Embedding an Ecosystems Approach in Decision Making: Measuring the Added Value

EMBED

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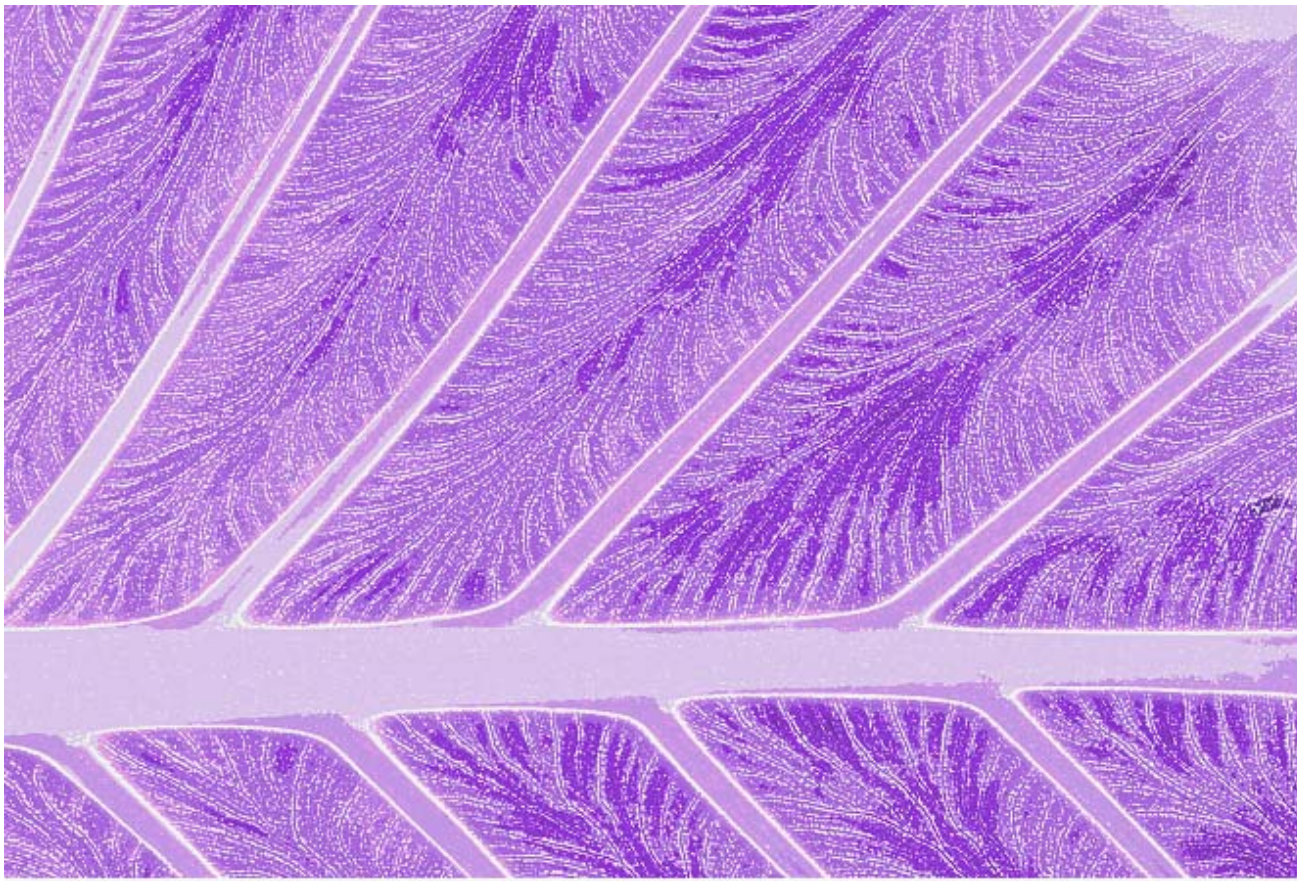

Overview Report

CEM Centre for Environmental Management

CEM Report No 18

The University of Nottingham

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Headline findings from the four demonstrator projects

Although an Ecosystems Approach is sound in principle its practical advantages are more difficult to assess. The EMBED study has therefore looked critically at four case studies so that the added value of an Ecosystems Approach can be better understood.

1. **The goal of building a resilient and healthy natural environment, that sustains people's well-being, is a challenging one.** To deal with the difficult problems we face it has been suggested that new, deliberative and holistic styles of decision making are needed. In this study we consider an Ecosystems Approach, which many have argued can stimulate the kind of responses we need to cope with rapid environmental, social and economic change.

2. **The principles that inform an Ecosystems Approach to decision making are understood by many to be basis for securing a healthy, resilient and diverse natural environment.** The concerns of an Ecosystems Approach to define and approach issues in a cross-sectoral way, as well as draw in a diverse range of stakeholders in decision making, are considered to be key attributes of decision making processes that will deliver strong environmental outcomes.

3. **The terminologies associated with consideration of ecosystem services in decision making are gaining traction with decision makers and stakeholders.** While it remains the case that an Ecosystems Approach brings challenges of communication in decision making, the terminologies of this approach are widely recognised and generally welcomed by stakeholders. An Ecosystem Approach communicates better the importance of managing and valuing environmental assets to non-traditional audiences in the policy and decision making process.

4. **Learning from demonstrated good practice is integral to the process of translating and embedding the principles of an Ecosystems Approach into wider practice.** There is discernible evidence that some of projects studied are considered 'pathfinders' among a wider stakeholder community interested in 'Ecosystems Approach' style decision making. Equally participants in some of these projects were also often keen to learn about the practical experiences of others in applying aspects of EsA principles in practical and tangible ways.

5. **Our investigation suggests that the principles underlying an Ecosystems Approach can indeed add significant value to decision making.** The projects that we have studied demonstrate that the Approach can encourage new and innovative ways of problem solving, and can be effective in helping resolve conflicts and bring different interest groups in to environmental decision making. Most importantly it can help society realise the value of the environment, and sustain it as an asset.

6. **Although this study provides evidence that an Ecosystems Approach to decision making is robust and effective, more needs to be done to encourage more people and organisations to think and plan in this way.** The good practice that has been seen in the EMBED case studies together with that found elsewhere, now needs to be shared. If an Ecosystems Approach is to be used more widely then more effective knowledge networks must be established so that these new styles of decision making can become part of normal professional and institutional practice.

Executive Summary

Introduction

The vision of securing a diverse, healthy and resilient natural environment, that provides the basis for everyone's well-being, poses a number of challenges. We need, for example, to consider whole ecosystems and the multiple benefits they provide to people, and understand how changes in ecosystem health can affect these benefits. We need to make sure the value of ecosystems is fully taken into account when making decisions and environmental limits are respected. We may also need to adapt how ecosystems are managed as conditions and circumstances change. In short, it has been argued that for the vision to be achieved, we need to adopt an Ecosystems Approach to decision making.

An Ecosystems Approach has gained wide support internationally on the basis of its promise and potential. In principle it can give a richer set of information to planners, policy advisors and decision makers and can help generate new ideas about how to manage ecosystems and attract investment into ecological restoration projects. Defra have also been an influential advocate. Before it can be mainstreamed in the UK, however, it is vital to demonstrate this potential in practice. Evidence is needed on effective applications that add value to policy and decision making in a range of real natural resource management contexts. The aim of the EMBED Project[1] has therefore been to look at an Ecosystems Approach in a critical way, and identify and measure the value it is adding to decision making compared to more traditional ways of working.

To do this we have investigated four demonstrator projects have been:

- The Finding Sanctuary Project in SW England(FS);
- The Gaywood River Valley Living Landscape Project in Eastern England , which is part of the EU-funded SURF[2] Project, abbreviated here as the Gaywood Valley Surf Project, GVSP;
- The Natural Economy Northwest Green Infrastructure Project (NENW); and,
- The Wetland Example of Payment for Ecosystem Services Project on the River Fal in West Cornwall (WEPES).

Each demonstrator represents a decision making system that has implicitly used an Ecosystems Approach. It was proposed that they could therefore be used as a basis for understanding what has motivated people to adopt an Ecosystems Approach, how an EsA is being implemented, how it is influencing policies and decisions, and what the costs and benefits are of taking an EsA.

Evidence has been collected from the projects individually and as a set, to identify what attributes and practices are most effective in delivering sustainable natural environment outcomes and what barriers might prevent such outcomes. A particular focus has been the role of the six distinguishing principles of an ecosystems approach that have been identified by Defra in their earlier work. We have explored how these principles have implemented, how individually and as a set they influence decision making, and how they can help deliver sustainable ecosystem outcomes.

[1] www.embed.org.uk
[2] www.sustainablefringes.eu/ProjectPartners/NorfolkCountyCouncil.asp

Approach

The questions that formed the basis of this study were:

- *What is the added-value of an Ecosystems Approach?*
- *Which attributes, products or outcomes of an Ecosystems Approach contribute to that added value?*
- *Is an Ecosystems Approach cost-effective?*
- *How might an Ecosystems Approach be further improved?*
- *How might an Ecosystems Approach be mainstreamed?*

In order to answer these questions we have developed a set of methods that have enabled us to systematically document and analyse the evidence we have obtained from the case studies. The information has been obtained from documents, and interviews with people leading the projects and the stakeholders involved in them. The methods have enabled us to identify recurring features of an Ecosystems Approach that have had a positive influence on decision processes and potentially on sustainable natural environment outcomes. A benefit of this analytical approach was that if attributes that are common to more than one projects could be identified, irrespective of context, then these lessons may be transferable, and could provide insights to others on how to tailor an Ecosystems Approach to meet their needs.

Findings

Our investigation has found that the principles underlying an Ecosystems Approach can indeed add significant value to decision making.

The projects that we have studied demonstrate that an Ecosystem Approach:

- Can encourage new and innovative ways of problem solving, because it helps to take a cross-sectoral view of issues and helps include a wider range of stakeholder perspectives.
- Can be effective in helping resolve conflicts and bring different interest groups in to environmental decision making by helping them to scrutinise evidence in a systematic and deliberative way.
- Can help people maintain the integrity of ecosystems and the services they deliver in ways that are compatible with wider social and economic goals, and are adaptable in the face of long term change.
- Can help society realise the value of the environment and thus sustain it as an asset.

Our investigation of the case studies has allowed us to identify a body good practice that can also benefit others. The studies provide strong evidence for the use of mapping and other visualisation tools that can help people understand and agree on the issues that need to be addressed. They have also been found to be important in helping people compare different options.

A key finding is that an Ecosystems Approach can have significant, beneficial impact on the *process* as well as on the quality of it outcomes. These benefits include:

- Achieving agreement between stakeholders in ways that are less costly to society in the long term.
- Achieving greater cohesion between different interest groups, and ensuring the collective support needed to ensure that sustainable ecosystem outcomes are delivered.

- The building people's awareness of the importance of the local environment, and the stake they have in sustaining the environmental assets that that surround them.
- Promoting adaptable ways of planning that take account of changing circumstances, including the potential impacts of climate change.

We found that in the short term using an Ecosystems Approach might take more time and can involve some extra costs, but that in general the long-tem benefits to society were potentially greater.

Next Steps

Although this study has provided evidence that by using an Ecosystems Approach in decision making more robust and effective outcomes can potentially be achieved, our discussions with people suggests that more needs to be done to encourage more people and organisations to think and plan in this way.

We need:

- Further examples of good practice that demonstrate the added value of the Approach in concrete ways; to do this we need new methods to help us compare and assess projects.
- To express the ideas that underpin an Ecosystems Approach in new ways that are easily understood by the different interest groups that can shape and assure sustainable ecosystem outcomes.
- A body of credible evidence about the kinds of management and policy intervention that work that can be easily accessed by people seeking to build coalitions of interest elsewhere.
- To understand better what kinds of triggers and general policy frameworks or guidance can encourage styles of decision making that are can sustain ecosystem integrity.
- A tool that can be used to place a monetary value on an environment would be of great use in terms of justifying a need to decision and policy makers to protect or enhance an area.

The good practice that has been observed in the EMBED case studies, alongside that found elsewhere in the UK by those attempting to apply an Ecosystems Approach, needs to be shared. If an Approach is to be used more widely then effective knowledge networks must be built so that these new approaches to decision making can become part of everyday professional and institutional practice

1. Introduction

1.1 Aim, objectives and background to EMBED

The aim of the EMBED Project[3] is to identify and measure the added value of an Ecosystems Approach[4] to decision makers. It did this by observing and reflecting on the outcomes of a set of carefully selected real-world projects that provided the evidence needed to:

i) analyse how the idea of an Ecosystems Approach is influencing the ways policies and decisions are being taken;

ii) evaluate motivations for, and the costs and benefits of, taking an Ecosystems Approach;

iii) evaluate which attributes and practices of the investigated projects are most effective in delivering sustainable natural environment outcomes (and, conversely, which aspects are not effective or act as barriers); and,

iv) identify practical mechanisms and tools by which positive attributes and practices can be shared with decision makers and delivery agencies involved in the development of other live projects that are using an Ecosystems Approach.

The 'demonstrator projects' that formed the focus of EMBED are: Finding Sanctuary (FS); the Gaywood Valley Surf Project; the Natural Economy Northwest Project (NENW) and the Wetland Example of Payment for Ecosystem Services Project (WEPES). Each of them has used or is currently using elements of an EsA to policy or decision making. More importantly, each is expected to influence societal choices about how ecosystems are managed in relation to green infrastructure, establishing conservation zones, or changing land management practices by implementing novel financial mechanisms. Thus the insights they provide are therefore of value to others.

The policy context for the EMBED was set by the Government's vision of securing a diverse, healthy and resilient natural environment that provides the basis for everyone's well-being (Defra, 2010). It is widely accepted that people obtain a range of benefits from the natural environment. However, it is also recognised that decision making often fails to take full account of the value of natural capital and of the stream of goods and services it produces. As a result, it is difficult to maintain the integrity of the natural resource base and secure a sustainable future. A more broadly-based, cross-cutting and integrated style of decision making is therefore required. Internationally, it has been recognised that an 'Ecosystems Approach' could help overcome some institutionalised limitations of decision making processes, such as biases toward sectoral solutions and short-term economic benefits, and so help change the basis and context for decision making, leading to better decisions and more sustainable

[3] www.embed.org.uk/

[4] We take as our starting point the definition of an ecosystems approach set out in a report to Defra (project code NR0111): "It should be noted that the literature contains a number of variations in terminology designed to emphasise different aspects of the idea. Reference is often made to an 'ecosystem-based approach', a term used mainly to promote holistic thinking in the design of specific management strategies for natural resource systems. More commonly the term 'Ecosystem Approach' is employed. The latter originates from the Convention on Biological Diversity (CBD) and emphasises the higher-level or more strategic issues surrounding decision making. Defra, in recent publications (e.g. Defra, 2007, 2010), refer to an 'Ecosystem**s** Approach', using the plural to emphasise that no prescriptive methodology is implied. In this report we employ the terminology used by Defra – but see no substantive difference in the way the two ideas are conceptualised. In this report we also avoid abbreviating the term 'Ecosystems Approach' as 'EA' because it can be confused with the abbreviation for the Environment Agency; the IUCN CEM suggests using EsA as an alternative (written communication, 2007)." (Potschin et al., 2008).

outcomes. To this end, Defra produced an Action Plan for embedding an 'Ecosystems Approach' in decision making (Defra, 2007a, 2010), and various guidelines for valuing ecosystem services (Defra, 2007b; Fish et al., 2011). The continuing relevance of the EMBED project lies in the insights it can provide about the way such 'ecosystems thinking' is applied in real-world situations. As UK Government's Natural Environment White Paper for England (HM Government, 2011) emphasises, there is a pressing need to share experience and good practice. In this respect, the outcomes of EMBED will help deliver the commitment in the White Paper to establish a national Ecosystems Knowledge Network.

1.2 An Ecosystems Approach

An Ecosystems Approach is best thought of as a special form of integrated sustainability assessment that is 'place-based' and is focused on the role an ecosystem plays (or could play) in sustainable development, as well as on the relationship between the status of the ecosystem and the stream of benefits it can deliver. It is characterised by a set of constituent principles (see Defra, 2010):

1. taking a more holistic approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services;
2. ensuring that the value of ecosystem services are fully reflected in decision-making;
3. ensuring that environmental limits are respected in the context of sustainable development, taking into account ecosystem functioning;
4. taking decisions at the appropriate spatial scale, while recognising the cumulative impacts of decisions;
5. promoting adaptive management of the natural environment to respond to changing pressures, including climate change; and,
6. identifying and involving all relevant stakeholders in the decision and plan making process.

