

# Ecosystem Assessment Tool Review

## Ecosystem Services Tools

<b>TABLES Project 2012: Mini reviews</b>	
<b>Guidance</b>	<i>Using your experience and expertise, consider the following tasks in relation to the tool. It may not be possible to complete all tasks for each tool due to a lack of available information, the task not applying to the tool, etc. <b>Please note where this is the case by giving the reason in the space provided.</b> Please use a maximum of 6 pages of A4 (excluding diagrams and appendices). <b>Your responses are required in the white spaces.</b></i>
<b>Task 1: Basic information</b>	
<b>Name of the tool</b>	Ecosystem Assessment (EA)
<b>Type of tool (list all that apply)</b>	Ecosystem services tools, valuation tools
<b>Group members</b> <i>(minimum size 3 members, must include a BCU rep)</i>	<ol style="list-style-type: none"> <li>1. Oliver Hölzinger</li> <li>2. Tim Sunderland</li> <li>3. Claudia Carter</li> </ol>
<b>Please provide a brief synopsis of the tool</b>  <i>This may include: background context, development (and ownership if appropriate), current use and applications etc.</i>  <i>Please also note any desired outcomes of the tool so that you can make reference back to these in Task 7: SWOT analysis</i>	<p>An Ecosystem Assessment (EA), sometimes referred to as ‘Ecosystem Services Assessment’, may be defined as “an assessment of ‘ecosystem health’” (Graham et al. 2012). This is the definition used within scope of this review. However, a generally accepted definition does not exist yet. EA is a comparatively new tool and framework and methods are varying and developing across EAs.</p> <p>The main aim of an EA is to inform about the state and trend of ecosystems and the links between ecosystems and human wellbeing. The most comprehensive and prominent example for an ecosystem assessment is the Millennium Ecosystem Assessment (MA) published in 2005 (Millennium Ecosystem Assessment 2005). The MA defines EA as "a social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision-makers".(Millennium Ecosystem Assessment 2005) The framework of the MA often serves as starting point for other EAs. However, it is commonly adjusted and developed when it comes to the operational stage of an ecosystem assessment. Appendix A provides an overview of the key questions addresses in the UK National Ecosystem Assessment. This introduces to the (potential and non-exclusive) elements of an EA.</p> <p>Whilst the MA is a global assessment of ecosystem services, there are several assessments available or in progress at the national level; including the UK National Ecosystem Assessment (UK NEA 2011b). Ecosystem assessments at the sub-national and local level are also evolving. Such local EAs are often conducted in pilot areas. Examples are available e.g. in Germany or Denmark (Graham et al. 2012).</p> <p>An EA usually provides decision-makers, but also other stakeholders and the wider public, with an evidence base about the state and value of ecosystem services at a specific spatial scale. An EA can include qualitative, quantitative, and monetary valuation of ecosystem services to make the benefits people derive from ecosystems explicit. It can evaluate changes (incl. drivers of change) in the past and/or scenario analysis projecting future</p>

changes in ecosystem services provision based on different policy options. An analysis of the state of ecosystem services and changes in the past can indicate if the actual development path is sustainable or not, even if other dimensions (e.g. society and technology) are crucial for a sustainable development as well. The assessment of future scenarios can project how the provision of ecosystem services may change depending on future development strategies and which strategy is most desirable to enhance human wellbeing. Additionally an EA may contain recommendations for feasible responses. But the components included in an ecosystem assessment can vary and depend e.g. on the demands and interests of those who initiate an ecosystem assessment.

According to 'Ecosystems and Human Well-being: A Manual for Assessment Practitioners' an ecosystem assessment has three main stages: (Ash et al. 2010)

- The exploring stage shall determine if an ecosystem assessment is needed and which scope and boundaries shall be defined considering the target audience and budget restrictions.
- The design stage includes (amongst others) the definition of governance and leadership of the project; the conceptual framework of the assessment; identifying and integrating different knowledge systems from published scientific findings to local knowledge; and capacity building amongst scientists and relevant institutions to ensure an effective adoption and use of the findings.
- The implementation stage is the stage where the actual ecosystem assessment will be undertaken.

One main aim of an ecosystem assessment is to generate general awareness of decision-makers about the value of ecosystem services and the trade-offs inherent in decisions affecting ecologies. Therefore it is important to provide the information that is most relevant to inform decision-making at the relevant scale and to ensure that the findings are presented in a format and terminology that can easily be taken up by the target audience. To ensure that it is recommended to allow and enhance stakeholder participation at all stages of the process.

