



DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS  
STATISTICS DIVISION  
UNITED NATIONS



System of  
Environmental  
Economic  
Accounting

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## System of Environmental-Economic Accounting 2012 – Experimental Ecosystem Accounting Revision

### First Global Consultation on:

**Chapter 8: Principles of valuation for Ecosystem Accounting**

**Chapter 9: Accounting for ecosystem services in monetary terms**

**Chapter 10: Accounting for ecosystem assets in monetary terms**

**Chapter 11: Integrated and extended accounting for ecosystem services and  
assets**

### *Comments Form*

**Deadline for responses: 6 July 2020**

Send responses to: [seea@un.org](mailto:seea@un.org)

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The comment form has been designed to facilitate the analysis of comments. There are twelve guiding questions in the form, please respond to the questions in the indicated boxes below. 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).

All documents can be also found on the SEEA EEA Revision website at:

<https://seea.un.org/content/seea-experimental-ecosystem-accounting-revision>

In case you have any questions or have issues with accessing the documents, please contact us at [seea@un.org](mailto:seea@un.org)

### Questions related to Chapter 8

**Question 1: Do you have comments on the principles proposed to underpin monetary valuation for the revised SEEA EEA, including the use of exchange values and net present value approaches?**

Exchange value is appropriate.

We are unclear on how the relationship between the economic units that own or manage the ecosystem assets that produce ecosystem services will be handled. Please see the comments on question 3.

**Question 2. Do you have any suggestions for topics to include in Annex 8.1?**

This will be a valuable part of this chapter.

It would be good to add in something on payments for ecosystem services.

**Question 3. Do you have any other comments on Chapter 8?**

We note the repetition of definition of exchange values in paras 8.7 and 8.10

Paras 8.1 and 8.9 environmental economics is the term used but ecological economics could be used and a mention of it at least needs to be added. Splitting hairs but use and mention of ecological economics may help to engage a broader spectrum of people in the discussion (or is this done/will be done elsewhere?). Similar argument for adding resource economics. Could be done once upfront and then note that a single term will be used from then on. A range of references are possible: e.g. I recently came across Van Den Bergh (2000), Ecological Economics: Themes, Approaches, and Differences with Environmental Economics, Tinbergen Institute Discussion Paper, No. 00-080/3, Tinbergen Institute, Amsterdam and Rotterdam  
<https://www.econstor.eu/bitstream/10419/85678/1/00080.pdf>

Para 8.5 I do not think this statement is completely true. There are schemes which provide payments for ecosystem services. Trading for carbon credits is an important example. While they may be limited in number they do exist, hence some qualification should be added. Indeed in para 8.17 the words “ . . . *ecosystem system services are not generally exchanged in markets* . . . ” are used. Increasingly there are schemes for payments for ecosystem services and these need to be recognised upfront and explained in some detail later.

8.18 This is an important paragraph and has implications for how the accounts can be used/interpreted. If, as is stated, the ecosystem asset is distinct and separate from the economic owner of the land on which the asset occurs on land owned/managed, then to what economic entity is attributed: (a) the value of the ecosystem asset? and; (b) the value of the ecosystem service flows? Maybe I have misunderstood the text or missed discussions/explanations elsewhere, but it seems that this means the idea of the environment/ecosystem as an additional sector is accepted and that the values will be attributed to this sector and not the sector that owns/manages the land on which it occurs (e.g. para 8.20). This is an area I am struggling with conceptually and wonder where this leads practically.

8.21 and 8.22 I would think payments for what are described as non-SNA ecosystem services would mean that these are then recognised within the production boundary and hence mean that they are SNA ecosystem services.

### **Questions related to Chapter 9**

**Question 4. Do you have comments on the range of valuation methods proposed for use in estimating exchange values of ecosystem services?**

Coverage is good.

Schemes for payments for ecosystem services should be added. In this, we think it is a market price and is directly observable in the scheme presented in the very nice Figure 9.1. They could be added as an example to para 9.23 but we think they may deserve a full paragraph (e.g. between the current 9.23 and 9.24).

The discussion of benefit transfer is essential and what we take to be the placeholder text from the SEEA-EEA is good start.