An Ecosystems Approach (EsA) therefore seeks to understand how an ecosystem functions and to identify how ecosystem integrity and flows of beneficial goods and services are interrelated and how both might be affected by threshold effects and capacity limits. It involves trying to identify the multiple benefits that ecosystems can provide to people, assessing the value of these benefits and reflecting these benefits in decision making processes. It also involves trying to understand how ecosystem integrity may be threatened by stresses, the sources of stress and the cumulative impacts on ecosystems of multiple stresses arising from different sources, including those associated with how an ecosystem is used and with environmental change. In order to identify a full set of benefits and beneficiaries, to provide for values to be revealed and negotiated, and to provide for negotiated limits on the use of an ecosystem to be established, an Ecosystems Approach can be organised as a participatory process of knowledge brokerage and social learning, which involves stakeholders, scientists and decision makers. It may usefully be organised as a process that accompanies adaptive policy making, so that findings about the impacts of management actions and other drivers of change on the ecosystem can be taken into account and integrated into decision making in real time on a continuing basis.

The argument for taking an EsA to support decision making has mainly been made on conceptual and theoretical grounds (Fish et al., 2011; Haines-Young and Potschin, 2008; Potschin et al., 2008). It follows a deductive logic, which appears intuitively sound, and is consistent with more adaptive models of environmental management that have developed in the context of sustainability. In

principle, an EsA can give a rich set of information to planners, policy advisors and decision makers and can help generate new ideas about how to manage ecosystems and attract investment into ecological restoration projects. These issues are particularly important given the prospect of climate change and the need to understand and meet future requirements in terms of energy, food and resource security. However, if an Ecosystems Approach is to be mainstreamed, a necessary next step is to develop evidence of effective applications that add value to policy and decision making in a range of natural resource management contexts. Documented applications and evaluations of these are needed to form the basis of robust guidance on the extent to which an EsA is able to influence decision making and how best to design and implement an Ecosystems Approach in specific contexts.

When looked at in an applied context, the critical research questions surrounding an Ecosystems Approach are:

- how might the principles be made operational;
- what contributes to their effectiveness in influencing decision making; and,
- how do the principles (individually and collectively) influence the nature of decision making, resulting decisions and ecosystem outcomes?

An opportunity now arises to address these questions because nationally, a number of projects, using what might broadly be interpreted as an Ecosystems Approach have been, or are being, undertaken. By focussing on a set of four of these 'live' demonstrator projects EMBED has sought to gather evidence about whether and how an Ecosystems Approach can help transform the basis of and context for decision making and 'add value'. The study has also gathered evidence about those attributes of an EsA that have a positive influence on decision making, and this experience can be used to explore how the approach can be mainstreamed.

Although EMBED is directly concerned with environmental issues it is also relevant to more general policy goals that concern better regulation and better governance. These seek to ensure that policy making is evidence-based and supported by the best available knowledge. There is a concern also to ensure that investment in knowledge-producing and similar processes of policy support is cost effective and justifiable in terms of its added value and to identify those policy-support processes and the constituents of these that add most value to decision making. In respect of these concerns, evaluating the usefulness of decision-support processes and analysing how knowledge produced in the course of such processes is used or is otherwise influential in decision making is an important and growing field of inquiry. There is a strong interest in such evaluation studies among those who commission policy-support activities and processes, especially when the intention is to promote sustainability integration into decisions and policies, which is an urgent and important challenge that remains inadequately-met. In essence, Defra's interest in exploring the potential of an Ecosystems Approach can be seen as a specific instance of a wider concern to find ways to better integrate sustainability into decision- making.

1.3 Methodological Approach

In general a mixed methodological approach was employed in EMBED to inform its project objectives. Specific research techniques employed included:

- A structured questionnaire to elicit basic descriptive information on demonstrator projects from project key informants.
- Semi-structured in-depth interviews (either face to face or telephone) with project key informants and a range of stakeholders to elicit analytical and reasoned responses toward study themes.
- Group discussion with key informants in a facilitated workshop format to foster inter-project comparisons over the lifetime of the study and
- Desk top analysis of project materials either available in the public domain or those made available by project key informants to reinforce and validate reporting on key study themes

These techniques have been designed to provide insight into:

- how an 'Ecosystems Approach' is constituted;
- how a decision making process is constituted; and,
- how the influence of an Ecosystems Approach on policy making and on ecosystems management practices might be constituted.

A simple conceptual model of a decision making system supported by an Ecosystems Approach is outlined in Figure 1.1. This figure recognises that decision- or policy-making is embedded in a wider socio-ecological context, which includes the ecosystem that is potentially under management. The decision making process is supported by an Ecosystems Approach and it is *hypothesised* that the former can be influenced by it. The socio-ecological context, including the status and dynamics of the ecosystem under management, may provide motivation for or influence how an EsA is implemented. An EsA is intended to influence decision making and, by implication, its outcomes. In turn, the outcomes of policy and decision making processes are intended to influence how ecosystems are

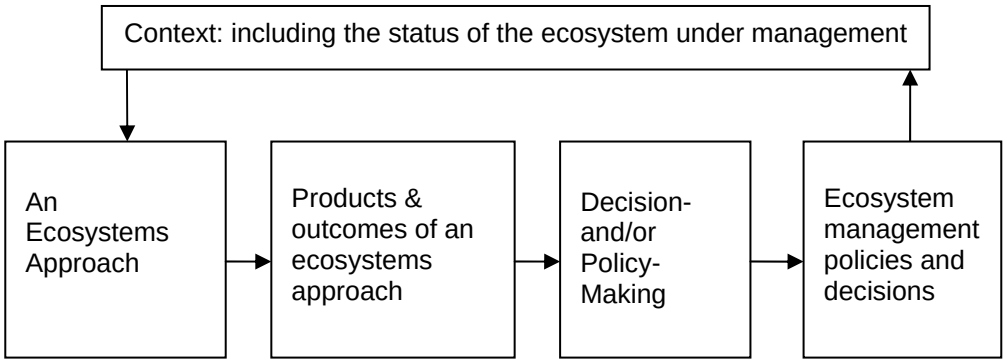

Figure 1.1: A decision making system supported by an ecosystems approach (Weaver et al., 2010)

developed and used. The broad intent of a decision making system that takes an Ecosystems Approach is to secure ecosystem integrity and optimise the contribution natural capital makes to sustainable development (i.e. in respect of the flows and values of ecosystem goods and services).

For purposes of structuring an evaluation method it is important to elaborate how each of these elements of the decision system under investigation in EMBED (context, an Ecosystems Approach, the products and outcomes of an Ecosystems Approach, decision/policy making and ecosystem

management decisions) could be constituted and how these constituent elements might be connected by inputs and outputs that constitute lines and mechanisms of potential influence. The overarching research questions for the EMBED project are therefore:

1. What is the added-value of an Ecosystems Approach?
2. Which attributes, products or outcomes of an Ecosystems Approach contribute to that added value?
3. Is an Ecosystems Approach cost-effective?
4. How might an Ecosystems Approach be further improved?
5. How might an Ecosystems Approach be mainstreamed?

A more detailed account of the methods used to answer these questions is presented in later parts of this Report.

1.4 Structure of this overview report

The purpose of this Overview Report is to document the key findings of EMBED and identify what steps might follow if an Ecosystems Approach is to be mainstreamed. Thus **Chapter 2** summarises the character of the demonstrator projects and justifies why they were chosen for study. **Chapter 3** describes the methods used. In **Chapter 4** we review the findings from the demonstrator projects against the principles of an EsA, and present the evidence collected via questionnaires and interviews with the Key Informants and Stakeholders associated with each of them. These materials form the basis of the cross comparison of the projects and the review of the general lessons learned about applying an EsA in **Chapter 5.** In **Chapter 6** we conclude by reviewing the research questions that were the stimulus for EMBED.

The original specification for the EMBED project is provided in the annex to this document. A more detailed Technical Report is also available, and this provides more complete access to the evidence base and the analyses based upon it.

2. The EMBED Demonstrator Projects

2.1 Introduction

The EMBED Project began in November 2009 and was completed in September 2011. When planning the work programme around 20 candidate projects were considered for investigation, and from this set four were selected as the basis for more detailed investigation (Table 2.1). At the outset we recognised that there are important methodological implications of the case study approach used in EMBED. With a limited group of projects there was no possibility of performing any statistical analyses, or constructing any external controls to help identify how 'ecosystem thinking' shaped decision making. To overcome this problem the strategy employed was to take a retrospective approach, and work backward from decision outcomes and asking decision makers how they made their judgements, what influenced their thinking, what information and evidence was important to their deliberations, and from where this information and evidence came. The four 'EMBED demonstrators' were therefore selected partly to explore a diversity of different decision making situations but also where the prospect of making a retrospective analysis was most likely. In this Chapter we summarise their key attributes and explain why they were considered to be an interesting target of study.

2.2 The EMBED Demonstrator Projects – an overview

In this section of the Overview Report we provide basic information about the four demonstrators that formed the focus of the EMBED study. In presenting these materials we have taken care not to imply that that any of them *explicitly* followed the principles of an Ecosystems Approach (EsA), but rather merely show that whether the EsA was used or not, their design and operation of the project was consistent with its core assumptions. Out *interpretation* of how the work and outcomes of the demonstrator relate to the principles is presented in Chapter 3.

2.2.1 Finding Sanctuary (FS)

Finding Sanctuary (FS) was a partnership project which has brought together a number of stakeholders to design a network of Marine Protected Areas (MPAs) in the South West England. It was one of four regional initiatives of its kind to be set up around the English coast under the umbrella *Marine Conservation Zone Project* established by Defra, Natural England and the Joint Nature Conservation Committee. All were tasked with designing MPA networks to achieve the objectives for marine nature conservation set out in the 2009 Marine and Coastal Access Act. FS was selected for EMBED to enable marine issues surrounding an Ecosystems Approach to be explored, and because it was the most advanced of the four national MPA studies. The work began in 2009 and has now been completed in that the recommendations for the proposed network of MPAs are with JNCC and Natural England for their formal advice to Government. .

Table 2.1: Overview of EMBED Demonstrator Projects

	Finding Sanctuary (FS)	Gaywood Valley Surf Project (GVSP)	Natural Economy Northwest (NENW)	Wetland Example of Payment for Ecosystem Services (WEPES)
Overarching project	Marine Conservation Zone Project	Part of the InterReg SURF project (SURF = Sustainable Urban Fringes)	Natural Economy North West	Part of the InterReg IVA WATER project - Wetted-Land: Assessment, Techniques and Economics of Restoration.
Ecosystem Type	Marine and Coast	River basin landscape	Urban & Rural	Wetland - subcatchment
Scale	Regional	Catchment	Local	Site/Catchment
Size	92,000 km^2	5,700 ha	8 site-scale redevelopment or regeneration projects	21 ha
Location	Southwest England (coast and marine ecosystems of Dorset, Somerset, Devon, Cornwall and the Isles of Scilly)	West Norfolk Borough area	Northwest England (Warrington, Salford, Liverpool, Oldham, Rochdale, Blackpool, Burnley and redevelopment projects in the Weaver Valley and around Windermere)	Southwest England (West Cornwall)
Issue	Defining Marine Conservation Zone (MCZ) boundaries that will command support of stakeholders	Making the urban fringe more accessible and attractive and introducing multi benefits	Demonstrate cost-effective ways to improve & integrate Green Infrastructure (GI) in the design of projects and by sharing investment costs amongst beneficiaries.	Using a pilot-scale project to evaluate the catchment-wide potential of a 'Payment for Ecosystem Services' approach in conservation and habitat restoration efforts.
Start/end	9/2009 to 6/2011	9/2010-8/2012	1/2007 to 12/2009	3/2009 to 3/2011
Status	recommendations to JNCC and NE in September 2011	Ongoing	The NENW programme has been completed and the overall evaluation also done. These 8 projects are ongoing and ideally monitoring outcomes would be desirable. The new partnership, the NENW Alliance will continue the work including providing a NW Green Infrastructure service.	Autumn 2011, but major outcomes including an assessment of the payment for ecosystem services model due by summer 2011
Overall budget	Approx. £ 1 million	£500,000 plus ca. 32.000 €	Total NENW budget £3 million - These 8 projects formed part of the NENW programme.	Approx. £90,000
Funding source	Past: Esmée Fairbairn Foundation, Defra Challenge Fund, Oak Foundation, FIFG, South West RDA, Cornwall County Council, National Trust, Devon County Council, RSPB. Currently funded by Natural England and Interreg.	Interreg North Sea Project (Europe) Some match funding by Norfolk County Council and West Norfolk Borough Council	Natural England, the Northwest regional Development Agency, the SITA Trust	Natural England, DEFRA, EU Interreg Manche, Springboard, RELU.
Websites	www.finding-sanctuary.org	www.sustainablefringes.eu	www.naturaleconomy northwest.co.uk	http://www.wrt.org.uk/

The goals of the MPA networks established by the Act are to safeguard and encourage recovery of biodiversity and to help ensure the long-term sustainability of marine resources. To achieve these goals, the networks must be based on a set of national MPA design principles which embody many aspects of an EsA approach including that the need to base decisions on stakeholder engagement. Thus reviewing FS the main tasks were to understand how it sought to assure a holistic perspective, how it framed notions of environmental limits and thresholds, the ways it sought to take decisions at the appropriate spatial scales and deal with cumulative impacts, the management of trade-offs and conflicts between competing uses and users, and the need for effective stakeholder participation.

This way stakeholder processes were designed and managed in FS made it particularly interesting for investigation through EMBED. The process of agreeing a set of MPA boundaries prior to producing final recommendations has involved assembling and using large body of empirical data, resolving conflicts about the way this evidence is interpreted, and the understanding the values and goals that the various stakeholder groups hold in relation to the use of the marine space.

2.2.2 The Gaywood Valley Surf Project (GVSP)

The aims of this initiative have been to assess the role and help realise and value of the natural asset represented by the Gaywood River Valley area for the people of King's Lynn, Norfolk. The goal has been to develop a holistic approach to catchment management that recognises the importance of the river valley and its management in helping the area to respond to the impacts of climate change the threat of flooding, and the pressure for development around the urban fringes of the town.

GVSP is led by Norfolk County Council and West Norfolk Borough Council, also in partnership with other public and private organisations including the Norfolk Wildlife Trust, King's Lynn Internal Drainage Board, Natural England and other environmental organisations, 14 local schools, local landowners, politicians and local resident and volunteer groups. Its core funding of around £500k has been provided from an INTERREG Project, SURF which is looking at social, economic and environmental quality of urban fringe areas. Of the four EMBED demonstrators this is the one which is yet to be completed. Nevertheless, there has been considerable progress since its official start in Nov. 2009 and its public launch in May 2011, and the insights that have been gained are relevant to better understanding the value of an Ecosystems Approach.

The original core rationale of the GVSP was to meet the requirements of the Water Framework Directive and to develop sustainable approaches to flood risk management, but the remit has changed slightly due to funding and partner support and so its wider concerns have included the need for enhancing biodiversity and ensuring that the local environment delivers a range of benefits to local people through education and the economy. Thus a particular focus for EMBED has been to understand how the initiative broadened the range of issues considered beyond those related to flood management, and to better understand how, via one issue, a wider range of cross-sectoral problems can be explored in the search for creative solutions. The project thus potentially allowed for a comparison between the default option for flood alleviation and alternative multi-dimensional strategies consistent with application of an Ecosystems Approach.

In reviewing the GVSP the focus has been to test whether by taking an EsA there were opportunities for 'problem reframing', and how cross-sectoral perspectives might provide a stimulus for decision making that is socially inclusive and capable of resolving conflicting priorities. We have also

considered the effectiveness of an Ecosystems Approach in promoting interagency working and how effective place-based approaches are in achieving effective of stakeholder processes.

2.2.3 Natural Economy Northwest (NENW)

Natural Economy Northwest (NENW) was a regional partnership programme led by Natural England, the North West Development Agency and the SITA Trust, on behalf of a wide range of economic and environmental partners. It was started in 2007 and ended in 2009, soon after the initiation of EMBED. It was selected as a demonstrator because its greater maturity allowed the influence of some of the project outcomes to be considered as well as using the case study to look only at decision making processes.

The focus of NENW was to deliver priority action 113 in the Regional Economic Strategy, namely *to optimise the contribution of the natural environment to the regional economy and quality of life*. Thus the Project sought to work with a range of regional partners to mainstream the natural environment within sustainable economic development. In the course of the programme substantial expertise as well as methods, tools, processes and knowledge were developed concerning green infrastructure, the services it provides, potential benefits and beneficiaries, and ways of valuing and enhancing these benefits.

NENW differed from the other demonstrator projects in that its main purpose was to influence others rather than to intervene directly. Thus the project was of interest from the outset because it allowed the way arguments about the importance of green infra-structure were being made in a number of 'live' initiatives, which included: the Omega South Development (Warrington), the Irwell City Park (Salford), the Knowledge Quarter Redevelopment (Liverpool), Social Housing Projects in Oldham and Rochdale, the Weaver Valley Regional Park, redevelopment projects in Blackpool and in Windermere, and the Rooley Tip / Pennine Forest Park (Burnley). The set of projects drawn from the NENW portfolio of work reflect a broad range of different types of infrastructure development; they also included those projects recognised as a priorities by the sub-regional economic strategy which had funding support.