## Task 2: Use of the tool

<b>Position / Use</b> <i>If you can, please indicate which stage(s) of the decision / policy making process your tool is / could be used in (these stages were identified in the specification document)</i>	<b>Stage</b>	<b>Could be used</b>	Please add any further comments here:
	Ideas		
	Survey	Y	
	Assess	Y	
	Policy / decision		
	Implement		
	Evaluate		

## Task 3: Existing literature about the tool

<b>Are you aware of any KEY policy and / or academic literature evaluating your tool?</b> <i>(e.g. reports, journal articles, books)</i>	<b>Author &amp; Date</b>	<b>Title Vol pages</b>	<b>Web link (if available)</b>
	Graham et al. (2012)	Ecosystem Assessments in Europe	<a href="http://biodiversity.europa.eu/ecosystem-assessments/events-1/eureca-meetings/workshop-ecosystem-assessments-europe-12-13-october-2010/documents/final-report.doc">http://biodiversity.europa.eu/ecosystem-assessments/events-1/eureca-meetings/workshop-ecosystem-assessments-europe-12-13-october-2010/documents/final-report.doc</a>
	Ash et al. (2010)	Ecosystems and Human Well-being: A Manual for Assessment Practitioners	<a href="http://www.unep-wcmc.org/ecosystems-and-human-wellbeing_553.html">http://www.unep-wcmc.org/ecosystems-and-human-wellbeing_553.html</a>
	Bateman et al. (2011)	Economic Analysis for Ecosystem Service Assessments. Environmental and Resource Economics, 48(2), pp.177–218.	<a href="http://www.lwec.org/sites/default/files/NEA%20published%20paper%20oct2010.pdf">http://www.lwec.org/sites/default/files/NEA%20published%20paper%20oct2010.pdf</a>
	MA (2005)	Millennium Ecosystem Assessment, Ecosystem and human well-being, Synthesis Report	<a href="http://www.maweb.org/documents/document.356.aspx.pdf">http://www.maweb.org/documents/document.356.aspx.pdf</a>
	UK NEA (2011)	UK National Ecosystem Assessment: Technical Report, Cambridge: UNEP-WCMC.	<a href="http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx">http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx</a>
	Carpenter, S.R. et al. (2009)	Science for managing ecosystem services: Beyond the Millennium Ecosystem Assessment. Proceedings of the National Academy of Sciences, 106(5), pp.1305–	

	1312.	
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**Task 4: Your experience of working on the tool**

<b>Have you done any research/consultancy work on this tool in terms of its development, testing and/or evaluation?</b> <i>If so, please provide an outline.</i>	Oliver Hölzinger has recently undertaken two ecosystem assessments at the local and sub-regional scale within his role as consultant: <ul style="list-style-type: none"> <li>- The Value of Green Infrastructure in Birmingham and the Black Country (Hölzinger 2011)</li> <li>- Ecosystem Services Evaluation for Birmingham's Green Infrastructure (<a href="#">forthcoming</a>)</li> </ul>
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<b>Guidance</b>	For Tasks 5-7, please also try to consider the <b>future</b> development and application of this tool in the TABLES project in your answers.
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**Task 5: Incorporating the ecosystem approach (EA) and ecosystem services (ES)**

*\*\*Please refer to the summary text about ES for concept clarification at the end of this template (appendix)\*\**

<b>Using examples (from practice, research or consultancy), explain how EA and/or ES are currently incorporated in/by the tool</b>	Ecosystem services and the ecosystem approach are key elements of any ecosystem assessment.
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<b>How <u>could</u> the ecosystem approach and/or ecosystem services be (further) incorporated within the existing tool?</b>	The ecosystem approach could be enhanced by incorporating stakeholders at all stages of future EAs.
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**Task 6: Situating the tool within priority questions/criteria arising from the scoping interviews**

<b>Explain how the tool can be situated within the priority questions/criteria that arose in the scoping interviews</b>  <i>Complete as</i>	<b>Priority question/criteria</b>	<b>Does your tool address/implement this question/criteria? <i>If yes, please explain how.</i></b>
	<b>Language and communication</b>	
	1. Contribution to aiding the development of shared vocabulary within which principles of EA and ES can be shared with multiple stakeholders across built and/or natural environment	Making the value of ecosystem services tangible for a non-specialised audience is a main aim of an ecosystem assessment. Sometimes an EA incorporates components or summaries for specific audiences to match their knowledge level and information demands.

