



DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS  
STATISTICS DIVISION  
UNITED NATIONS

**SEEA Revision**

**SEEA Experimental  
Ecosystem Accounting**

**Comment form**

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## Comment form for the Consultation Draft

**Deadline for responses: 1 January , 2013**  
**Send responses to: [seea@un.org](mailto:seea@un.org)**

Your name:	Rocky Harris
Your country/organization:	UK Department for Environment Food and Rural Affairs (Defra) in consultation with the Office for National Statistics (ONS) and the Forestry Commission
Contact (e.g. email address):	<a href="mailto:Rocky.harris@defra.gsi.gov.uk">Rocky.harris@defra.gsi.gov.uk</a>

To submit responses please save this document and send it as an attachment to the following e-mail address: [seea@un.org](mailto:seea@un.org).

The comment form has been designed to facilitate the analysis of comments.

In Part I general comments on the structure and content of the draft document are sought. In Part II any other comments, particularly those of a technical nature should be included.

### **Relevant documents**

Before submitting responses you are encouraged to read

*Cover Note to the Consultation Draft*

*SEEA Experimental Ecosystem Accounting – Consultation Draft*

### **Part I: General comments**

In the box below please supply any comments on the structure of the document, the balance of material and the coverage of the draft including any thoughts on missing content.

Comments on the style, tone, and readability of the text are also welcome.

**Please reference paragraphs numbers or section numbers as appropriate.**

Defra and the ONS welcome the release of the consultation draft of the SEEA Experimental Ecosystem Accounting report. We think this is a very significant step forward in supporting the development of ecosystem accounts that follow an agreed set of principles and that explicitly relate to the SEEA Central Framework for environmental accounts.

It is important for us that the report covers principles for ecosystem valuation alongside principles for measuring flows and assets in physical terms. We see valuation (in addition to physical measurement) of stocks and flows as an essential part of an ecosystem accounting approach.

A monetary metric helps in assessing trade-offs and places the economic value of ecosystems on a comparable basis with conventional accounting measures.

We recognise that valuation in itself may not be sufficient when it comes to addressing questions of sustainability. Among other things, integrated ecosystem accounts would be the ideal framework to investigate unacceptable depletion or damage in relation to environmental limits/thresholds.

We still have general concerns about readability and the amount of repetition. Examples are given in the specific comments.

We agree the need for a glossary of terms.

## **Part II: Other comments**

In the box below please supply any additional comments including those of a more technical nature.

**Please reference your responses with the relevant paragraph number or section number.**

### **Chapter 1**

1.12 final sentence: development of “analysis of trends” rather than “trends”.

1.17 “uses of energy”. Not clear how this could be done within the ecosystem accounts. Policies relating to alternative sources of energy could be informed by the accounts, but not so much the uses. Final clause “uses of ecosystems”: better to express this as the trade-offs between the different services we get from ecosystems, rather than “uses of the ecosystems themselves”.

1.18 “part of landscape management”. Not sure what this is about.

1.19. Seems to repeat much of what has gone before.

1.20. It’s a fair point, but reads awkwardly and it doesn’t really come out what

you do with the information once you have it. If your natural capital is a fraction of your human capital, so what?

1.21. Needs a bit more qualification. The policy response is usually developed at an aggregated level but the intervention will be at a local level.

1.22. This is very tenuous: cross-border analyses might be possible but we doubt if we have any evidence for them. Should concentrate more on the possibility of more integrated analysis of global environmental challenges.

1.28. Repeats earlier text.

Section 1.5. The main argument for NSO involvement is that they are generally responsible for the National Accounts and this expertise is needed to ensure strong links with the SNA.

1.34 second sentence: Delete “be” and “also consider”.

1.42. Resilience crops up here and elsewhere, but it’s not clear how this fits in to the accounting framework or what the point that’s being made is. In practice it’s just one aspect of the quality assessment.

1.43 first sentence “crosses” rather than “cross”.

1.44 final sentence “other” residuals (as pollutants are also residuals).