A key reason for including the NENW case study in EMBED was the recognition that is has been a pioneer in developing and implementing approaches to Green Infrastructure (GI) planning and investment. NENW has operated in a context where additional finance for green investment has to be attracted from a wide range of investors and had to be justified in terms (and in language) relevant for these wider constituencies. This kind of situation is one that occurs in relation to redevelopment and regeneration schemes in many parts of England. The limited public finances available for environmental improvements and sustainable initiatives make it all the more important to attract new investors from private and third stream sectors. A core aim of NENW was to find ways of maximising the returns from investing in GI and of ensuring that investment in GI was made whenever it represented a 'least cost' solution (i.e. when investment in GI offsets higher costs that would otherwise be incurred in other sectors, such as health care).

By reflecting on the achievements of NENW it was felt that EMBED would potentially be able to identify clearly the impact and added value of using an Ecosystems Approach in influencing project design, providing information to support decisions about investments in green infrastructure and in bringing additional finance to projects to cover increases in up-front investment costs that may be

needed to secure a continuing stream of enhanced ecosystem benefits. Key questions arise in relation to NENW were how ecosystem services and the benefits associated with them were identified and valued and how the arguments about GI fitted in to existing policy and decision making frameworks. It was felt that the experience provided by NENW would be relevant to planning authorities throughout England. It was also felt to be relevant to those involved in multi-partner projects designed to: enhance the quality of local environments; lower the risks and overall economic costs of adapting to climate change; and, identify a stream of public and private benefits that enable projects to be (at least in part) paid for by beneficiaries.

2.2.4 Wetland Example of Payment for Ecosystem Services (WEPES)

The WEPES project was led by the Westcountry Rivers Trust and focussed on water management issues associated with the River Fal in West Cornwall. It started in 2009 and has now been completed. Compared to the other three demonstrators project it was the smallest, focussing on only 21ha of land. However, it has run in parallel with a larger INTERREG project which had similar objectives – called WATER (Wetted Land: the Assessment, Techniques and Economics of Restoration) which took in the other catchments of the Axe and Exe. Like WEPES, the WATER project seeks to improve the condition of the rivers that discharge into the Channel by developing a 'Payments for Ecosystem Services' (PES) model. This scheme would allow farmers and landowners to access funds to afford long term protection to strategically targeted areas of their land that are important providing the wider ecosystem services.

In selecting WEPES for inclusion in EMBED it was felt that the insights would not only be relevant to other river basins, but also more generally for those interested in PES schemes. The policy backdrop for WEPES was the Biodiversity Action Plan (BAP). WEPES has explored whether market mechanisms can used to facilitate changes in land management practices consistent with the BAP. It has involved making an economic valuation of the services that restored wetlands can provide such as carbon sequestration, flood mitigation, nutrient stripping, biodiversity and other benefits associated with extensive management. The particular site on the Fal that is the focus of attention provides an opportunity to examine how evidence about the impacts of land management on ecosystem services can be used to bring together the interests of potential buyers for some of these services (e.g. South West Water) and sellers (the Land Owner), thereby ensuring the long-term protection of hydrologically-important in the catchment

Since the outcomes of WEPES will feed into real decision, investment and negotiation processes, it was felt that in the context of EMBED there was an opportunity to evaluate the effectiveness of the project attributes, processes and products in delivering a long-term sustainable solution based upon supporting the creation of new market mechanisms. In particular it provided the opportunity to evaluate the effectiveness of an EsA in valuing and monetising the ecosystem services provided and in securing payments for them, and how agreements between different actors could be made given uncertainties associated with much of the evidence.

3. Methodology

3.1 The EMBED methodology: Rationale

Chapter 1 described how an evidence-based methodology has been used by EMBED to answer the core research questions concerning the added-value of an Ecosystems Approach (EsA) in decision making. The methodology used is based on an approach developed elsewhere (see Weaver, 2002a&b) that employs externally-defined and consistent criteria for judgement. In this Chapter we discuss in more detail the nature of this approach and the kinds of evidence that it generates. [5]

The use of externally defined criteria as the basis for investigation the EMBED demonstrator projects ensures that the conclusions are not dependent on whether each project met its own, internally-specified, goals and objectives, but rather is based on the answer to a more generic question, namely *what value is added to policy and decision making in each case by taking an Ecosystems Approach*. To address this more general issue requires establishing *which attributes of an Ecosystems Approach contribute most to its effectiveness* in adding value. This concerns the role of the principles of an Ecosystems Approach. It also requires understanding: *What contributes to implementing these principles? How do the principles (individually and collectively) influence the nature of decision making, resulting decisions, and ecosystem outcomes?*

Thus the 'object under evaluation' in each demonstrator project is understood to be *a decision making system* that is supported by an EsA and is concerned with the management of an ecosystem. As Figure 1.1 shows, the 'system' can be conceptualised in generic terms as a set of linked elements. The elements include the ecosystem under management (which is a part of a wider social-ecological context), an Ecosystems Approach taken in each demonstrator project, the products and outcomes of an EsA, the decision process that is supported and the decisions and other outcomes of decision making that impact upon the ecosystem under management.

In this decision making system the important links that require scrutiny for the purposes of evaluation are those between *an Ecosystems Approach used in each demonstrator project* (i.e. what it is and how it is implemented), *what it delivers* (i.e. in terms of 'extra' products and outcomes that, without an EsA, would not have been delivered), *the value of these 'extra' products and outcomes in policy and decision making*, and (to the extent this is possible to discern in the time-frame of the EMBED project) *the impact of resulting decisions on ecosystem integrity and on the flows and value of ecosystem goods and services.* There is also a need to understand the degree to which effectiveness in adding policy value is related to generic attributes of an Ecosystems Approach versus the degree to which this depends on the specifics of the application and context.

3.2 The EMBED methodology: Implementation

The methodological approach used for EMBED is analogous to that employed in other projects that have sought to define and evaluate projects that employ strategies that promote the integration of sustainability considerations into decision making. A pioneering project of this type was AIRP-SD (Adaptive Integration of Research and Policy for Sustainable Development)[6]. The experience gained

5 This chapter is based on work undertaken by Dr. Paul Weaver (Groundswell Research Associates).The complete methodology is provided in the annex of the Full Technical Report (Weaver, P. et al., 2010).

6 The AIRP-SD Project was part of the EU STRATA Programme: http://web205.vbox-01.inode.at/airp-sd/start/index.htm

from such work suggests that there are two levels of analysis that must be addressed during a project such as EMBED:

The first involves fact finding and judgment at the level of individual demonstrator projects. To achieve this, a standardised methodology was developed which could be applied to each project to ensure consistency in evaluating the costs, benefits and cost-effectiveness of taking an EsA. In proposing this component of the methodology we recognised that there are many different contexts of policy- and decision-making and many different ways of implementing an EsA. Our review of methods suggested that whatever framework is considered as the basis of analysis, this should cover a full range of potentially influential dimensions and attributes of the context and the application, in order that these might be described in detail. Thus at the level of the individual project we have systematically collected evidence relating to:

- project initiation, motivation, policy context and issue framing;
- the project financial model and how this is justified;
- the project leadership, partnership, management and decision making model and how this is justified;
- project orientation, goals & objectives, targeted outcomes and how these are justified;
- project scope, how this is defined/decided, and how this is justified;
- the organisation of the project (phases, sequencing, time allocation, financial allocation, etc) and how this is justified;
- the tools, methods, analytical approaches, and stakeholder engagement processes used and how these are justified;
- how the ecosystem under management is described and characterised (including ecosystem status, limits, thresholds, services, etc.) and how this characterisation is justified;
- the approach to defining and valuing ecosystem service benefits and how this approach is justified;
- rules and procedures for value negotiation, trading off values, safeguarding critical values, etc., and how the approaches taken are justified;
- learning and use of knowledge;
- language and communication; and,
- how challenges of uncertainty, risk, system dynamics and quality assurance are addressed and how the approaches taken are justified.

The evidence underpinning each of these issues was collated through direct observation and from inspection of relevant documentary sources, gathered through questionnaires, interviews with Key Informants (KIs) responsible for the demonstrator projects, or Stakeholders (SH), which included decision- and policy- makers and other users of information and outcomes delivered through an EsA (reports are in the annex of the Full Technical Report). We have also, where possible, collected information from stakeholders relating to the value of the approaches used in the demonstrator projects, the outcomes achieved and the added-value to each stakeholder group that these outcomes represented. Table 3.1 provides an overview of the indicative questions that we devised in order to undertake this first 'fact-finding' stage of the work. By using this approach rigid questionnaires were avoided in favour of a flexible, semi-structured method that enabled a consistent of themes and topics to be explored.

Table 3.1: Project description – motivation, management, design and implementation (Weaver et al., 2010)

Dimension	Indicative questions
Context, initiation, motivation, policy issues, issue framing	Why is this project being undertaken? What is the 'context' for the project? Who initiated the project? What or who is driving/motivating the project? What policy issues are involved? What problem is being addressed? Is the use of an ecosystems approach explicit or implicit? What does it mean here to 'take an ecosystems approach'? Why is it considered useful to take an ecosystems approach? How are the issues framed? Is 'reframing' needed? Other perceived/stated benefits of an ecosystems approach?
Leadership, partnership, management and decision making	Who is involved in the project delivery team? Why are these involved? What is the project management structure, decision making and reporting model? Who decided these? On what basis?
Finance and resources	What is the cost of the project? How is the project financed? What is the funding model for the project? How are funds allocated across phases? What other resources are available to the project? Who decided these? On what basis?
Orientation, goal setting, targeted outcomes	What are the project goals, objectives and targeted outcomes? Which of these is potentially unique to an ecosystems approach? Who are target users for the outcomes? What are target uses? What influence/impact is intended? How will this influence/impact be secured? Who decided these? On what basis?
Process/timing/phases	How is the project organised in time? What are the start/finish dates? When are specific outcomes needed? How is the project broken into phases/tasks? How much time is allocated to each? Are tasks sequential, parallel, cyclical and/or iterative? Who decided these? On what basis?
Scope and content	What problems/issues/challenges/threats/opportunities/solutions are being explored? What is the boundary of the analysis? How is this defined? What is included in the analysis? Are social and economic aspects included? Who decided these? On what basis?
Ecosystem characterisation: status, thresholds/limits, services	What is the ecosystem under consideration? How is this defined? What is its size and scale? How is it 'characterised' and 'described'; i.e., using what dimensions and data? Why are these dimensions relevant? What is the current status of the ecosystem? What is the trend in status? What is driving the dynamics? Is the ecosystem vulnerable or stressed? Are there thresholds/limits? Who identified/defined these and how? What ecosystem services are involved? Who identified/defined these and how?
Tools, analytical approaches	How are the five principles of an ecosystems approach being implemented? What analytical tools, methods, approaches and data are used in the project? For which purposes? What alternatives were available? How did these compare? Who decided these? On what basis?
Stakeholders and users	Who is involved as a stakeholder? What is the definition of a 'stakeholder' in this project? What is the model for stakeholder identification and engagement? Was there a stakeholder mapping exercise? Why and when are stakeholders involved… to fulfil which purposes? Is 'power' addressed and how? Who decided these? On what basis?
Valuation: approaches to valuing ecosystem service benefits	Are ecosystem services valued in the project? What approaches are used to identify and value services? Who is involved in valuing services? Who decided these? On what basis?
Rules and procedures for value negotiation: trading off values, safeguarding critical values, etc.	How are decisions and recommendations reached in the project? How are values negotiated? How are conflicting values resolved? How is power addressed in value negotiation? Who decided these? On what basis?
Learning and use of knowledge	How is knowledge developed in the project used in the project? Are efforts made to track and capitalise on learning? How? Whose learning is monitored?
Language and communication	What issues of language and communication are implied by the project? How are these addressed?
Uncertainty and quality assurance	How is uncertainty handled in the project? How is uncertainty communicated? How is quality of project outcomes assured?

The second component of the EMBED methodology has involved examining the demonstrator projects for common lessons and themes. This was needed to help identify recurring attributes with a positive influence on decision processes and on sustainable natural environment outcomes. We felt that attributes that are common to more than one of the set of projects, irrespective of applications context, may be transferable. We also considered that the meta-level analysis would provide insights into how to tailor an Ecosystems Approach in specific contexts and applications.

The meta-level analysis has provide to be the more difficult and complex of the two parts of the EMBED methodology, because it has involved making judgements concerning attribution. To ensure that this phase of the analysis is as robust and constructive as possible, we developed an approach that has included:

- a quality assurance check of completeness and accuracy of information collected about each demonstrator project;
- a cross-comparison of the different demonstrator projects designed to reveal any commonly-shared positive attributes and/or pathways of influence; and,
- a three-step procedure for assessing the quality, completeness and strength of evidence about lines and mechanisms of influence on decision making and ecosystem outcomes, based on expert and peer-to-peer review.

The methodology used in the meta-analysis phase was intended to make a separation of responsibilities and introduce some independence in reviewing the evidence available. The intention was to ensure that the assessment of evidence about the influence of an Ecosystems Approach was not performed only members of the evidence gathering team, but also collectively by group of Key Informants who had the opportunity to sift material in a workshop environment.

Identification of the *added value* of an Ecosystems Approach is a complex undertaking, not least because comparisons are difficult if not impossible. The problems posed by this lack of an external 'control' (i.e. analogous situations where the same decisions were being made without recourse to an Ecosystems Approach) was, as we have suggested in Chapter 2, addressed by a 'retrospective approach'. This involved working backward from decision outcomes and asking decision makers how they came to those choices, what influenced their thinking, what information and evidence was important to their deliberations, and from where this information and evidence came. In this way it is possible to work back through the hypothesised chains of cause and effect to identify attributes, products and outcomes of an Ecosystems Approach that people report as the sources of influence. In practice this oral evidence was augmented with documentary sources that also demonstrated what information was used at different stages of the decision making process.

Table 3.2 provides an overview of the indicative questions that we devised in order to undertake the meta-analysis. Its construction was more complex than the template used for the fact-finding phase. It involved identifying the potential sources of influence that an Ecosystems Approach might have on decision making. We derived these from our general knowledge of the topic area and a reading of the literature; the themes identified included the stimulus it gave to problem reframing or consultation approaches. We then identified the kinds of evidence that might be used to identify this kind of influence and the potential sources of this influence and its potential value. The different sources of evidence were used as prompts to structure the meta-analysis in the second phase of the work programme.

Table 3.2: Value added to policy making, decision making, ecosystem management, and ecosystem outcomes (Weaver at al., 2010)

Influence	Evidence for this influence (indicative)	Evidence for the source of this influence (indicative) and its value
Reframing	e.g. changes in the ways issues are understood and how they might be addressed effectively; changes in the urgency or priority afforded to issues; shifts to making the spatial, temporal and functional scale of policy or decision making coincident with the functional boundaries of the concerned social-ecological systems (rather than coincident with administrative boundaries, sectors, etc.); shifts from shorter- to longer-term perspectives in decision making;	What issues are of policy or management concern here? What are the main policy priorities in respect to these? Has there been any change in thinking about these? Has there been a shift to a more systemic approach to addressing issues? What was the role of the project in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential? How valuable is that influence? Are there any other ways this influence might have been achieved?
Policy or management goals and objectives	e.g. widening of goals and objectives to include ecosystem integrity and function explicitly: enhancing the contribution of natural capital to quality of life and/or to social and economic development; restoring or maintaining ecosystem function; enhancing the quantity, quality and range of ecosystem services; respecting ecosystem limits	How were the policy/management goals, objectives and priorities decided? What role did the project play in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential? How valuable is that influence? Are there any other ways this influence might have been achieved?
Consultation and engagement	e.g. widening the scope of those whose perspectives are included in planning, policy making and decision making processes and who are involved in deliberative processes concerning ecosystem management; evidence of strengthened links between and among delivery agencies, beneficiaries, benefits and beneficiaries; evidence of consensus building and/or creation of a forum for negotiating ecosystem limits, values, etc.	Whose perspectives have been taken into account? Who has been consulted and how? Why are these stakeholders/actors engaged? What added value does their involvement bring to decision making? What was the role of the project in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential? How valuable is that influence? Are there any other ways this influence might have been achieved?
Options	e.g. consideration of new and improved planning, ecosystem management and policy options suggested to policy and decision makers through an Ecosystems Approach	Have new or improved options for policy or decision making been proposed or suggested through the project? What attributes, products or outcomes of an Ecosystems Approach were particularly influential in suggesting these? How valuable is that influence? Are there any other ways this influence might have been achieved?
Information used in decision making	e.g. shifts in the information used by decision makers to include information provided through an Ecosystems Approach (such as costs and benefits of enhancing ecosystem services, the full value of ecosystem services, levels of critical capital, etc.); evidence that decision makers consider outcomes from projects taking an Ecosystems Approach as salient and robust (i.e. because stakeholders judge these to have been produced through credible and legitimate processes)	Has new or improved information relevant for policy or decision making been delivered by the project? Is the information considered particularly robust? How important a role has this played in the decision process? What attributes, products or outcomes of an Ecosystems Approach were particularly influential in producing this information? How valuable is this information? Are there any other ways this information might have been obtained?
Criteria for decision making	e.g. shifts to include new criteria in decision making suggested through an Ecosystems Approach; reflecting the full value of ecosystem service benefits; changing relative weights applied to decision criteria; introducing elements to be safeguarded in any decision (preserving critical capital, preserving critical function, respecting ecosystem limits);	Have there been any changes of criteria used in decision making or in the weights applied to different criteria? Have these been suggested through the project? How important a role has this played in the decision process? What attributes, products or outcomes of an Ecosystems Approach were particularly influential in suggesting these criteria? How valuable is this contribution? Are there any other ways that suggestions for change in the criteria for decision making could have been made?