<i>many boxes as required</i>	2. Capacity of the tool to develop shared understandings of the many identities and values of places from the perspectives of multiple visitors, residents and businesses	Regional and local ecosystem assessments may be more useful than national and global assessments because the evidence is provided at the scale where it is most useful for many decisions. However, this depends on the quality of the assessment and the available data that is available at that scale.
	3. Capacity of the tool to improve or enable engagement across different publics so avoiding the usual suspect problem	Especially if stakeholders are involved from the beginning of an EA there is high potential to establish a broader engagement across different publics.
	<b>Learning from experience/pedagogy</b>	
	4. Capacity of the tool to help reveal and value 'hidden' assets that are not recognised by communities or publics that use them	An EA should cover as many ecosystem services as possible. This includes 'hidden' assets. However, this may be limited by budget restrictions, available expertise, and diverse incentives of those who initiate an EA.
	5. Extent to which tool is building on other tools or EA/ES progress	An EA demands other primary valuation tools and methods as for example the revealed preferences method, the stated preferences method, the benefit transfer approach or valuation based on expert judgement.
	6. Extent to which tool is locally derived or grounded or can be adjusted to closely reflect 'local' context. Is the tool suitable for an open source approach?	To date EAs are applied at the national and global stage. However, in general it can be applied at all spatial scales and some examples are already available.
	7. Extent to which the tool is open to interpretation and application in a variety of forms (that reflect 'cultural' differences)	The tool is reasonable flexible and allows to integrate different valuation methods and the assessment of cultural differences.
	<b>Developing and selecting tools</b>	
	8. Is the tool dependent on a specific funding source? How onerous is the application procedure? What are the chances of success?	EAs are not dependent on a specific funding source but their appropriate application requires specific expertise.
	9. Does skills development (essential or optional?) and support exist for the tool or is there a body to ensure the optimal and correct use of it?	Skills may develop during the process of an EA but specific expertise is essential for its appropriate application. Social learning can be achieved through the process of engagement. A peer-review process can ensure the appropriate application of an EA.
	10. Extent to which current statutory hooks can be exploited by the tool or will benefit the quality or application of the tool (e.g. NNPF's duty to cooperate, SUDS, ecol. networks)	Limited.
<b>Informing resultant policies effectively</b>		
11. Extent to which the tool informs or improves policies/decisions. What does	That depends on the scope of an EA. However, even if 'only' the state and value is assessed it contributes to the knowledge of the decision-maker about inherent	

	the tool cover? (full range of positive and negative economic, social and environment impacts / tradeoffs?)	trade-offs of decisions affecting ecologies. In general an EA has the potential to cover the full range of impacts and trade-offs (acknowledging general data limitations and caveats).
	12. How does the tool link into the planning system (applications and processes). At what cost / extra burden?	An EA can only provide basic information but other tools such as Environmental Impact Assessments (EIA) can built upon the outcomes of an EA. Therefore it is important to locate it within the first stages of the decision making process.
<b>Delivering management objectives</b>		
	13. Suitability or capacity of the tool to assist with managing visitor needs and pressures within protected areas / the considered area? How?	If applied locally or regionally, yes.
<b>Local ownership/new governance</b>		
	14. To what extent can the tool assist in developing statutory plans (local and management plans) and improve ownership and use by publics?	There is a great potential if the scale of the EA matches the scale of the plans. Especially scenario analysis may provide a valuable information source for local and management plans.
	15. To what extent does/could the tool contribute to a new form of community governance in management of the environment?	One advance of an EA is to bring together different actors from science and practice. This can engage community governance. However, this is more likely for local and regional ecosystem assessments.
<b>Improved tools: understanding flows, interconnections and spatial issues</b>		
	16. Capacity to improve spatial understandings of the flows and interactions of various ecosystem services between sectors and at different scales	This has for example been undertaken within scope of the UK NEA.
	17. Capacity of the tool to reconcile assessments of options and benefits across different scales (and sectors)	Depends on the scope of an EA.
	18. Extent to which the tools is capable or can be manipulated to work across sectoral and administrative boundaries	The tool allows many different institutions to participate in the assessment process.
	19. Extent to which the tool can handle data shortages and gaps (or is effectiveness considerably compromised?)	In general an EA should cover as many ecosystem services as possible. Because an EA is not limited to monetary valuation areas where relevant data is lacking can be covered quantitatively and qualitatively. EA is flexible enough to handle data gaps and shortages. Primary valuation studies can also be conducted within scope of an EA to overcome data gaps.
	20. To what extent has/could the tool put landscape/nature conservation and designated species/sites on the radar (positively or resulting in	One main aim of an EA is raising awareness of the value of ecosystems. Especially when applied at the local and regional level this could put landscape/nature conservation and designated species/sites on the radar (of usually

resentment?)