Paras 1.47 to 1.51. This section needs to come before 1.40, otherwise it is not clear what the other two disciplines contribute to the accounting activity.

## **Chapter 2**

2.4 final sentence. The key location characteristic for us is proximity to areas of population. Climate is also important.

2.9. It would be useful to distinguish between characteristics which are in some sense “given” and those which are variable indicators of quality or condition. Land cover and biodiversity fall in the latter category.

2.13 second sentence. What are we trying to say here?

Figure 2.2. Human inputs affect the ecosystem processes and also the way in which services are delivered (as Figure A3.1 shows).

2.19. This dichotomy may not be helpful for the later discussion on overlaps with the SNA. For example, health benefits are reflected in the SNA (in terms of improved labour productivity) but are not produced by an SNA production process. Is the distinction really necessary? It crops up frequently elsewhere but does not seem to be an important distinction to have.

2.20 first sentence. Again, not sure about the words “used” or “activity”. Services may be passively received. Suggest “benefits to the economy and to society generally”.

2.22. This is right, but sits poorly with 2.19 which says that water is not an SNA benefit, and Fig 2.3 which has it as an SNA benefit.

2.23. Isn’t this true of all non-provisioning services?

2.25. Repeats earlier text.

2.30 first sentence. This is where a distinction between characteristics which are indicative of quality and those which are “given” would be helpful.

2.34. It’s important to note that not all service flows can be measured in physical terms. Non-monetary terms is a better expression, and is sometimes elsewhere in the text.

2.41. With respect to what is not articulated, important to note that the units for measuring characteristics both of quality and other characteristics as well as biodiversity are not discussed in this section.

Section 2.3. Agree with Australia’s comments generally. Not sure that the word “functional” adds anything to LCEU (it just makes it seem even more complicated than it needs to be!).

Table 2.3. What we are finding is that the expected flows of services from an ecosystem are not obviously related to the stock or condition at a point in time. Freshwater resources being a case in point, but also enclosed farmland where the land cover can vary significantly over the year. To do this properly we will need to take a view of the expected extent and state of the ecosystem over the accounting period.

2.86 seems to suggest making comparisons at the BSU level, whereas in practice these comparisons would have to be done at a more aggregated level.

2.99. The time period of 1 year may be sensible from an accounting point of view, but would be difficult in terms of data availability e.g. for forest inventories.

2.104, 2.105. Repeats earlier text.

### **Chapter 3**

3.14 to 3.16 Ditto.

3.21 (iii). By national level assessment, do you mean a specific provisioning service assessment whereas from a broader ecosystem service perspective a distinction between cultivated and natural yields may be more relevant?

3.24. It is just worth noting that this approach should obviously exclude production from intensive systems that have minimal reliance upon local ecosystem services (e.g. glasshouse production and pig or poultry sheds - which use piped mains water, imported growth media or animal feeds, and electricity to control the micro-climate).

3.36. Delete references to abiotic services as already noted (several times).

3.37. Combine with 3.4.

3.39. Repeats earlier text.

3.42 first sentence. The primary consideration must be to organise information by type of ecosystem/land cover type, as shown in Table 3.2.

3.42 second sentence. Is the distinction between those benefitting from and those using (see first sentence) the services intended?

3.44, final sentence. This isn't necessarily true as it will be possible to allocate the share of the relevant service pro rata to the amount of the LCEU which is in each EAU.

3.74 last sentence. The CBD argument (with which we agree) is that this is the problem: a focus on provisioning services has led to the degradation of ecosystems and the loss of other services. It would be better if this sentence were strongly qualified.

3.76. By 'production volumes' we mean amounts of water abstracted for drinking and for irrigation?

#### **Chapter 4**

4.52 to 4.54. Needs some mention of marine areas. A challenge for us is also how to deal with linear features (small rivers, coastal margins, drystone walls, hedgerows etc). Although some of these don't change in extent, others do.

Table 4.1. The inclusion of groundwater is relevant to the hydrological cycle and provisioning services but doesn't fit well with the two dimensional approach to the measurement of 'extent' - this needs further discussion.