Table 3.2 (cont.): Value added to policy making, decision making, ecosystem management, and ecosystem outcomes (Weaver et al., 2010)		
Influence	**Evidence for this influence (indicative)**	**Evidence for the source of this influence (indicative) and its value**
Decisions and outcomes emanating from policy- and decision-making processes	e.g. new or improved strategies, plans, recommendations or actions concerning the use and management of ecosystems that reflect the influence of an Ecosystems Approach (including business plans, community engagement plans and other plans needed to secure implementation and continuity)	What decisions and outcomes have been reached concerning the use and management of the concerned ecosystem(s)? How important a role has the project played in the decision process? What attributes, products or outcomes of an Ecosystems Approach were particularly influential in supporting these decisions and outcomes? How valuable is this contribution? Are there any other ways this support could have been delivered?
Coordination	e.g. building links and achieving coordination between those involved in implementation and delivery, including between and among public, private and civic society actors and agencies	Which actors and agencies are involved in implementation and delivery? How were these decided? How is coordination among these assured? What was the role of the project in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential? How valuable is this contribution? Are there any other ways this support could have been delivered?
Political support	e.g. providing a political context more conducive for changing ecosystem management practices	Is the political context for policy or decision making (more) conducive for the plans/actions proposed? How has this context come about (e.g. greater awareness or understanding among stakeholders, shifts of perspectives or priorities, new opportunities)? What was the role of the project in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential? How valuable is this contribution? Are there any other ways this support could have been delivered?
Financial support	e.g. providing a financial context more conducive to for maintaining/enhancing ecosystems and securing ecosystem services	Is the financial context for policy or decision making (more) conducive for the plans/actions proposed? What was the role of the project in this? What attributes, products or outcomes of an Ecosystems Approach were particularly influential... e.g. has the project supplied arguments, evidence or market mechanisms that facilitate investment in ecosystems, payment for ecosystem services... has the project linked benefits and beneficiaries... co-suppliers, co-beneficiaries? How valuable is this contribution? Are there any other ways this support could have been delivered?
Ecosystem outcomes	e.g. changes in ecosystem use and/or management; improved integrity of ecosystems; improved flow of services and value of service benefits; improved contribution of the managed ecosystems to sustainable development.	Are there improvements in ecosystem health and/or the flow of ecosystem services? Have any issues/problems been resolved? What decision outcomes and implementation pathways contributed to these improvements? How valuable are these contributions? Are there any other ways they could have been achieved?

3.3 EMBED: Identifying Good Practice

An advantage of the analytical approach used for EMBED is that it has taken account of the key dimensions of good practice for the evaluation of decision- and policy-support projects that have been recognised in other work funded by Defra. Thus methods have enabled the analysis team to work backwards from real project outcomes to the conditions that generated them, and hence identify the strong positive influences of taking an Ecosystems Approach on decision making *and/or* on ecosystem outcomes. Although within the time-frame of EMBED it was only feasible to make judgments about the immediate and short-term influence of an EsA, it was anticipated that the work would provide signals about the added value of taking an EsA in the longer term. Thus the material uncovered by the investigation analysis has been used to identify examples of good practice. Such output may be helpful to others when deciding, for example, when, where and in relation to which management challenges an Ecosystems Approach can be deployed cost-effectively, how to tailor an Ecosystems Approach to its application contexts, and how best to transfer good practice more widely. A review of the major lessons learned from the demonstrator projects is presented Chapter 6 of this Report. In the next Chapter we provide an overview of the results of the fact finding phase, and in Chapter 5 the results of the meta-analysis and cross comparison.

4. Evaluation of the Individual Demonstrator Projects

4.1 Introduction

In this Chapter we evaluate the demonstrator projects separately. The aim is to highlight how we have interpreted their work in relation to the general notion of an Ecosystems Approach (EsA). As noted in the introduction, the demonstrator projects were not selected because they *explicitly* claimed that they used the Approach; in fact, few of the candidate projects considered at the outset did. Rather they were chosen because that our preliminary investigations suggested that their aims and methods conformed to the general principles on which the EsA, and that by closer observation we might understand how such thinking was played out in the real world. The intention is to discover how 'ecosystems thinking' is interpreted and used as an argument making device alongside the other tactics and strategies that are used on the ground.

4.2 The Demonstrator Projects and an EsA

The material collected during the fact finding phase of EMBED has been organised and analysed in two ways. The first sets out how we interpreted the evidence from each demonstrator project about the way their work and activities conformed to the six EsA principles. This perspective is necessary in order to make the case that the demonstrator projects are, in fact, appropriate case studies for EMBED. The second reorganised this material in order to expose what the case studies could tell us in relation to the five EMBED research objectives (Section 1.1). In the sections that follow both ways of looking at the evidence are presented; the first in tabular form and the latter as text. In presenting this material we have sought to cross-reference the interpretations that we have made to the evidence that supports it, namely questionnaire material (Q), or interviews with the Key Informants (KI) or Stakeholders (SH). Our interpretations have been cross-checked by the sources for factual accuracy and any misrepresentation. Detailed and aggregated summaries of these empirical materials is presented with supporting discussion in the Full Technical Report.

4.2.1 Finding Sanctuary (FS)

Objective 1: To analyse how the idea of an Ecosystems Approach is influencing the ways policies and decisions are being taken

Some of the key features of the evidence collected in relation to FS, which suggest to us that it conformed to the six EsA principles, is summarised in Table 4.1. An essential point to note about this project was that it was essentially a collaborative decision making exercise designed to achieve agreement between key stakeholders before the formal consultation phase required for implementation of the MPA network under the Marine Bill. Nevertheless, while the success of the project depended fundamentally on effective stakeholder engagement, the dialogue that it established was also reliant on a number of other ideas that form part of the EsA. For example, there was agreement about the 'holistic' nature of the initiative, both in terms of addressing issues across the entire marine space and in the sense that it sought to include all key interests.

Table 4.1: Finding Sanctuary and the EsA Principles

Defra EsA Principles	Interpretation of Evidence
Taking a more **holistic** approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services	FS was felt by some to be open and inclusive from the outset, with stakeholders in all their variety potentially involved (KI, SH). Although some discrepancy here (SH). There was feeling by some that the process was driven by SHs simply wishing to minimise damage to their interests rather than a group endeavouring to take a 'holistic' approach. Some SH argued that the intra-sectoral diversity of some stakeholder groups was also under-represented (for example, not capturing the full range of fishing interests in the overall process).
Ensuring that the **value** of ecosystem services is fully reflected in decision-making	Formal valuation was not really a facet of the process, although it is notable that avoiding areas of high commercial fishing value were very much a governing theme (KI). To some extent the FS process was governed by fairly conventionally drawn conservation versus commercial interests (SH, KI). The asymmetry between the potential losses and gains of the conservation and commercial sectors was evident and did permeate discussions (KI).
Ensuring **environmental limits** are respected in the context of sustainable development, taking into account ecosystem functioning	Generally yes. There was feeling by some that the process became *too* preoccupied with meeting minimum targets embedded in the ecological network guidance (e.g. Broad scale habitat targets) (SH) and that the SH led approach weakened/compromised achievement of conservation objectives by excluding ecologically valuable areas from MPAs. For example from the outset the process excluded consideration of areas that had a high social-economic value (KI).
Taking decisions at the **appropriate spatial scale** while recognising the cumulative impacts of decisions	The SH evidence suggests this was a strength of FS. The process was a regional process nested within consistent national guidance and built on the inputs of wider range of groups at the local (sub-regional) level. This scalar framework was generally felt to appropriate to its purposes. Only slight discrepancy here is that sister projects for England were operating at similar spatial scales but were not co-ordinated in terms of the management assumptions they were using (KI).
Promoting **adaptive management** of the natural environment to respond to changing pressures, including climate change	FS is part of a wider process that promotes adaptive management. In itself the process could be described to lack adaptive capacity (KI). The timing and phasing of data inputs in relation to decision taken was an issue. Feeling was that the process could not always adapt to new information coming on line (KI).
Demonstrating effective **stakeholder participation**	It was felt that the face to face nature of the process resulted in SHs developing a clearer understanding of each others' perspectives. Incorporation of non-formal (lay) expertise was also a clear feature of FS (KI). Some SHs have since remained in contact implying some degree of network legacy. Some concern that the facilitation process tried to rush the process along too much and that the process did not lead to real consensus (SH).

The range of stakeholder groups included in the process is evidence that FS was essentially cross-sectoral. It was also agreed that while the spatial scale at which FS was working was set by the requirements of the MPA process, it was appropriate in framing most of the issues.

The way environmental values entered into the consultation process was complex, in that while no formal assessment of the economic impacts of different design options were made, the different

interest groups clearly brought their own values and value systems to the table. Our KI suggested that apart from the practicality of making formal valuations at the pre-consultation stage, it may have been counter-productive. By focussing discussion on potential sites and the kinds of activities that should be permitted a mechanism was established through which the different stakeholder positions could understood and their priorities explored. It was noted, however, that some of the sensitivities were avoided by excluding the areas of high commercial value from consideration at the outset. The asymmetry between the conservation and commercial interests was however, a feature identified by the KI as an important aspect of the consultation that needed to be understood. Through the designation of MPAs the conservation sector could, in a sense, only 'win', whereas commercial interests could only strive to 'minimise their losses', at least in the short term.

In arguing that any particular project conformed to the principles of the EsA it cannot be assumed that all of the principles are necessarily acknowledged, or that they are given equal weight. In the case of FS this was particularly so in relation to the ideas about environmental limits and adaptive management. Our KI suggested that it would also have been counter-productive to introduce limits thinking into the discussion because this would have possibly led to more entrenched positions. Nevertheless, there was a sense in which notions of environmental limits did permeate and shape discussions albeit in a less explicit way. It was suggested by the KI that the nationally specified minimum requirements and guidelines set for the design an MPA network did much to structure discussions; moreover, the general understanding that if the proposals did not meet the these minimum requirements and that a 'solution' might be imposed from outside, did much to focus the debate.

The principle of adaptive management was perhaps the one component of the EsA that was not apparent in the material collected for FS. While the policy setting of FS clearly meant that it has been about finding effective ways of managing the impacts of activities in the marine space, our KI suggested that discussion of what the MPA would deliver in conservation terms was not part of the process. It was suggested that since there were so many potential drivers of change, any expectation that the MPA network would address them may have introduced too much complexity into the consultation process.

Objective 2: To evaluate motivations for, and the costs and benefits of, taking an Ecosystems Approach

It is too soon to make any cost-benefit assessment of FS as a decision making process. Nevertheless, it is clear that by facilitating stakeholder dialogue before the formal consultation stage, the main motive for the work was to reduce potential conflicts and maximise benefits in the future. As a result the formal stages of the decision making process would be speeded up, thereby reducing the costs associated with it. Moreover, by achieving local support, a further motivation was to achieve an outcome that is likely to be respected. To the extent that FS conforms to the principles of the EsA it provides evidence of how the approach can be used to help multi-stakeholder groups reframe problems and arrive at a collective decision.

Objective 3: *To evaluate which attributes and practices of the investigated projects are most effective in delivering sustainable natural environment outcomes*

The judgments that we can make about FS are more to do with the processes of decision making that it fostered, rather than the outcomes. In the short-term it would be valuable to examine the extent

to which the 'outcome' represented by the proposed MPA network was modified after the impact assessment and formal consultation. In this way we could determine just how effective the process was in taking account of *all* key interests. An assessment of the extent to which the proposed network would deliver *sustainable natural environment* outcomes, however, is probably impossible, given the time-lags involved and the many other factors that will shape the future marine space. At present, it seems that consideration of the current situation as a base-line against which these futures and the role of the MPAs in them have not been part of the discussion.

As a decision making process that embodies the EsA, however, there are a number of attributes and practices that appear to be effective. The KI and the SHs interviewed confirmed that the use of external guidelines helped provide a strategic steer for discussions; the use of a processional facilitator and formal discussion fora helped to manage potential conflict, and the provision of high quality technical support and data that was used effectively in a consultative processes that was both deliberative and iterative.

Objective 4: To identify practical mechanisms and tools by which positive attributes and practices can be shared

Mapping stands out as one of the most important 'tools' that led to the positive outcomes achieved by FS. There was considerable time and effort invested in the use of GIS for 'activity mapping', the evidence for which was collected via stakeholder elicitation. The integration of these data with other sources of biophysical information about the marine space was also an important milestone. The ability to display and interact with these data over the internet has also been beneficial. There was strong evidence from those consulted that the tools FS provided for manipulating and discussion of the location of proposed MPA boundaries was one of the important components of the deliberative decision making process, and that it facilitated learning within the group. The evidence archive is one of the major legacies of FS. Both this and the mapping tools are important resources than can potentially be shared with others.

4.2.2 The Gaywood Valley Surf Project

Objective 1: To analyse how the idea of an Ecosystems Approach is influencing the ways policies and decisions are being taken

The features of this project that have resonance with the principles of the EsA are summarised in Table 4.2. Although the principles were not used explicitly in much of the material that was available to us, the evidence suggests that many of the core propositions of the Approach are represented in the activities and thinking associated with the Project.

The overarching aim of the GVSP is to create, and take steps towards achieving, a vision for the Valley, which entails achieving multiple uses of green space on the fringes of King's Lynn. The motivation stems from an acceptance that through better use of the environmental capital some of the problems found in socially disadvantaged areas that border the Valley can be overcome. Thus use the environment as a way of realising health, economic and social benefits for the people in the locality was a common theme that emerged from all our discussions with stakeholders.

Table 4.2: The Gaywood Project and the EsA Principles

Defra EsA Principles	Interpretation of Evidence
Taking a more **holistic** approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services	The project embodied an explicit attempt to act in a cross-sectoral way (KI). The better (multiple) use of green space on the fringes of a socially disadvantaged area with the health, economic and social benefits that could bring was a core vision of most stakeholders (SH).
Ensuring that the **value** of ecosystem services is fully reflected in decision-making	Formal valuation is not a core part of the aspirations of the project, it is something we want to work towards as it will convince the politicians and stakeholders generally agreed that identification of social benefits and inclusion of relevant stakeholder groups was the main focus. Education value of the initiative was also seen as a major benefit (KI). Some stakeholders felt that the educational value went beyond the formal, to transforming life styles in some of the surrounding areas, both for the benefit of the people themselves and to ensure the resilience and the wider community.
Ensuring **environmental limits** are respected in the context of sustainable development, taking into account ecosystem functioning	Notion of limits not really part of the vision, however, environmental capacity (as imposed by flood risk, say) and identification of deprivation were used to frame arguments (KI).
Taking decisions at the **appropriate spatial scale** while recognising the cumulative impacts of decisions	In so far as the project is working at the catchment scale this aspect is covered – however KI and SH emphasised it is not really about a physical unit but a place and community. Place making – i.e. awareness and understanding of what the Gaywood River Valley means as an environmental asset, was a key part of the project.
Promoting **adaptive management** of the natural environment to respond to changing pressures, including climate change	All agreed that it was a learning exercise, and while the objectives of the project contained in the initial specification were respected, there was clearly an evolutionary process in train. The project appeared to be arising to deliver a suite of changes (some often quite specific and small) that added up to a significant realisation of the benefits that the natural asset represented by the river valley and its juxtaposition with King's Lynn could provide.
Demonstrating effective **stakeholder participation**	Involvement of key stakeholders (Principally the Internal Drainage Board) was seen as a key achievement both by the KI and the SH interviewed. Publics not formally involved in steering of the project but throughout-reach, especially in relation to 'place-making' and education seen as a key element in the wider stakeholder process. Publics were not so strongly involved in setting objectives – but were more involved in delivery (KI). Public comments are taken into account in the Delivery Plan for the project. These ideas are prioritised and help to shape the direction of the project, particularly over the next year 2012.