uninterested/uninformed parties).

Please add any further comments here:

### Task 7: A SWOT analysis of the tool

Referring back to the relevant policy and academic literature (listed in Task 3), plus your own expertise (listed in Task 4) and the way in which the tool is situated within the priority questions/criteria (listed in Task 6), please complete a summary SWOT analysis ensuring that each point is well justified

Where possible, this analysis should reflect the tool's past and current application, as well as its effectiveness in policy and decision making processes

#### Strengths (of the tool in delivering intended outcomes)

- The flexible approach allows integrating qualitative, quantitative, and monetary valuation.
- An EA provides a comprehensive assessment of ecosystem services at a specific scale.
- Because relevant information is bundled it is easier for non-specialists to take up such information.
- Especially when scenario analysis is conducted as part of the EA it reveals trade-offs inherent in strategic policy options.
- An EA can bring many relevant actors and scientists together which can enhance interdisciplinary research and collaborations between academia and practitioners.
- EAs often catch the attention of institutions and actors which are usually not involved in relevant research.

#### Weaknesses (factors that detract from the tool's ability to deliver intended outcomes)

- The ability of an EA to support concrete decisions affecting the environment can be limited.
- There is no agreed framework that determines the elements and methods of an EA. This can make the comparison e.g. between national ecosystem assessments difficult.
- Because ESs are often undertaken by several research teams, different methods are used for different elements of the EA; but also to assess different ecosystem services. This can lead to double-counting and makes the comparison of values as well as adding up values difficult.
- Conducting an EA is usually very resource and time consuming. However, especially at the regional and local scale this is not mandatory.

#### Opportunities (consider opportunities for application of the ecosystem approach and services)

- EAs are not only relevant at the international and national level. Local and regional ESs are necessary to provide relevant information at a scale where many decisions impacting ecosystem services take place.
- Audience-specific summaries of EAs may enhance a wider understanding of the value of ecosystem services within communities that are usually not engaged with environmental issues.
- National coordination of sub-national, regional, and local EAs as well as international fora may add additional value to such assessments e.g. by transferring knowledge and data. This would also facilitate to upscale local and regional ecosystem assessments.

#### Threats (factors which negatively affect the tool and its outcomes)

Classify these by their "seriousness" and "probability of occurrence" in the table below, and pay particular attention to the threats associated with potential use of ecosystem approach/ecosystem services.

Threat	Seriousness (high, medium, low)	Probability of occurrence (high, medium, low)
The selection of ecosystem services to assess is often based on expert judgement. There is a danger that not the most important ecosystem services are	Low	Low

	<p>assessed; but the ones where the institutes, funders, or researchers are most interested in or where relevant data is best available.</p>		
	<p>National governments and other institutions may want to follow the trend of undertaking EAs without providing the necessary resources (time, funding and expertise) to undertake a sufficient robust EA.</p>	Low	Low
<b>Guidance</b>	<i>Please now use the remainder of the document (box below) to make any general comments, observations or analyses of the tool</i>		
<b>Further comments</b>			