Table 4.2, Para 4.60. As noted above in the comment on 2.9 above, there are some characteristics of ecosystems which are variable and relevant to the provision of services such as management regime, access etc. These need to be covered in Table 4.2 and the subsequent text.

4.68. Reference should be to Table 4.4 not Table 4.3.

4.71. Other factors besides the Leaf Area Index may be important, for example

in urban areas in the UK it may be that height above ground is a relevant factor as hedgerows and shrubs have been found to be more effective than trees in terms of air filtration.

4.124. We have found that indices of species abundance are better expressed in a logarithmic form and need to take into account i) declining species which fall below the level of reliable random survey detection (by freezing the index for that species at a suitably low level) and ii) naturally colonising species (introduced into the indicator at the average level of the indicator in the year of introduction. It's also useful to have measures of invasive non-native species.

## **Chapter 5**

Generally speaking we think the chapter is a big improvement although it still needs further work on linguistic precision.

The chapter could perhaps be clearer on the need to separate the value of ecosystem services from the value of other inputs. Such things as fishing effort need to be excluded from the value of the fish harvest. This is something that was dealt with successfully in the valuation methodology for the UK's National Ecosystem Assessment. It is more of a reminder for the economists carrying out the required valuation study but it is worth emphasising and also links to the Annex to Chapter 3.

Overall, there is a good attempt to appreciate the importance of valuation of non-market goods. However, a very cautious approach is taken in describing the valuation techniques. The cover letter stated that the purpose of this document is not to set standard, but to mark the beginning of a more integrated research programme in Ecosystem Accounting. Therefore, it is recommended that a more ambitious approach should be taken for the research agenda. This research document should allow the challenges to be explored instead of limiting its scope.

Though this chapter recognises various valuation techniques, a number of them are not carefully assessed. While we agree the valuation of ecosystems should be consistent with the SNA, this should not limit the document to reject certain valuation methods which are not consistent with the SNA valuation principle. Instead these should be recommended for further research.

We should recognise that SNA has limitations and this is the very reason we are going beyond SNA. On one hand, it is recognised that SNA has flaws because it does not take into account those transactions that are external to the economy, yet we are valuing the environment and ecosystem using the valuation methods that are part of the economy (SNA). Nevertheless, there are a number of methods that are in principle consistent with the SNA valuation, but this chapter is weak in recognising them.

This chapter is rather weak on revealed preference methods. Most of these methods are capable of producing estimates that are consistent with the SNA as they allow one to derive a demand curve and calculate an area that excludes the

consumer surplus. Revealed preference methods especially travel cost method are well established and are being used for decades. The travel cost methodology is based on well-established economic principles. There has been extensive use of this method in peer-reviewed literature, dating to 1947 when Harold Hotelling first proposed it. This method involves using generalised travel cost as a proxy for the prices of visiting outdoor recreational sites and as a basis for estimating a demand curve.

This document has almost dismissed stated preference methods but we should recognise that stated preference methods can be used where other alternative methods are not viable. There are a number of researches on this and a lot of academics are pointing to this method, though there are some who disagree as well. Dismissing this altogether would be a missed opportunity.

The contingency valuation method (CVM) is a widely used nonmarket valuation method especially in the areas of environmental cost benefit analysis and environmental impact assessment. Its application in environmental economics includes estimation of both nonmarket use values and non-use values. The main concern with this method is the reliability and validity of the responses. The concern is whether the individuals would really pay the amount stated in the survey. This issue has been subjected to a great deal of empirical testing and debate and while there is a range of views among environmental economists on the potential of CVM to yield reliable findings, carefully designed studies have proved capable of producing reliable estimates.

This chapter has considered two main valuation methods - revealed preference and stated preference; however, there is another emerging method - life satisfaction approach, which should also be considered in this chapter. As it is not based on observed behaviour, the underlying assumptions are less restrictive and non-use values can – to some extent – be measured. Furthermore, individuals are not asked to value the public good directly, but to evaluate their general subjective well-being, life satisfaction or happiness. Though this method has not been used widely, it has been applied in a number of studies in the UK and some other countries, and is worth considering further (see for example the discussion in the UK Government advice on evaluation, at [http://www.hm-treasury.gov.uk/data\\_greenbook\\_index.htm](http://www.hm-treasury.gov.uk/data_greenbook_index.htm), Annex 2).