Given the vision embodied in the GVSP it can clearly be described as holistic and cross-sectoral, both in terms of the range of issue and drivers that are being considered, and in the range of interest groups involved in the work. The evidence suggests that a major effort has been made to ensure that all interest groups in the visioning process and the plans that are developing around it. There is also evidence to suggest that by including a wide range of interests, significant problem reframing has taken place. Thus while flooding and the potential impacts of climate change (sea level rise) was one of the major issues that prompted early discussions about the Gaywood, and motivated efforts to involve the King's Lynn Internal Drainage Board in the Project, the evidence we have collected suggests that currently a far greater range of economic, social and ecological benefits are being considered. The influence of the project is being achieved by encouraging the different interest groups to look at the local environment as an *asset*, and potentially to identify what a 'sustainable urban fringe' might be.

Achieving effective stakeholder involvement is a major aspect of the Gaywood Project. The evidence suggests that this goes beyond the formal representation of different interest groups within the Project, to those who the project partners seek to influence. Thus an interesting aspect of the initiative has been the attempt to develop the notion of the Gaywood Valley as a *place*. It is clear from our investigations that the Project is not simply about better catchment management, and questions of appropriate scale have not been framed solely in biophysical terms. Education and awareness rising emerged as strong motivating themes from many of the SH interviewed. The assumption is that better place recognition will lead to both better public engagement and better public use of the environmental resource. Although improved economic prosperity for the area and mitigation of environmental risks are common goals, the evidence available to us suggests that it is also widely accepted that economic social and environmental values are all shaping the direction of the work.

There was little evidence to suggest that notions of environmental limits were used to motivate discussion amongst stakeholders. Indeed was suggested both by the KI and some SH that it was often more helpful to talk about 'opportunities' and 'social needs' etc. The issue of the capacity of the town to absorb new development, and the contribution that Gaywood area might make was, however, apparent, but the main focus of debate appeared to be about the resolution of conflicts between economic, social and environmental goals, rather than about the any limits related the environmental.

Objective 2: *To evaluate motivations for, and the costs and benefits of, taking an Ecosystems Approach*

The evidence available suggests that perhaps the key motivation for the project was the need to create a cross-sectoral vision for the area, and acknowledgement that the environmental assets of the Valley could be used to develop an integrated strategy for overcoming important social and economic issues in the area. The project is led by the Borough Council of King's Lynn and West Norfolk, where it is seen as a novel and potentially fruitful way of taking forward its multiple objectives for the area; these are expressed in, for example, Local Development Framework growth strategy for the town. When looked at in terms of the long-term social and economic benefits, the costs of the project are modest, and mainly cover the process of building partnerships and facilitating dialogue, although some resources have been used to facilitate interventions, such as supporting habitat creation, improving access, educational materials and support for an alternative energy

water pump. A member of the Local Council argued that there are major challenges facing King's Lynn in terms of overcoming social deprivation and improving the competitiveness of the town, and that project of this kind provided an opportunity of taking this agenda forward.

Objective 3: *To evaluate which attributes and practices of the investigated projects are most effective in delivering sustainable natural environment outcomes*

Any judgement about the outcome of the project is probably premature, because at the time of preparing this Report, the initiative still has a year to run. Nevertheless, in terms of its effectiveness as a decision making process evidence that high-level political support, a dedicated, full time leader and local knowledge are all important ingredients of success. The coalition of interests that need to be brought together to realise the vision for Gaywood is potentially very large, and effective networking is therefore at a premium. Evidence suggests that local connections and a track record of leadership in the area has been an important part of coalition building. It is also apparent that the inclusion of Gaywood in the wider EU-funded SURF initiative has also done much to build credibility and raise awareness.

Objective 4: *To identify practical mechanisms and tools by which positive attributes and practices can be shared*

Useful practical mechanisms and tools that have assisted in the project have included newsletters and the organisation of a range of public events, many of which have been designed to build awareness of the Gaywood Valley as a place. A school's competition for the design of a project logo, was found to be effective in awareness-raising and promoting inclusion, as was a 'love it – hate it' survey, designed to elicit local people's feelings about Gaywood. A comprehensive engagement plan has underpinned all this work. The involvement of the University of East Anglia as a partner in the Project has enable a visualisation tool to be developed, that will enable people to 'fly through' the area and so better understand it. At the time or preparing this report the tool has not been used widely, however, and so its contribution to discussion is difficult to assess at this stage.

4.2.3 Natural Economy North West (NENW)

The main features of NENW have been summarised in Table 4.3.

Objective 1: To analyse how the idea of an Ecosystems Approach is influencing the ways policies and decisions are being taken

Of the four demonstrator projects considered, NENW is the most mature, in that it was nearing completion as the EMBED began its investigation. This provided the opportunity to look at the process of decision making that it represented as well as some of the outcomes or legacy effects. There was also a significant turnover of people associated with the initiative on its completion and others have then became responsible taking the thinking developed in NENW forward. Thus there has been the opportunity to take account of the views of several key informants as well as stakeholders.

The relationship between the work of NENW and an Ecosystems Approach formed an important early focus for our work. The self-understanding within the NENW-GI management team that was in place at the end of the project in 2009/10 was that it was based upon valuing the benefits of Green Infrastructure (GI) in multifunctional terms and that this was equivalent to taking an "Ecosystem

Services Approach" (with the latter seen as *equivalent* to an Ecosystems Approach"). The use of Green Infrastructure was justified as a way of expressing the core EsA ideas in "language" that those which NENW sought to influence would understand. Other KIs (sub-projects) interviewed more recently, suggested that the history was more complex and that the GI concept itself was "imported from the US" as a way to make more effective arguments in favour of the environment. Although interest in GI pre-dated the recent attention that the concept of ecosystem services have enjoyed, the interview material suggests that there has been a more close alignment of the two sets of ideas, with green infrastructure being the means though which services are delivered. It was also noted by the same KI (and confirmed by interviews with SHs) that when NENW was first initiated, GI was in fact not one of its central concerns, and that part of the early discussions about the project involved making a case for including it.

Whether or not we regard NENW as conforming to the ideas that underpin the EsA at its inception, the evidence that we have collected from this now involved in the post-project phase see that the approach that it developed embodies many of them. Thus it is fundamentally cross-sectoral and holistic in the perspective that it offers. The analytical framework that it developed has been used to identifying the multiple economic and social benefits that investment in 'environmental assets' (i.e. green infrastructure) can deliver. It was stressed by our KI that an important point to note was that NENW regarded green infrastructure "as more than green networks", and that an important contribution that it made was in identifying the various "functions associated with green infrastructure" (i.e. benefit flows). A further core argument deployed in NENW, which suggests a close alignment to the principles of the EsA, was that the actual or potential *economic* value of the environment is something that should be realised. While the wider social and ecological benefits of green infrastructure were acknowledged by NENW, there was an explicit attempt to make monetary estimates of the value of investments in GI as part of the argument making and influence spreading process (see Objective 4, below).

The two EsA principles that appeared to figure less strongly in the work of NENW related to limits and scales. As in the other projects, notions of environmental limits was generally found to be rather "negative" by both KIs and SHs alike. Instead they suggested that the issues are better framed around notions of "opportunities" and "needs". It was apparent that the kinds of argument that are made about the role of green space and what it can deliver are highly context dependent, and have to be set alongside the other goals that developers and public bodies hold. This has implications for arguments about scale, which largely seemed to be dictated by the project brief rather than any notion of an appropriate biophysical unit, although the need to better align particular initiatives with wider strategic spatial plans was seen as an important part of the process. The question of how and whether "effective stakeholder involvement" was achieved by NENW is also somewhat problematic in terms of judging the alignment to the EsA, in so far as most of those interviewed in the wider circle were really co-sponsors or even beneficiaries of NENW. Real stakeholders, in the sense of the people affected by the individual GI projects that formed a core part of the work of NENW were one or two steps removed from the network of contacts that we had access to. Nevertheless, while we have little evidence about how different publics reacted to the types of argument made about green infrastructure, or were involved in actual decisions in relation to the different initiatives, to the extent that there have been some real investments made in GI as a result of the work of NENW, then it is likely that the approach has been effective in broadening the debate.

Table 4.3: Natural Economy North West and the EsA Principles

Defra EsA Principles	Interpretation of Evidence
Taking a more **holistic** approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services	The need to connect the GI agenda with the wider economic and social objectives of the NW Region was a key aim of the project, and in this sense it aspired to take a more holistic to notions of planning and development than was done in the past (KI).
Ensuring that the **value** of ecosystem services is fully reflected in decision-making	The identification of benefits in a formal framework was a key achievement. These could (with difficulty) be translated into economic values in particular circumstances – but more could be done in this area (KI).
Ensuring **environmental limits** are respected in the context of sustainable development, taking into account ecosystem functioning	Notion of limits not really part of the vision, however, environmental capacity and opportunity identification were stressed, deprivation or deficiency in relation to GI was used to frame arguments (KI).
Taking decisions at the **appropriate spatial scale** while recognising the cumulative impacts of decisions	Not an issue except that the GI interventions had to make sense in relation to the NW Region and the visions associated with it. It was recognised however, that through planning and eventual delivery the cumulative benefits of GI would make a difference (KI).
Promoting **adaptive management** of the natural environment to respond to changing pressures, including climate change	Formal review of whether GI delivered the benefits proposed was not made – learning aspect was mainly based on wider experience of people in research and policy communities related to GI (KI).
Demonstrating effective **stakeholder participation**	Evidence of effective engagement with a wider (and often 'hard to reach') range of stakeholders (such as planners) – mainly as a result of the language of GI – and awareness of its economic and social benefits (KI).

Objective 2: *To evaluate motivations for, and the costs and benefits of, taking an Ecosystems Approach*

As noted above, the motivations for NENW appeared to be complex. However, the evidence collected from interviews suggested that they certainly included recognition that the environment was an important asset to the NW, and that this importance went beyond those aspects related to tourism and heritage. There was also a realisation that arguments about the importance of the environment were not confined to rural areas alone, and that better arguments needed to be found for sustaining, restoring and managing environmental assets by linking it to developments in the urban arena. Given that the NENW initiative mainly sought to influence others, however, a cost-

benefit analysis of the project has little value. Rather, this kind of judgement has to be made by looking at the kinds of project that NENW sought to influence and the role that GI had within them. There was insufficient time in EMBED to explore these issues at the sub-project level, and so assessments of costs and benefits are a major area of uncertainly associated with the evidence base provided by this project.

Objective 3: *To evaluate which attributes and practices of the investigated projects are most effective in delivering sustainable natural environment outcomes*

An important feature of NENW that the later KIs and SH acknowledged was the expertise of the NENW team; the skills it brought together, meant that it was sufficiently authoritative to take the arguments about GI into a number of important areas. The importance of engaging with the planning community was seen as fundamental. The ability to influence thinking around the development of regional spatial strategies provided a framework in which individual projects or initiatives could be discussed. It was argued by one of our consultees (KI) that the main purpose of the practices and concepts that NENW and others have sought to establish was to enable others to take ownership of the GI issues and build it into their everyday work. Green Infrastructure, it was suggested, should not be thought of as an "add-on", but rather an "essential part" of the planning or project design process. It was suggested by our KI that while people needed to trust in the evidence assembled by NENW, independence was not an essential ingredient of success. Indeed, the involvement of organisations like Natural England meant that the team had the standing necessary for effective to engagement with senior management in the public and private sectors. Overall, the evidence suggests that the ability to talk the "right language" and underpin arguments with credible evidence were the attributes that contributed most strongly to the influence of NENW. It is also apparent that the stimulus and support that it gave to building and sustaining networks of experience around the topic of green infrastructure is an important part of its legacy.

Objective 4: *To identify practical mechanisms and tools by which positive attributes and practices can be shared*

At the operational level the later KI and the SHs we consulted suggested that part of the success of the NENW team was that they were effective communicators. The benefits framework developed through NENW, which showed how GI could support the sectoral goals, targets and priorities relevant to local planners and decision makers, was particularly influential. NENW was supported by a high-quality website, which has provided access to guidance, case studies and decision support tools. A GIS tool has been developed that enables the functions associated with green infrastructure to be mapped. A down-loadable 'Valuation Toolbox' has also been developed to help people quantify the economic benefits associated with green infrastructure. It was acknowledged by several of those interviewed that the development of the tool box had been a particularly challenging task and that it should still be regarded as experimental; trials and applications of the toolbox in practical support to decision making in real situations are seen as an essential next step.

4.2.4 Wetland Example of Payment for Ecosystem Services

The main features of WEPES have been summarised in Table 4.4.

Objective 1: To analyse how the idea of an Ecosystems Approach is influencing the ways policies and decisions are being taken

The evidence we have collected suggests that there is explicit recognition that the approach adopted for WEPES conforms to the EsA. Indeed, our KI observes that "an Ecosystems Approach has given the

idea and vocabulary for a 'third approach' [to conservation] based on payment for ecosystem services". Thus it has been presented as fundamentally 'holistic' and 'cross-sectoral' in its attempt to realise the multiple benefits that can be achieved by more sustainable forms of wetland management.

Table 4.4: Wetland Example of Payment for Ecosystem Services and the EsA Principles

Defra EsA Principles	Interpretation of Evidence
Taking a more **holistic** approach to policy-making and delivery, with the focus on maintaining healthy ecosystems and ecosystem services	The project is holistic in the sense that it attempted to look at broad scale land management issues; in so far as it related to the water management issue (quality and quantity) it was perhaps less 'holistic' than the other projects investigated. Suggest notions of holism need to be qualified (KI). Cross-sectoral rather than holistic?
Ensuring that the **value** of ecosystem services is fully reflected in decision-making	Formal monetary valuation of benefits was attempted, and it argued that by looking at potential cost-benefit issues over long timescales seemed to change the attitudes of buyers to making investments. The monetary issues were more to deal with what the beneficiary was prepared to pay for what the land owner was prepared to do and did not turn on what the service was 'worth' in societal terms. Although multiple benefits identified and potentially costed – these were not really reflected in the cost of triggering the change in land management (KI).
Ensuring **environmental limits** are respected in the context of sustainable development, taking into account ecosystem functioning	The notion of limits not formally part of process – more the aim was to identify opportunities for cost-effective, intervention. Strategies for achieving agreements between providers and buyers for beneficiaries were the key part of the process. People had to agree where something effective might be done according to their experience and local knowledge (KI).
Taking decisions at the **appropriate spatial scale** while recognising the cumulative impacts of decisions	Discussions framed around catchments as 'process-response' units, and attempt to map one of potential agreement in which action could be effective were a core part of the problem framing and delivery process (KI).
Promoting **adaptive management** of the natural environment to respond to changing pressures, including climate change	Outcomes are very long term and so strategies were very much framed around what could be agreed as appropriate given current knowledge of what interventions might be effective. Programme was adaptive in the sense of better understanding what arguments and information was most helpful in developing strategies etc. (KI)
Demonstrating effective **stakeholder participation**	Role of knowledge broker/intermediary was essential – often stakeholders (buyers and sellers) did not meet face to face. Number of stakeholders limited to those with an interest in land management. More limited requirement for a stakeholder driven process – but agreement mapping (Zone of Potential Agreement) was a key part of the scoping of the work and this involved both water authorities and farmers etc.) (KI).

WEPES seeks to widen the set of ecosystem services that currently feature in decisions about land use and management at the scale of individual farms, by creating markets for currently ecosystem services. The idea is that by creating markets where regulating, supporting and cultural services can also be traded, and that provide for the effective demand for these to be expressed, the market values attaching to these services will lead automatically to more holistic decision making on the part of private land owners over how land is used. The aim of WEPES to recognise and realise the value of environmental assets through economic mechanisms beneficiaries is further strong evidence of its conformity to the EsA.

In common with the other Projects that we have investigated, the notion of environmental limits was not found to be helpful in WEPES. Rather the aim has been to re-frame problems around the language of 'opportunities' and potentials. The Project is dealing with only a very small area of land and there is, in reality only one potential seller and one buyer (represented by the Westcountry Rivers Trust and those who sponsor it). Thus few generalisations can be made, perhaps from this one example. However, the approach used to represent the value of different types of land parcel, and the use of evidence to identify where interventions might usefully be made has been tested by the KI in other area of the South West. The KI stressed that the most important thing was to focus the discussion between stakeholders on how to target investment on those locations where it will be most effective and in the long term sustainable. Thus adaptability is also a key feature of the approach used by WEPES.

Perhaps the most problematic aspect of WEPES that we found in relation to its conformity to the EsA was the issue of effective stakeholder engagement. The small size of the project, and the fact that there was only one buyer and seller made the situation particular sensitive, and to intensive stakeholder elicitation was not possible. However, the KI was able to describe similar situations in other areas, where the effectiveness of the tools and techniques used in WEPES could be demonstrated. This evidence suggests that not only is the focus on economic benefits helpful for engaging with land managers, but also that the experience and standing of the Trust was an important in bringing credibility to the process.