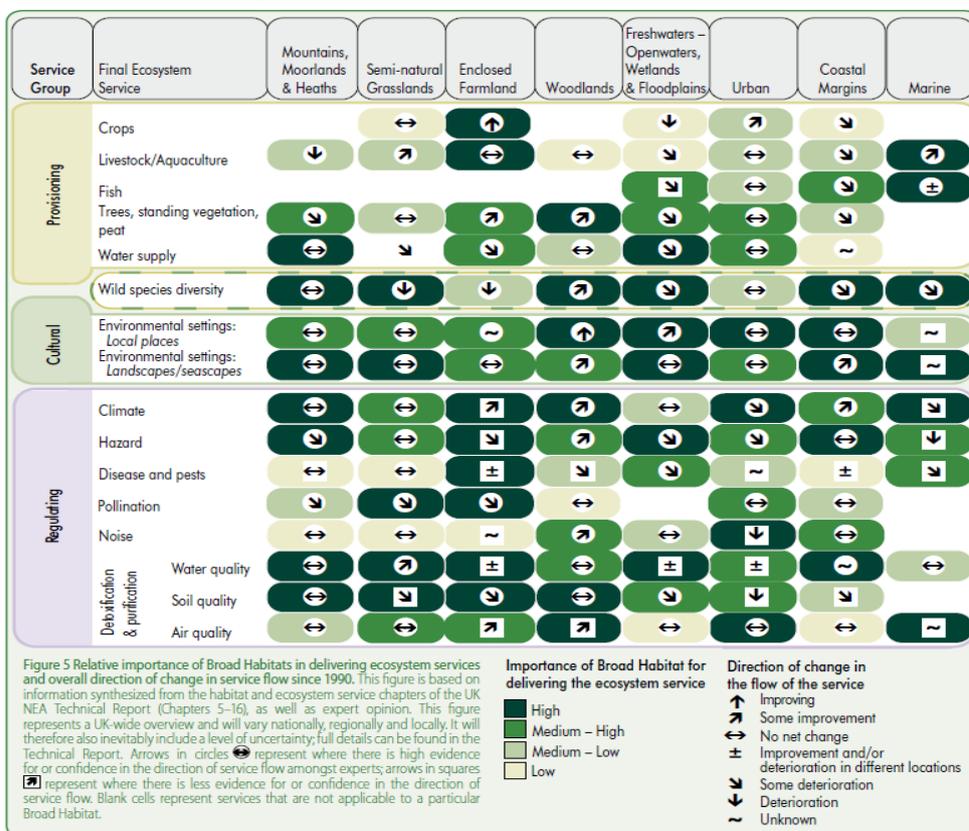
## Appendix A

### Summary of the contents of the UK NEA (selection)

The table below provides an overview of the key questions addresses in the UK National Ecosystem Assessment (UK NEA 2011a, p.22)

1. What are the status and trends of the UK's ecosystems and the services they provide to society?
2. What are the drivers causing changes in the UK's ecosystems and their services?
3. How do ecosystem services affect human well-being, who and where are the beneficiaries, and how does this affect how they are valued and managed?
4. Which vital UK provisioning services are not provided by UK ecosystems?
5. What is the current public understanding of ecosystem services and the benefits they provide?
6. Why should we incorporate the economic values of ecosystem services into decision making?
7. How might ecosystems and their services change in the UK under plausible future scenarios?
8. What are the economic implications of different plausible futures?
9. How can we secure and improve the continued delivery of ecosystem services?
10. How have we advanced our understanding of the influence of ecosystem services on human well-being and what are the knowledge constraints on more informed decision making?

Below you can find a basic assessment of habitat importance for delivering ecosystem services and changes of such services since 1990.



Source: UK NEA 2011a, p.11

## References

- Ash, N. et al., 2010. *Ecosystems and Human Well-being: A Manual for Assessment Practitioners*, Washington DC.
- Graham, M. et al., 2012. *Ecosystem Assessments in Europe*, SEI, Milieu.
- Hölzinger, O., 2011. *The Value of Green Infrastructure in Birmingham and the Black Country - The Total Economic Value of Ecosystem Services provided by the Urban Green Infrastructure*, Birmingham: The Wildlife Trust for Birmingham and the Black Country. Available at: <http://ceep-online.co.uk/joomla/index.php/projects-a-publications/75-the-economic-value-of-green-infrastructure-in-birmingham-and-the-black-country>.
- Millennium Ecosystem Assessment, 2005. *Ecosystem and human well-being*, Available at: <http://www.maweb.org/documents/document.356.aspx.pdf>.
- UK NEA, 2011a. *UK National Ecosystem Assessment: Synthesis of the Key Findings*, Cambridge: UNEP-WCMC. Available at: [http://archive.defra.gov.uk/environment/natural/documents/UKNEA\\_SynthesisReport.pdf](http://archive.defra.gov.uk/environment/natural/documents/UKNEA_SynthesisReport.pdf).
- UK NEA, 2011b. *UK National Ecosystem Assessment: Technical Report*, Cambridge: UNEP-WCMC.