There is not much emphasis on option values and non-use values. Chapter 5 on page 84 has discussed option values in terms of insurance against possible losses, and a similar concept of insurance against future losses could be applied to non-use values.

In valuing the ecosystem and ecosystem services, if we could use proxies by observing a parallel market, regardless of the method used, we will not be including consumer surplus.

5.1 Non-market valuation techniques estimate the value that people place on things for which market prices do not exist, like ecosystem services. As such under certain condition they can offer a basis for estimating the value of non-market transactions within an ecosystem accounting context. So we suggest replacing last two sentences with: As a consequence, economic principles must

be applied to measure the prices that would have been paid for the various ecosystem services and assets even when these prices are not directly observable.

5.2 There are different methods but the conceptual approach to valuation is the same - the idea being to estimate the area under the demand curve in order estimate consumer surplus.

5.4 “either...or...” not “either...and...”

5.5 Deny people “the benefit” not “to benefit”.

5.15 *For estimates in monetary terms, the initial targets of valuation are ecosystem services.*

Does it mean that by adding up all the ecosystem services of an ecosystem capital, we get the total monetary value of the ecosystem? Or we are valuing the ecosystem capital separately? Could this be clarified?

5.22. Concept not conception.

5.23. Types and concepts both used here, the first is probably the better one.

5.47 to 5.59 It would be helpful if the text in these sections could be simplified.

5.56. The statement that *“Many of the valuation methods developed in the field of environmental economics include consumer surplus and are therefore less applicable in the context of ecosystem accounting”* is not true.

Perhaps this should be rephrased as *“a few of the valuation methods developed in the field of environmental economics include consumer surplus and are therefore less applicable in the context of ecosystem accounting”*.

Section 5.4.2. On valuation methods, we still have issues with the lack of sufficient caveats on the replacement cost methods and the excess of caveats on travel cost methods and revealed preference methods more generally. The section would be much stronger if it started with saying that given the conceptual framework of figure 5.1, any economic method that helps derive a demand curve can in principle support the determination of suitable marginal prices “P”, although in practice existing valuation studies may often report measures of average or aggregate consumer surplus. You could then talk about methods for estimating demand curves. The replacement cost method is a supply curve focused method and hence less directly related to value (though under specific circumstances may be a suitable approximation).

5.63 We are not sure it is right that with open access the resource rent approach is no longer valid. Ultimately accounting is about current management conditions, not ideal management condition. The counter-argument to this (for example from a conservationist perspective) is that it would lead to perverse outcomes (the more we deplete a resource the less it

appears to have value). But this can be highlighted by policy analysis informed by accounts, accounts need to be objective.

5.67 & 5.68 These are confusing and would be helpful if simplified and explained with examples.

5.71 The service is the sequestration of carbon, not the storage (which is a risk in terms of potential future release, as it is not permanent).

5.77. *Given that many of the valuation studies undertaken in the environmental economics literature are preference based...*

This is not true. A number of studies are observation based (revealed preference).

The discussion on travel cost and consumer surplus is now more balanced compared to previous version, but 5.81 is not entirely consistent with 5.77 and arguably redundant. Also the production function method discussion could be usefully expanded as this is a methodology that has been applied (or has been shown to be suitable in theory) to the valuation of regulating services.

5.78 Suggest: Give an example for clarity.

5.79 Suggest “characteristics of the house” not “properties of the house” – the use of property in this sentence doesn’t read well as it has two meanings.

5.80 Suggest: Additional sentence highlighting that this method often underestimates the problem – lack of information, myopic behaviour and complexity in calculating and understanding the issues are all reasons why people don’t do what is good for them.