Objective 2: *To evaluate motivations for, and the costs and benefits of, taking an Ecosystems Approach*

Our KI suggested that fundamentally WEPES was driven by the perceived need for a "*pragmatic approach"* that is acceptable to stakeholders because it provides a convincing economic case for the marketing of ecosystem services, is effective in conservation terms, and is cost-effective in delivery terms. The motivation was described in terms of finding ways to make farming practices more consistent with habitat and wildlife conservation goals, by changing the financial incentives that drive farming practices. Thus in projects like WEPES, the KI reported that the Trust the work with individual land-owners and farmers is set in an overall coordinated strategic approach to land management practices at the catchment scale, which seeks a better match between the intensity of farming and the sensitivity and importance of land areas in terms of hydrological function, habitat, and biodiversity.

A cost-benefit assessment is at the heart of the discussions stimulated by WEPES, and an interesting feature of the approach involved changing the time perspectives over which the potential costs and benefits might be assessed. The KI argues that by taking a long term view, over centuries rather than

decades, the cost-benefit ratio can change quite markedly in favour of improving or restoring the environmental today.

Other motivations for WEPES were found to be concern that subsidy streams now supporting less-intensive uses of ecosystems will be reduced or withdrawn, which might threatens ecosystem health and function. These dangers come at a time when there is a need to meet the policy targets and goals established by the Water Framework Directive, Bathing Water Quality Directive and similar Directives. Our KI observed that this would require more extensive conservation efforts at catchment-scale. Thus it was perceived that new policy and management mechanisms have to be developed; PES schemes were seen by Westcountry Rivers Trust to be one potential approach.

An important facilitating factor for PES schemes that was identified by the KI, was the OFWAT decision concerning the possibility for South West Water to charge bill payers an amount that can be dedicated to investments in assuring water quality at point of extraction. This has kick-started the possibilities of developing markets for ecosystem services in water catchments more generally.

Objective 3: *To evaluate which attributes and practices of the investigated projects are most effective in delivering sustainable natural environment outcomes*

In terms of the practices that have a positive influence in achieving sustainable outcomes the evidence suggests that the role of the Trust as an independent 'knowledge broker' is important ingredient of success. In WEPES and similar projects undertaken by the Trust the project management team act as intermediaries between farmers and their potential clients, and has to have the confidence of both if negotiations are to succeed. Ultimately stakeholder engagement in WEPES is confined to the individual negotiations between the service provider and the broker and between individual beneficiaries and the broker. For these to be effective the acceptability, authority and accountability (legitimacy) of the Trust to act in these roles is essential. It has to play a strategic function, in deciding on the overall conservation strategy for the catchment that is convincing to the potential buyers. It also has to play the role of a convincing advocate about the types and effectiveness of interventions at the holding level. It is apparent that WEPES had no stakeholder board. The credibility of the Westcountry Rivers Trust and the trust that landowners, farmers and potential beneficiaries and buyers of ecosystem services in the Trust and its staff was the central issue.

Objective 4: *To identify practical mechanisms and tools by which positive attributes and practices can be shared*

The evidence collected from WEPES suggests that mapping tools are especially valuable as part of the evidence base needed to establish PES schemes. To establish confidence between the buyers and sellers, there needs to be a credible body of general evidence about the effectiveness of particular sorts of interventions. Beyond this, however, there needs to be a strategic plan for the catchments being targeted that made a believable case for where those types of intervention would be most effective. The idea of using GIS to identify 'Zones of Potential Agreement' has been one developed by the Trust. Evidence suggests that it is a valuable useful framework around for discussions and for achieving consensus. It seems to embody the 'pragmatic approach' to market creation being promote by the Trust, and is based on establishing 'best-estimates' of the costs and benefits of providing ecosystem services through a deliberative or sequential bargaining process.

5. Cross-Comparison of Demonstrator Projects and Lessons Learned

5.1 Introduction

Chapters 3 and 4 have set out and discussed the materials collected in the first analytical phase of EMBED, namely the gathering of the factual evidence and its reorganisation around the principles of the EsA and the research objectives that have shaped this project. After checking these basic materials and the initial interpretations that we made by going back to their sources, a draft set of generic lessons were constructed by the Project Team for use in the cross comparison. As noted in the account of the methodology used for EMBED, the aim of this second meta-analysis phase was to draw our any general lessons from across the four demonstrator projects. These could then be checked and refined by the Key Informants in a workshop, and then used to inform the conclusions arising from our work. The lessons also form the basis of some more generic guidance for others seeking to apply the principles of an Ecosystems Approach in their work.

5.2 The Cross-Comparison: General Lessons Learned

In preparation for the cross comparison workshop twelve common themes were identified as the basis for discussion. The material was organised in tabular format, with each general lesson cross-referenced against the evidence we collected that that supported it. The Table was used to structure the discussion at the subsequent workshop.

During the interviews with KI there had been strong support for the opportunity that the cross comparison workshop would offer for the different projects to share their experiences with each other. Unfortunately the timing of the workshop meant that the KI from Finding Sanctuary could not attend, and so this input was obtained through an individual interview prior to the workshop. The responses were added to the Table prepared by the Project Team which was then considered collectively by the KIs from the other three initiatives.

The cross-comparison workshop lasted a full day; as a result of the discussion the initial set of themes were refined, and fourteen general lessons were agreed. These are presented in Table 5.1, which again cross-references the statements to the evidence that supports the claim. The coding system used for the different sources is defined in Appendix 1. The supporting evidence was drawn from all sources including the kick-off workshop, initial individual interviews with the KIs and the various stakeholders, as well as the material from the cross-comparison meeting. One of the purposes of the final, collective meeting was therefore to validate the project team's overall interpretation of its findings

The discussion in the cross-comparison workshop was also informed by our analysis of the kinds of thing that would demonstrate the added value of an Ecosystems Approach (see Chapter 3, Table 3.2). the ability of the EsA to 'reframe' problems stood out as a common feature from all the demonstrators, and this was confirmed at the workshop (see Table 5.1, Lesson 1). Indeed, although the EsA often is described as a decision making tool, the participants endorsed the view that the stimulus it gave to collectively define problems or issues was one of the characteristics that gave it significant added value. Effective decision making was felt by all to build from a clear understanding and agreement of what the situation, problem or issue is and this should involve all stakeholders.

Table 5.1: Individual lessons learned identified in Cross-Comparison Analysis (For Coding of Sources, see Appendix 2)

	General Lessons Learned	Finding Sanctuary	GVSP	NENW-GI	WEPES
1	*Effective decision making builds from a clear understanding and agreement of what the situation/problem/issue is from the perspective of stakeholders*	FS process was given a clear (general) picture of what national government wanted to achieve through collaboration with stakeholders so the process was very task orientated. **[I-KI-1.1/ I1-SH1]**	GVSP process should be seen as a process of gradually cultivating awareness/ownership of a problem across a sceptical community. **[WS2-KI-2/I2-SH2]**	NENW-GI started form trying to understand and listen to what SHs wanted. This provided the context in which the case for a GI approach was then rationalised. **[WS2-KI-3]**	Looking at WRT as a whole, the organisation always starts from defining the need/or problem from the perspective of farmers **[WS2- KI-4]**
2	*A stakeholder approach only works if you have involved people who can influence change locally. The process must include those who can make a difference.*	FS had a nested structure of sub-reg. and regional management groupings to ensure that broad/ deep local involvement occurred. **[I-KI-1.1]**	GVSP process hugely dependent on the support and good will of local organisations such as the Norfolk Wildlife Trust and officers and elected members in the two councils . **[WS2-KI-2]**	NENW-GI felt the GI idea had been taken forward and owned by local groups rather than a government agency like NE **[WS2-KI-3]**	WRT work with farmers because they influence direct changes in the management of environmental assets. External drivers are also helpful in stimulating stakeholder involvement (e.g. OfWat) **[WS2-KI-4/I-KI-4]**
3	*Part of the process of achieving buy-in locally involves identification of a 'unique selling point' (novelty).*	FS process was based on the understanding that decisions would be taken by gov't if SH did not define the MCZs **I-KI-1.1**	Financial incentive to the internal drainage board to participate was regarded key **[WS2-KI-2]**	The key NENW-GI was to 'sell the benefits'. BUT...These do not always have to be economic. **[WS2-KI-3]**	In the case of farmers, the emphasis was always on the financial benefits, not the water quality per se**[WS2-KI-4]**
4	*Evidence and data are an underpinning part of the process framing issues, problem and priorities and weighing up and comparing hypothesises/ visions.*	Considerable resources were required in assembling the data required to frame the problems and inform the decision process **[I-KI-1.1/1.2]**. Sometimes the availability of data feel behind decision process itself impeding informed decision making **[I-KI-1.2; I1-SH1-4].** The curation of these data resources in the long term is a potential issue. Role and relevance of local knowledge was recognised **[I-KI-1.1].**	There was always a concern to establish baseline data/ evidence to inform decisions, especially with elected members. **[WS2-KI-2]**	Evidence was very important at the beginning of the process to frame the issue as a credible one. **[WS2- KI-3].** Data or evidence that can demonstrate the scale of benefits (social and monetary) of GI necessary. Better (credible) information on economic benefits needed. **[I-KI-3/I-SH2]**	Base-line data to determine scale of problem and conditions that make interventions appropriate or possible are essential. **[I-KI-4]**

Table 5.1, cont.: Individual lessons learned identified in Cross-Comparison Analysis (For Coding of Sources, see Appendix 2)

	General Lessons Learned	Finding Sanctuary	GVSP	NENW-GI	WEPES
5	*Representing a diversity of interests in a decision process is important but this can potentially impede (e.g. slow down/confuse) the process of making a clear decision.*	SHs on the FS working group felt that the small group process was conducive to constructive and decision orientated discussions **[I1-SH1]** **[I-KI-1.2]** However stakeholders in FS felt that it was difficult to involve themselves in a process initially because groups were capped to 10 participants **[I1-SH1]**	Process was designed to link everyone from "European MEPs to the person on the street" but communicating with this diversity of levels was seen to be practically difficult to achieve. Good communication results takes time, needs a multiple number of different methods and needs to be done regularly **[WS2-KI-2]**		In catchment planning the breath of potential interests in a decision is potentially very wide (Everyone is stakeholder). It is often difficult to know 'where to stop' in terms of inclusion. Being driven by inclusion can inhibit a decision being made **[WS2- KI-4]**
6	*Continuity of people is essential to the decision making and implementation process.*	Some argued that in FS the approach to decision making was disrupted if the person representing a particular group or organisation changed (e.g. new SHs can challenge group assumptions and approaches to working). It is important to maintain the continuity of who represents the "stake". **[I1-SH1/I1-SH2]** Ensuring replacements came from within existing steering group was a way of resolving this **[I-KI-1.2]**	Post project issues and legacy are of concern but strategies presently unclear. **[I-KI-2]**	Continuity is already an issue given end of NENW Initiative and changes in structure of regional governance. GI Unit led by Mersey Forest is a mechanism for taking thinking forward. **[I-SH-2]**	WEPES was undertaken over short enough time-space to ensure that SHs and the assumptions on which the decision making process was based did not change. **[WS2- KI-4]**
7	*Mapping and visualisation tools are generally very useful in the problem definition phase and in identifying the important cross-sectoral linkages (deficiencies etc...)*	Mapping used as an essential tool in discussions of options and choices. However, people can be hesitant to draw lines used of interactive 'pdfs' and large printed formats were heavily used**. [I-KI-1.2]**	Visualisation tools have been used as a way of raising awareness and capturing imaginations in the Gaywood River Valley. **[WS2-KI-2/ I-KI-2]**	Mapping was seen as a way of achieving "visual agreement" **[WS2- KI-3].** Mapping of potential benefits & identification of locations where there is opportunity or deficiency is essential; Visualisation tools used with local SHs and benefit calculator developed by project **[I-SH`3/ I-SH4]**.	Mapping a key tool in supporting discussions between potential stakeholders in terms of where effective interventions are appropriate. **[I-KI-4]** This is because working at the catchment scale is intuitive. However like FS, putting lines on maps can be difficult with SH. Farms interpret lines as regulation.**[WS2- KI-4]**

Table 5.1, cont.: Individual lessons learned identified in Cross-Comparison Analysis (For Coding of Sources, see Appendix 2)

	General Lessons Learned	Finding Sanctuary	GVSP	NENW-GI	WEPES
8	*Sometimes the impact of a decision making process lies as much in the way it changes how SHs 'think about' decision making as it does on the 'effectiveness' of the particular decision.*	FS seen to be distinctive and novel in its stakeholder approach to decision making.**[I-KI-1.1]** This approach to 'process' was sometimes queried as an effective way of ensuring sustainable outcomes **[I1-SH1; I1-SH3; I1-SH4]**	The project set out to change the perception of the area and for people to feel that they have some influence over the changes and growth that is taking place. .	NENW Initiative was much about trying to cultivate a new way of thinking about decision making than its particular material outcomes **[WS2- KI-3]**	Through project such as WEPES [which is time-bound] WRT are aspiring to cultivate catchment based approaches.**[WS2-KI-4]**
9	*Arguments by comparison or analogy can be a useful stimulus to act.*	This was very much a pathfinder initiative and has helped the other MPA initiatives frame their work. **[I-KI-1.1]**	GVSP felt that there is a lack of useful of comparisons. Where used analogies were even sometime counterproductive in some places. Good practice examples should be carefully chosen so as to respect local sensitivities. **[WS2-KI-2]**	Intra-regional comparison of GI work was seen to be a useful way of winning hearts and minds. **[WS2- KI-3]**	Access to good practice examples/experience perceived to vital to WRT work in this area. Use of local demonstration a key device for showing good practice in land management. **[WS2-KI-4]**
10	*Knowledge Brokerage: There is need to have readily available trusted advice, expertise and facilitation to interpret and respond to SH needs. Expertise should support a client-focused process rather than dictate what needs to or can be done. Experts should also 'learn'.*	Suggested that key to the process was putting voluminous information in a format that reflected SH needs and queries. It was suggest good facilitation required expert understanding of the topic area as well as data handling skills**. [I-KI-1.2; I1-SH1; I1-SH2]** FS was recognised by SH as having strong facilitators, who kept the process on track by, for instance, stopping people "soap boxing", managing group expectations about outcomes, encouraging SHs to accept compromise, and 'soaking up' SH criticism otherwise directed to a project team/secretariat. **[I1-SH1; I1-SH3; I1-SH4]**	In GVSP it was felt that stakeholder have different needs in terms of building trust. Need for specialists in different fields: e.g. NE advisors speaking to farmers; those with experience in dealing with elected officials, schools etc. **[WS2-KI-2]**	The skill combination in NENW was essential in facilitation process – they could communicate effectively with the range of constituencies that needed to be influenced. In NENW Initiative it was felt the key was providing *access* to trusted evidence when required rather than been led by specialists/experts. Experts also need to learn about the problem to be effective, i.e. to achieve 'convergence' **[WS2 - KI-3]**	WRT draws in bespoke expertise (such as a diffuse pollution modeller) to build credibility and trust with SHs in the decision making process. **[WS2 - KI-4]** Role of trusted knowledge broker was essential in securing agreements between buyers and sellers of the services. **[I-KI-4]**

Table 5.1, cont.: Individual lessons learned identified in Cross-Comparison Analysis (For Coding of Sources, see Appendix 2)

	General Lessons Learned	Finding Sanctuary	GVSP	NENW-GI	WEPES
11	*The decision process needs to recognise the red-lines (bottom lines, defaults) and then explore the space for negotiation or choice making. Realising opportunities within this relies on thinking creatively (across sectors) about potential (i.e. non-standard) solutions.*	In FS initial map based work was designed to avoid obvious conflict between different sectoral interests. **[I1-SH1; I-KI-1.2]** However SHs suggested that by not having any pre-given objectives for the MPAs led to them being naturally defensive from the outset (i.e. expecting a worst case scenario). **[I1-SH1]**	Many of the local stakeholders started with highly entrenched views that needed to be slowly changed as the basis for engagement in debates about sustainable land use.**[WS2-KI-2]**	An effective GI decision process starts by understanding where each stakeholders 'bottom line' is – the line they cannot cross. This line may be regulatory, economic etc. **[WS2-KI-3]**	In catchment based approaches building lots of different people into a vision process means that the prevailing wisdoms of SHs can be challenged and new and creative solutions emerged.**[WS2 - KI-4]** This involved the identification of zones of potential agreement about where interventions would be effective **[I-KI-4]**
12	*Use of languages appropriate to those who need to be influenced is essential*	The deliberative process was valuable in developing the necessary group learning and terminology in so that discussions could take place. **[I-KI-1.1; I-KI-1.2]**	Place-making did involve some transformation in the languages or images that people used to discuss the area. The project avoided certain terminologies to so that SHs weren't put off [such as 'sustainable urban fringes']. Project found it better to 'talk about the issues' than give something a label that no one understood.**[WS2-KI-2]**	Language of GI illustrates how important terminologies are in communication with different audiences. **[WS2-KI-3]** 'GI language' specifically designed to enrol others into environmental debates. GI speaks the language of developers and planners.**[WS1-KI-3]**	ES language is a multi-sector language that has allowed WRT to compare different kinds of environmental assets (such food and water quality) in a way not possible before **[WS2 - KI-4]** In dealing with farmer sand land owners, ability to communicate issues in their terms was found to be important. **[I-KI-4]**
13	*Shortage of time can compromise the quality of outcomes but keeps the process focused. Start engaging as early as you can.*	FS perceived to stand out as a success within the marine spatial planning process partly because it builds on a longer term non statutory process of stakeholder engagement, meaning it got off to a 'really strong start'. Some concern that the process was rushed along too much given available scientific information but the short length of time for the process also focused minds. **[I-KI-1.2]**	Start-up phase was lengthy and this may be an issue in terms of demonstrating concrete outcomes within the funding cycle. **[WS2-KI-2]**		The fact that benefits are long term (>100+ years) makes assessment of outcomes difficult, but it changes cost-benefit analysis **[I-KI-4]**

Table 5.1, cont.: Individual lessons learned identified in Cross-Comparison Analysis (For Coding of Sources, see Appendix 2)

	General Lessons Learned	Finding Sanctuary	GVSP	NENW-GI	WEPES
14	*Be explicit about where the 'real' decisions are being taken in a process*	Some feedback of FS Stakeholders was that it was hard at the beginning to determine where the real decisions were taken. The need to be clear about where SH can influence a process is important. **[I1-SH1]**	The objectives are set out in our Delivery Plan, this are scored in terms of what level of priority they are and whether they are realistic aims.	In terms of GI planning and delivery – decisions are taken in a variety of contexts and at different scales **[WS1-KI-3].**	Essential – at the interface of the provider and beneficiary (Water Company). Public involved only indirectly via impacts on cost and risks etc. **[I-KI-4]**

A number of lessons emerged in relation to handling stakeholders. It was felt that the stakeholder involvement was an essential part of the EsA, but it only works by including all the people or groups who can influence change locally (Lesson 2, Table 5.1). The KIs felt that it was important to understand where the 'real' decisions are taken in a process (Lesson 14, Table 5.1). However, it was also agreed that a balance had to be struck between building a broad and deep stakeholder process and keeping a decision process on track (Lesson 5, Table 5.1). A shortage of time is often regarded as a negative limiting factor on informed decision making but it does serve to keep the decision process focused. The general emerging message, however, is that decision processes benefit greatly from early stakeholder engagement (Lesson 13, Table 5.1)

There was agreement that formalisation of the stakeholder process was helpful to ensure continuity of interests in the decision making (Lesson 6, Table 5.1). This was important so that early decisions are not revisited and progress is maintained. An attempt by those facilitating the process to understand how the different stakeholders see the world was also identified as key lesson to emerge from the demonstrator projects. Those involved in the cross-comparison workshop felt that in many situations the impact of a decision making process lies as much in the way it changes the way stakeholders 'think about' decision making as it does on the 'effectiveness' of the particular decision (Lesson 8, Table 5.1). All agreed that those facilitating such a process must attempt to identify the 'red-lines' (or default positions) of the different interest groups. Knowledge of these constraints can help to define the space for negotiation and making choices (Lesson 11, Table 5.1). It was agreed, however, that notwithstanding these difficulties a key contributor of added value in the EsA was the fact that by including a diversity of interests there was a greater opportunity to think creatively (across sectors) about potential (i.e. non-standard) solutions. The novelty of potential solutions was found to be a useful selling point in all the projects (Lesson 3, Table 5.1).

A number of lessons emerged from the cross-comparison exercise in relation to building the evidence base that supports the decision making process (Lesson 4, table 5.1). Trust in the evidence was essential, and the lack of it is often a source of conflict. Thus depending on the situation the role of 'independent' knowledge brokers is often helpful (Lesson 10, Table 5.1). There was strong agreement that mapping and visualisation tools are essential both in the problem definition phase and in identifying the important cross-sectoral linkages, as well visioning (Lesson 7, Table 5.1). It was apparent from the experience of the KIs that the use of analogies, or at least evidence from analogous situations were useful as 'argument making devices' or 'stimuli for action' (Lesson 9, Table 5.1). It was also felt that the languages and terminologies used when communicating with key interest groups had a important bearing on the success of the process(Lesson 12, Table 5.1). The development of a credible and relevant body of case study material was generally seen as essential for future progress.

6. The Added Value of an Ecosystems Approach

6.1 Introduction

This final Chapter of the Overview Report draws upon the material from the investigation of the individual demonstrators and the cross-comparison exercise to reflect on the research questions that were the stimulus for EMBED.

6.2. What is the added-value of an Ecosystems Approach (EsA)?

Finding: The Ecosystem Approach can help develop new problem framing perspectives and practices that can change approaches and shape relationships between interest groups in 'productive ways'...

6.2.1 What is the influence of an EsA on decision and policy making?

EMBED has confirmed that the 'added value' of the EsA cannot be identified directly because the demonstrator projects considered use of the principles implicitly rather than explicitly. Moreover, because the case studies were dealing with unique situations or issues, it is difficult to identify a 'comparator' against which some analysis of 'additionality' can be made. Nevertheless, even though the principles of the EsA are not discussed overtly, we have found from the evidence collected that many of the key features and practices of the four demonstrators are consistent with it, and many of the outcomes achieved by the projects show its effectiveness as an 'argument making' and 'problem solving' mechanism. This view was strongly confirmed in the cross-comparison exercise with our Key Informants.

Thus in different ways each of the demonstrators is making cross-sectoral connections (i.e. is holistic) and each also recognises the value of the environment as an asset (either social and/or economic). The projects are also similar in that they have needed to consider the issue of appropriate scale, although this issue has varied in its importance depending on context; in the case of natural NENW. for example, the focus was on how GI issues could be addressed across multiple scales. All of the projects could also be interpreted as efforts to develop adaptive strategies of some kind. The processes they engendered demonstrated features of community learning, and the 'solutions' that were discussed were clearly designed to cope with uncertainties. Perhaps the major difference between the thinking observed in the demonstrators and EsA principles was in the way notions of environmental limits and thresholds were framed. The terminology of limits was often seen as too negative and other 'argument making' strategies were thought of as being more helpful.

The lack of comparators against which to judge the benefits of the EsA was considered in the workshop discussions with Key Informants, and it was suggested that the major contrast is between the cross-sectoral, iterative approach stimulated by the Principles, and more linear and siloed styles of decision. The participants agreed that the principles had to be taken as a whole, and if they were their main added value was realised by **the new perspectives and practices that were encouraged amongst those involved**. One KI argued that the EsA could simply be viewed as an example of a more general "systems approach" to decision making, around which concern with the environmental has been built, and that the value of systems thinking is widely acknowledged as a problem solving tool.

6.2.2 What is the influence of an EsA on the bases for decision making and on the context for implementing new ecosystem management practices?

The nature of the decisions being made in each of the demonstrator projects was found to be very different and so identification of the types of influence is often quite specific. However, the analysis presented in Chapter 5 suggests there are some common themes which have a strong resonance with the EsA principles. Thus, the outcomes of the demonstrators all, to some extent, depend on consensus building and trust, both between the different interest groups, and in relation to the participants and the information that will be used to inform the decisions made. The creation of a reliable evidence-base was generally seen as a central part of the processes set in train by each of the projects. The inclusive nature of the projects was designed to engage all relevant stakeholders and thus to some extent ensure their 'buy-in' in relation to the goals or deliverables from the work. If we accept the proposition that each of the demonstrators implicitly embodies the EsA then the principles do change the context in which decisions are being made. **The notion of using an EsA as a creative 'problem reframing' device was strongly endorsed in the cross-comparison workshop**. The stimulus it gave to designing 'novel solutions' was also seen as a feature that brought added value.

6.2.3 What is the influence of EsA on ecosystem management, ecosystem status and ecosystem service delivery?

The question of whether the demonstrator projects have lead to 'better decisions' is complex, and to answer it we need to disentangle the issue of whether the **process** of decision making stimulated by the EsA is better, or whether the **outcomes** are also superior, more robust and sustainable. In terms of the influence of the EsA on ecosystem management or the status of ecosystem services time scales are generally too short to identify positive outcomes. Nevertheless, in the case of NENW, that a better quality output was intended is was explicit in the case of the Liverpool Knowledge Quarter project. The work involved th use of innovative mapping and visualisation to show that a near final plan for an area could be improved with better consideration of what GI could do to help deliver the aspirations for the area set out in the regeneration framework. Taken together, however, a common characteristic of all of the demonstrator projects is that they identify and/or operationalise components of the environment as economic and social assets, rather than just a biophysical resource, so that its future status is put on the management agenda.

It is important to note, however, that some projects may not always involve identifying what a sustainable ecosystem outcome is, and may in fact avoid the question. This type of situation is illustrated by FS, and to some extent GVSP, which have been more concerned with decision making processes than defined ecosystem outcomes. The project outcomes have to be consistent with the goal of achieving some broader sustainable goal, but this may not be there main concern. In FS the aim was to achieve as much pre-consultation consensus as possible about an MPA network design, rather than to agree what precise conservation goals it would deliver. In GVSP it could be argued that 'awareness-raising' and 'place-making' and that these could then be a platform on which more concrete outcomes for the urban fringe could be built.

Thus while the short term nature of EMBED has meant that the success of the project outcomes is difficult to determine, **there is clear evidence from each of them to conclude that in procedural terms EsA thinking can be influential in changing approaches and shaping the relationships between the various interest groups in 'productive ways'**.

6.2.4 How much do stakeholders value that influence and/or these outcomes?

Although EMBED was not able to talk to all the stakeholder groups within each demonstrator project, there is clear evidence from those contacted of wide support for the processes around which each of them was constructed. The finding that stakeholders valued the influence of the EsA (even if they used them only implicitly) has to be qualified, however, because each project aspired to achieve consensus about the outcomes some element of satisfaction is to be expected. A major uncertainty is that only the interest groups who are prepared to be involved could be consulted; disaffected groups are by definition outside the process. From the evidence collected we did not find that there was a feeling that key stakeholders were not included, and indeed there is evidence that in particular projects efforts were made to ensure key actors were brought into the process (e.g. Internal Drainage Board in GVSP). Nevertheless the extent to which stakeholders 'value the outcomes' is difficult to determine, except in those situations (as with FS) where a formal consultation process will follow, where those included and others can register their support or objections.

6.3 Which attributes, products or outcomes of an Ecosystems Approach contribute to that influence?

Finding: Analytical, mapping and visualisation tools were a common feature of all the demonstrator projects, which found them to be an effective and sometimes essential ingredient for taking their work forward. It also provided a new language and terminology that could be used to frame and discuss problems, and to build an understanding of the value of place...

6.3.1 What kinds of tools and products contribute to achieving the influence of the ESA?

Evidence from the demonstrator projects suggests that there is strong support for the proposition that as a 'decision making framework' the EsA has added value. Our investigation suggests that the benefits are often attributed to the practices and tools that are associated with it.

Use of analytical, mapping and visualisation tools were a common feature of all the demonstrator projects, which found them to be an effective and sometimes essential ingredient for taking their work forward. Mapping was used, for example, to analyse areas were action might be appropriate (e.g. deficiency of greening infrastructure provision) or as a framework for making agreements about where actions might be targeted (most cost-effective interventions). The activity mapping undertaken in FS was particularly successful in identifying zones of potential conflict between the different interest groups and it emerged as providing a platform for negotiation. In addition, tools such as 'benefit calculators' were also sometimes used as a way of developing the evidence base.

Clearly tools, such as maps or calculator, can be used as part of any type of decision making, and so it cannot be concluded that their use alone constitutes influence of the EsA. The EsA provides the context in which such tools are used, and it is the way they are applied, that is not important. The evidence we have collected is suggests that analytical tools can make an important contribution at different stages of the project cycle, such as problem framing or option comparison, and that they were essential in building the kind of deliberative process engendered by the EsA.

6.3.2 What kinds of practices, contribute to achieving the influence of the ESA?

In terms of practice, it was also apparent that **the language and terminology used to frame and discuss problems was also a key element in the processes** around which the different projects were built. None of the projects highlighted the term 'Ecosystems Approach' as the framework being used, and the principles were often not explicitly used to structure the processes around which they were

built. In fact, some of those consulted felt that the 'ecosystem' terminology would have been a hindrance. The notion of 'Green Infrastructure', for example, was highlighted in NENW as more appropriate for engaging with the planners and developers. It was apparent, however, that in all projects that the principles underlying the EsA were understood and largely accepted, but that the multi-partner nature of the work demanded a more tiered approach, with ideas being refined and translated to ensure that technical or unfamiliar terminology was not a barrier to communication.

A second important aspect of practice which emerges from several projects is **the importance of building place-identify as a key ingredient of success**. This was particularly so in the case of the GVSP initiative, where building recognition of the 'Gaywood River Valley' as an asset was a key aim. However, the importance of locality was also significant in most of the other projects and impacted on such things as the nature of the evidence that needed to be considered, the appropriateness of outcomes, and potentially the values by which strategies and outcomes were judged.

Although the projects provide evidence to suggest that the technical languages surrounding natural capital and ecosystem services may not always be useful for good communication, there is also some evidence to suggest that the 'new concepts' that surround ES are being taken up and used. Some stakeholders suggested that may be some time-lag effect here, in that most of the projects were initiated before the ES debate 'took off'.

6.3.3 Which outcomes of an EsA contribute to a strong and positive influence on decision making and/or to sustainable ecosystem outcomes?

As argued above, it is largely the process outcomes that seem to contribute to the strongest positive influences associated with projects that (implicitly) use the EsA. The short term character of EMBED and the long time horizons needed to realise most of the social, economic or biophysical impact outcomes, makes this aspect of the question more difficult to answer. Although it is hard to identify with any certainty whether the projects will lead to sustainable ecosystem outcomes, this is perhaps not the main issue – the key question is whether the interest groups involved think or make the judgment that the interventions will, and that there can be some monitoring and adaptation of strategies along the way.

Building consensus around an evidence-base and using that evidence base to come to some decision or formulate a strategy using a deliberative process is one of the most important ways that the EsA influences decision making. Those consulted suggested that the key uncertainties that arise in terms of achieving sustainable ecosystem outcomes arise in relation to: the adequacy of current knowledge and current evidence; maintaining the institutional and individual learning and the long-term curation of base-line data; and the short-term nature of the projects and the problem of managing their legacy in an adaptive way so that intended outcomes can be realised.

6.3.4 Which principles (individually and collectively) of an EsA contribute to these outcomes?

As noted above out Key Informants argued that it was essential that all of the principles of the EsA were taken together is successful environmental outcomes are to be achieved. **Nevertheless of all the themes covered by the EsA, the question of environmental value stood out as one of the key areas of concern.** Recognition environment as an asset was a strong and common theme across all the demonstrator projects. In some case there is an attempt to frame value in economic terms, in others wider social or ecological (conservation) values are important. Indeed it could be argued that questions of value determine how the discussions around the other principles are played out – for

example the linkages and relevance of the asset to other sectors, or the boundaries of the decision making unit.

Nevertheless, there is strong evidence to support the assertion that the identification and realisation of environmental value is one of the main unifying EsA themes principles observed in the demonstrator projects. It is also apparent that the handling of values is difficult and our informants confirm there is a clear need for further work in this area. The benefit model that was built around the idea of investing in Green Infrastructure demonstrates that efforts to conceptualise issues surrounding notions of value can be a key ingredient of success. The complexities of carrying that work though to making robust economic estimates of value illustrate that probably much more needs to be done in this area. There is also evidence from the demonstrators to suggest, however, that questions of value do not always boil down to questions of economic value, and indeed a focus on economics may detract from the outcomes. In FS, for example, the discussion was framed around what kinds of activity should be permitted in each potential area protected and did not involve any formal discussion of the economic impact of a particular MPA design. The extent to which the economic component of the formal impact assessment of the final recommendations after the consultation stage will modify outcomes is presently uncertain.

The difficulty of dealing with notions of environmental limits was also a common theme across all the demonstrator projects. This difficulty seemed not only to be related to the problem of defining such limits in ecological terms, but also the negativity that discussions of limits seems to engender. The evidence suggests that more positive approaches or languages seem to be preferred. Thus projects sought to identify 'opportunities' for intervention, or locations where there was a 'deficiency' of some kind that could be addressed. There is evidence from the FS project that the imposition of an external (albeit political) limit, in terms of the total area and mix of protected areas that had to be identified in the process, did much to structure and focus the discussions.

6.3.5 Which approaches to implementing the five principles of an EsA contribute most to delivering outcomes that have a strong and positive influence on decision making?