5.81 Estimates the “value” not “price.” There is some confusion elsewhere in the text on these two terms. Also suggest highlighting examples of the costs for clarity, e.g. travel time, visit time, petrol costs.

5.82 Choice experiments – compare ecosystems with a market good? For example? Better explanation needed and an example.

5.84 Types of value not concepts of value.

5.85 How is this calculated? More detail needed, this comes across as a new and untested idea – therefore it’s uncertain and caution in using it should be applied.

5.87 Agreed although this section appears a bit suddenly, these points could be made earlier in the chapter.

5.98 Introduction of acronyms: Net Present Value (NPV).

## **Chapter 6**

Overall this chapter reads well but there are very strong caveats in 6.4 and 6.44 of this chapter which should be avoided. Point 6.44 (i) also states that “*there are strong contrary views about the meaningfulness.....*”. Not using the word “strong” will help to present a more balanced view.

6.4 (ii) This is too general. Better to say there are concerns from “part of the official statistics community”.

6.25 and 6.44: The discussion of weak sustainability may for balance reflect the argument that shadow prices would in theory adjust to reflect scarcity as specific assets become scarcer (and will approach infinity when substitutability approaches zero). Having said that it is probably fair to say that consideration of future scarcities is difficult to reflect in operational choices around shadow prices.

In a similar vein, the text could perhaps acknowledge that some authors (e.g. Ian Bateman after Karl-Göran Mäler) have discussed the possibility of developing “weighted shadow prices” to reflect thresholds and irreversibilities, even though this remains an area for further research .

Table 6.1. The table does not deal well with changes in stock resulting from human action which do not lead to catastrophic changes or additional regeneration. An example might be where woodland changes from unmanaged to managed woodland, with consequent increases in recreational benefits and improved flood protection and hence an improvement in the stock of the asset. Or where a reduction in management results in lower timber yields which are not catastrophic. The breakdown in Table 4.3 seems to deal with these changes more systematically.

6.34. The logic behind the first sentence is not clear: “*If ecosystem degradation is considered to relate only to reductions in ecosystem condition it is not possible to apply standard asset accounting models...*”. Why?

6.44 (i). “*Consequently, the approaches to valuation that are commonly used to integrate values of ecosystem services into standard national accounting structure may not be appropriate.*”

This is not true as some of them are. Perhaps “a few” should be added in the above sentence.

Section 6.3.2 Some examples will be helpful. It also needs a definition (or a set of definitions to reflect different perspectives) of ecosystem degradation in monetary terms. It should probably be something like “a reduction in the value of ecosystem service flows due to human activities”. The section could also then usefully expand on the various additions and reduction categories in the context of monetary ecosystem accounts. The SEEA Central Framework is much more precise in describing the approach to asset accounting in physical terms and we think it would help to have something similar. In this context we think it would

be useful to expand on the “Revaluation” category, which in the context of monetary ecosystem accounts is quite important as this is where changes in unit values (e.g. reflecting better estimates) or other methodological assumptions (e.g. around discounting) would be reflected.

6.37 to 6.39. These seem to suggest that what is called “damage-based” assessment (which one might term value, demand-based) is more problematic than restoration costs approaches, which seems inconsistent with the discussion in Chapter 5. It does on the other hand capture some of the issues of overlaps with Chapter 5.

Section 6.4.2. This section needs more a bit more work as to why wealth accounting is important. It should describe the rationale and the aim of wealth accounting to make it more understandable. There should also be a reference to WAVES project.

6.57 point ii): In fact location values can reflect the value of ecosystem services (e.g., properties, proximity to urban green spaces providing cultural ecosystem services).

6.57 point iii): The ABS was very clear when this issue came up at the margin of the PCT meeting in Washington that protected areas should be in the SNA boundary and that the practice of assigning them zero value as “unproductive land” was malpractice, and that at the very least they should be valued at the opportunity cost of agricultural land. There may be a widespread misconception that this land should not be valued in conventional accounts.

Section 6.4.4. The discussion about adjusted income aggregates seems rather dismissive, compared to the more balanced treatment of wealth accounts.