A key finding from across the demonstrator projects was that some kind of 'knowledge brokerage' was needed to achieve consensus or agreement. Situations differed considerably, however. In some cases neutrality and independence may be important (e.g. WEPES, FS), in others recognition and trust in the expertise or data available may be sufficient (GVSP, NENW). There is also evidence to suggest that the makeup of the project team can be an important aspect, in terms of having the professional expertise and authority to interact at strategic levels. Professional facilitation may also be an important component of building trust in deliberative processes and ensuring their outcomes at the more grass-roots level.

A second key finding was that political support for the projects from the institutional structures in which they are embedded is essential. For example, there is evidence to suggest that engagement in GI issues is dependent on the issues being highlighted in high level policy document and plans and that this established the relevance and importune of the work. In the case of FS the importance of external expectations and requirements set out in the Marine Bill is even clearer. In the case of NENW, the institutions that sponsored the initiative ensured that people were, in a sense, more prepared to listen.

From the evidence collected it is difficult to identify particular approaches that relate to auctioning the principles in isolation, except at a technical level (e.g. creation of a benefits calculator for the value aspect). Rather, the evidence from the projects seems to suggest that the approaches that are key ingredients of success are more overarching in character. These are to do with (a) creating a structure that is capable of making balanced, evidence-based arguments; and (b) ensuring the project team can gain the trust and authority needed to engage with stakeholders and those wider constituencies that can influence the decision making environment.

6.4 Is an Ecosystems Approach cost-effective?

Finding: The level of resources needed to undertake the demonstrator projects was relatively small compared to the size of the potential benefits and so may be justified. However, benefits are more difficult to estimate in monetary terms than costs and this makes cost-benefit questions hard to answer outside the context of particular projects...

6.4.1 Is there an extra cost of taking an EsA?

The question of extra cost (like that of added value) is difficult to answer because of the lack of comparators. There is evidence to suggest, however, that multi-partner projects designed to build consensus take time, and that investment in people, data and the tools required to handle and present evidence, is needed. **The evidence from the demonstrators is that the level of resources needed to undertake the projects is relatively small compared to the size of the potential benefits and so may be justified; costs cannot be looked at in isolation from benefits likely to be achieved by the project.**

6.4.2 If so, what is this extra cost and what are its component elements?

In order to make a comparison between projects, it is probably helpful to separate the 'transaction costs' from the resources needed to achieve the interventions, and only consider the former. These largely comprise costs for (a) staff; (b) stakeholder engagement and communication; and (c) data and analysis. **The evidence from the demonstrator projects is that the balance is dependent on the nature of the initiative, but staff costs are often the most significant and in some situations data and analysis costs can be large, and so should not be underestimated.** It is also apparent that there are extra costs to society of the undertaking an EsA, because it can require input and commitment from other organisations. Consultation and engagement in deliberative processes can be time consuming. The extent to which these kinds of costs might be a barrier to others becoming involved in projects based on EsA principles is unclear.

6.4.3. Is this extra cost warranted by the added-value an EsA delivers?

The major uncertainty surrounding the demonstrator projects is their 'cost-benefit ratio'. Costs can be calculated relatively easily but benefits are more difficult to estimate. As noted above the benefits arise in terms of the process of decision making and the effectiveness of outcomes but these can sometimes be difficult to disentangle. There is evidence from the demonstrator projects that part of their rationale is to reduce overall costs to society and so in some sense the projects would not have been supported if the added value did not outweigh the costs. Examples of benefits that seem to outweigh the costs include: (a) achieving consensus and reducing conflict prior to formal consultation or public enquiry making these latter stages quicker and cheaper to execute; (b) ensuring that management of environmental assets are built into the design phase of projects thereby reducing the scope for conflict and revision down the line; and, (c) building capacity and skills so that future projects involving environmental assets can be undertaken more effectively.

6.5 How might an Ecosystems Approach be further improved?

Finding: A consistent message from the demonstrator projects was that argument by analogy is a powerful tool in taking the principles forward. Thus if effective interventions of the kind envisaged in a particular situation are evident elsewhere, then the case is much easier to make if lessons cold be generalised and shared with others...

6.5.1 What difficulties or barriers are faced in implementing an EsA?

Our review of the demonstrator projects suggests that there is a gap between the generalised and somewhat abstract EsA principles and real world practice. Thus it is often difficult to identify how the principles play out in operational situations because of the complexities and unique characteristics of individual projects. The barriers to using the principles are probably less to do with their rationale or justification than to do with: (a) the ways the principles are translated into practice at the project inception and planning stage; and, (b) the difficulties of making judgements about whether particular initiatives are consistent with EsA thinking, when looked at from an auditing perspective. Over and above this, there are differences in the way the EsA is interpreted and more especially the fact that projects are never about the EsA as such, but the real world problems or issues that 'need to be addressed'. Thus the extent to which the principles are followed depends on the constraints associated with particular situations. There is evidence from the demonstrator projects, however, that high level messages about the importance of the environment as an asset are helpful in terms of enabling people to make more specific or localised arguments for approaching problem in ways consistent with EsA thinking.

It is not clear from the material provided to use whether the design or operation of the demonstrator projects would have been significantly improved if the EsA Principles had been considered explicitly at the outset. Nor is it clear that they are particularly helpful as part of a review process within the project management cycle. The evidence provided by KI and SG seems to suggest that the overarching philosophy of the EsA provides a rationale and justification for what they are doing, but beyond that the specific circumstances of the project seem to dictate how problems are addressed.

6.5.2 Are there any significant gaps or weaknesses in what an EsA is able to contribute?

A consistent message from the demonstrator projects is that argument by analogy is a powerful tool in taking the principles forward. Thus if effective interventions of the kind envisaged in a particular situation are evident elsewhere, then the case is much easier to make. The difficulty of quickly gaining access to this wider experience and using the evidence to demonstrate the robustness or credibility of the interventions being proposed is a weakness of current practice. Particular 'pinch points' concern: (a) the demonstration of economic benefits; and, (b) understanding of the ways improved ecosystem function will increase or sustain ecosystem service output.

A second and somewhat related issue is that the outcomes of initiatives such as those illustrated by the demonstrator projects are so long term, that their effectiveness is inherently difficult to assess and therefore to share with others. Thus arguments in favour of applying the EsA probably need to be made more in terms of the improved process of decision making and the increased likelihood of the benefits being delivered at lower risk or cost, if people act in this way compared to some other approach. The demonstrator projects already provide some evidence to support the claim that there are considerable social and economic benefits to be gained by looking at the environment as an asset. **All the Key Informants felt that the major challenge is to generalise from these lessons and share them effectively with others**.

7. Conclusions and Next Steps

7.1 Key Findings

Our investigation of the four demonstrator project suggests that the principles underlying an Ecosystems Approach can add significant value to decision making. The evidence suggests that the Approach positively influences both the *processes* of decision making and the potential *outcomes*. The influence is largely realised through the inclusive, cross-sectoral practices that it engenders. These practices enable problems to be looked at in new ways so that innovative, and ultimately 'sustainable solutions', can be found.

Although we have identified clear benefits in taking an Ecosystems Approach many uncertainties and practical barriers are also apparent. A key issue is that we have only been able to consider *four* projects, and the extent to which these findings can be generalised still has to be tested. However, while it would be valuable to add to the portfolio of case studies it would also be useful to explore whether the practical lessons that seem to have emerged from the demonstrators also have wider resonance.

7.2 Knowledge Gaps and Next Steps

In the light of our findings a number of issues and knowledge gaps exist and it would, we suggest, be valuable to consider them in order to move discussion about the EsA on, beyond the merits of the principles themselves. On the basis of the lessons learned from the cross-comparison exercise and out review of the research questions that stimulated EMBED, useful next steps would include:

1. Better understanding the base-line against which notions of added value can be judged. Given that projects such as EMBED can mainly focus on decision making processes, rather than outcomes, how could the benefits of the EsA really be identified and what kinds of evidence would be convincing to those sponsoring such processes?
    - *In situations where the EsA deals with issues at the 'pre-consultation stage', for example, determine whether the formal consultative stage is more rapid, more efficient and less contentious, etc. compared to those situations where no preparatory consensus building phase was attempted.*
2. In multi-partner/multi-constituent projects there will always be differences in terminology and understanding, ways of re-expressing the EsA principles so that they are seem to be relevant are probably needed.
    - *Guidance on how to support the EsA through place-based approaches would be useful. Especially in relation to identification of collective values etc.*
    - *Further work is probably needed to better understand the contexts in which different approaches to valuation are appropriate and how through deliberative processes these value can be compared and differences resolved.*

- *Further work and guidance is probably needed in relation to the notion of limits, and how such concepts are used in the kinds of discourse represented by the demonstrators. If limits are to be used to structure discussions then the sources need to be authoritative.*

3. What kinds of mechanism can be put in place to manage or ensure legacy, or to ensure that base-line information is preserved so that effectiveness of interventions can be assessed?
4. Further work is needed to build up an evidence base that can be used to capture expertise and best practice, and so be used to develop credible arguments in particular situations. Authoritative evidence of this kind, and the ability to draw on examples of where tangible benefits can be demonstrated, can be help to move strategies for dealing with environmental assets into the design phases of projects, so that the case for GI is no longer a contentious issue.
    - *Can a set of generic lessons be identified? How can we test and add to the lessons identified through EMBED?*
    - *What kinds of network already exist and how can it most effectively be encouraged and used? How can new networking activities be encouraged where it is currently lacking, what kinds of support are needed?*
    - *How can the experience gained in applying the EsA be shared and disseminated as part of normal professional practice etc.?*
5. Development of EsA project accounting or auditing methods would be helpful.
    - *The extent to which the overhead arising from involvement is a barrier to engagement of project partners needs to be investigated, especially if EsA projects are more common.*
    - *We need to understand better what role or value these principles have in justifying or designing projects.*
    - *We need to understand if something more is needed beyond the principles to help with the specifics of translating the rationale behind the principles into practice etc.*
6. We need to understand better what kinds of triggers and general policy frameworks or guidance can trigger or justify projects that are consistent with EsA thinking.

8. References

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Appendix 1: Source Coding used for Questionnaire, Interviews and Workshops

	Questionnaires		workshops		Interviews				
	KI	Sub-projects	KO	CC	KI	Stakeholders			
FS	**Q1**	N/A	**WS1-KI1** Joana Smith	**See I-KI-1.2**	**I-KI-1.1** – T. Hooper **I-KI-1.2**[7] – T. Hooper (cross comparison)	**I1-SH1**	**I1-SH2**	**I1-SH3**	**I1-SH4**
GVSP	**Q2**	N/A	**WS1 - KI-2** John Jones	**WS2 - KI-2** Gemma Cousin	**I-KI-2** Gemma Cousin	**I2-SH1**	**I2-SH2**	**I2-SH3**	**I2-SH4**
NENW	**Q3**	Q3.1 = demo version Q3.2 = Liverpool Qu.	**WS1 - KI-3** Will Williams	**WS2 - KI-3** Martin Moss	**I-KI-3** Martin Moss	**I3-SH1**	**I3-SH2**	**I3-SH3**	**I3-SH4**
WEPES	**Q4**	N/A	**WS1 - KI-4** Laurence Couldrick	**WS2 - KI-4** Laurence Couldrick	**I-KI-4** Laurence Couldrick	n/a[8]	n/a	n/a	n/a

Notes:
For full details and reports see annex of full technical report
Abbreviations:
KI = Key informant
KO = Kick-off workshop with demonstrator workshops, London, 5th May 2011
CC = Cross comparison workshop, London/27th Sept, 2011
Qn = Questionnaire
I – Interview
WS = workshop

Ethical considerations

Interviews and group events were recorded with the participant's consent. These material were stored as sound files and written up as reports which were sent to participants for approval. In this document names have been removed and the stakeholders are referred to using the codes listed above. The Key Informants have agreed that their names can be used.

[7] Tom Hooper – the key informant for FS was unable to attend the cross comparison workshop on that day – therefore the EMEBD team conducted a second interview with T. Hooper to discuss the preliminary lessons learned with him. This view was then represented by Rob Fish at the workshop.

[8] Due to the structure of WEPES the EMBED team was unable to interview stakeholders of this project directly. Some of the stakeholder perception was discussed through the project knowledge broker – Laurence Couldrick.

Appendix 2: Original specification as set out in the Tender call-

This is an extract and starts from paragraph 9 of the Tender Call document.

Rationale for research

9. NESU has previously undertaken research on data sources and has commissioned some theoretical case studies into how an ecosystems approach might be followed, in making certain policy decisions. It is now appropriate to move the focus towards understanding and evaluating how an ecosystems approach works in practice by looking at real life examples and the costs and benefits associated with taking an ecosystems approach in different circumstances. Research is needed to understand how an ecosystems approach affects societal choice in the management of environmental resources. This research will provide insights from real life projects where such choices have been made and examining how the views of different people and organisations involved in the projects, have been taken into account. These views include the values and priorities people have placed on the management of environmental resources, and their knowledge about the systems being managed.

Aims of research

10. The study will build on existing work based around applications of the ecosystems approach.

11. The key aim of this study is to identify what, in practice, is the value added to decision makers of taking an ecosystems approach. By analysing and evaluating current 'live' projects which are attempting to take an ecosystems approach to policy or decision making, the study should seek to determine key products and processes from these projects that increase the value of an ecosystems approach relative to alternative approaches, including aspects that are transferable to other such projects. The study will also examine how the ecosystems approach was followed in practice and identify areas where there were gaps in the approach taken or where things could have been done differently. Although the emphasis is on identifying the positive aspects of taking an ecosystems approach, researchers should also consider potential difficulties and barriers experienced in practice.

Objectives

Objective 1: To analyse how taking an ecosystems approach is influencing the way policies and decisions are being taken i.e. how the projects are:

- showing a holistic approach to policy making and delivery, with
- a focus on maintaining healthy ecosystems and ecosystem services;
- ensuring that the value of ecosystems services is fully
- reflected in decision-making;
- ensuring environmental limits are respected in the context of
- sustainable development, taking into account ecosystems functioning;
- taking decisions at the appropriate spatial scale while
- recognising the cumulative impacts of decisions;
- promoting adaptive management of the natural environment to
- respond to changing pressures, including climate change ;
- demonstrating effective stakeholder participation.

Objective 2: To evaluate the costs, benefits and motivations for taking an ecosystems approach based on the experience of these demonstrator projects.

Objective 3: Based on findings of Objectives 1 and 2, to evaluate what attributes and practices of the projects investigated are most effective in delivering sustainable natural environment outcomes, and, if appropriate, to identify which aspects are not effective or act as barriers.

Objective 4: To draw out the positive attributes and practices and identify practical mechanisms and tools by which these can be shared with decision makers/delivery agencies involved in the development of other live ecosystem based projects.

12. In delivering these objectives, researchers need to be aware of the case studies undertaken Defra's natural environment research programme which exposed a number of issues in delivering an ecosystems approach. It will be important to assess how the demonstrator projects have addressed or are attempting to address some or all of these particular issues:
    - the language used by stakeholders involved in the demonstrator projects;
    - the information base used to underpin the demonstrator projects in terms of locally useful data at sufficient resolution;
    - the way in which community participation and deliberative decision making has been used within the demonstrator projects;
    - the way in which the projects have demonstrated the delivery of different policy areas to support the ecosystems approach and any problems have been encountered along the way in achieving this policy delivery;
    - the approach taken by the demonstrator projects to valuing ecosystems services in particular, the role of monetary valuations as well as alternative methods of valuation including deliberative and
    - participatory approaches;
    - the approach taken by the demonstrator projects to work through and with existing policy frameworks (such as the planning and environmental assessment regimes);
    - the approach taken by the demonstrator projects to operationalise the concept of environmental limits.

Scope

13. The researchers will decide how many projects to focus on, bearing in mind the need to cover each project in sufficient breadth and depth. It is suggested that no more than 4 projects are used. The projects will be active within a local, sub regional or regional context (noting that they may cross administrative boundaries) so researchers will need to demonstrate a good understanding of 'place' including all those contextual factors which shape delivery of the projects. However, these factors should not constrain positive attributes of the projects being replicated elsewhere around the country. Whilst we recognise local characteristics will inform how the projects deliver, these projects must have characteristics that can be related to similar situations in other parts of England.

14. The projects which are targeted for this study need to be discrete entities which have relevance to Terrestrial (land, freshwater or coastal) or Marine management or change of use. The projects must be active, clearly moving beyond a planning stage but still at a stage where an ecosystems approach can make a real difference to the success of the project. The targeted projects will be driven by the public sector, private sector, or the voluntary sector or through two or three working in co-operation. The demonstrator projects should show how plans, strategies and decisions which impact on the delivery of Ecosystems Services have been drawn up. Where the private sector has been involved, motivations for private sector engagement should be explored. For example, examining whether the primary motivation is to reduce their impacts on the Natural Environment, or recognition that the Natural Environment can have a fundamental impact on economic activity and business performance.

15. This study should not duplicate work that is currently taking place relating to wetland management, flood risk management or farming catchments for water quality.