**Question 5. Do you have any other comments on Chapter 9?**

Para 9.3 – It is good that there is reference to the definitions, treatments, etc of ecosystem services of Chapter 6 and 7 but as they are not available, and notwithstanding the information in Section 9.2, our ability to pick up on any issues which might result from a different understanding of how ecosystem services are defined (including the scope of services covered) is constrained (and in this we note that Table 9.1 does not contain water provisioning as a type of ecosystem service).

The naming of the accounts seems inconsistent. You have an “ecosystem service supply and use account in monetary terms” and the “ecosystem monetary asset account”. For consistency, the latter should probably be “ecosystem asset account in monetary terms”

The relationship between the ecosystem service supply and use table in physical terms and monetary terms is critical. We suggest moving para 9.9 to be after the first sentence in para 9.3. This section from para 9.9 should be strengthened to recommend that a list of physical ecosystem services that are not translated to monetary terms should be stated

so that it is explicit and transparent that the monetary ecosystem services may be a subset. This point is stated in para 9.13 but may preferable to include all this information about differentiating ecosystem services that are included and not in the monetary account at the beginning.

Para 9.38 Avoided damage costs – the example of carbon should include carbon storage as it is the damage to the stock that is at risk.

On hedonic pricing (para 9.47 and 9.48), maybe some thought needs to go into how the price of each property is influenced by the production of ecosystem services (e.g. as for agricultural land) or by the use of ecosystems services from adjacent areas (e.g. a house with a sea view)

Purely presentation but for Table 9.2 the title could be clarified. Summary of methods for calculating exchange values by ecosystem service type. Also an “X” is used to denote where it could be used – a tick may be better. It might also be possible to rate the degree of appropriateness (i.e. a hierarchy of methods). This could be in the table (i.e. A, B, C, with “A” the best) or in some additional text.

### **Questions related to Chapter 10**

**Question 6. Do you have comments on the definitions of entries for the ecosystem monetary asset account including ecosystem enhancement, ecosystem degradation and ecosystem conversions?**

It is noted that in para 10.10 ecosystem enhancement is related to increased flows of ecosystem services. It should be made clear in the first sentence that this is due to increases in *physical* flows. Text later in the paragraph deals with changes in demand and in price. A worked example would help with understanding and this all gets back to the interrelationships between ecosystem extent, condition, conversions and ecosystem services.

Para 10.12 Suggest re-wording to align with terms used in Ch 5 ‘*Restoration occurs where the aim is to re-establish pre-existing composition, structure and function, including ~~biotic~~ ecosystem integrity*’.

Para 10.18 is important and relates to para 10.10, with changes in *physical* flows due to changes in management by economic units. This points to a case for expenditure on management as a potential measure of enhancement.

Para 10.20 is important with conversions based on changes in ecosystem composition, structure and function with consequent changes in current and future ecosystem service flows. The paragraphs that follow (10.21 to 10.24). This refers to chapter 4, but the as yet unavailable chapters on ecosystem services are also relevant. Since service flows are based to a large extent on management, then there is a case for the condition and conversions of ecosystems to be based on physical characteristics of ecosystem types and / or management that relates to the use of the ecosystem service flows (and this is alluded to in 10.24).

Conversions could be recorded in terms of both physical characteristics of ecosystem types (as columns) and management types (as rows under Ecosystem Conversions). This would provide a more complete picture than trying to distinguish between ecosystem types and management.

Para 10.21 it is noted that this crosses into the issues of units and their aggregation. It may be useful to add that where the conversion occurs in only part of the ecosystem asset, that area of the asset can be sub-divided according to the basic spatial units available.

For 10.26 there may be a need to have some more guidance on how catastrophic losses and changes in physical services flows (degradation) should be split. It seems catastrophic losses are “natural” one-off events (which begs another question with relation to fires, droughts and other events which are recurring and may be predicted, and natural and human causes can be difficult to distinguish), whereas degradation may be due to natural or human causes. Again changes are assessed against flows of ecosystems (not just composition, structure and function) as is demonstrated by the statement in the middle of the paragraph: “*the capacity of an ecosystem asset to generate ecosystem services*”.

10.30 Great to see the notions of bridging and back casting getting attention. As well as changes to data sources and methods, perhaps mention should also be made to changes in concepts or interpretation of concepts. This is a general issue, spanning all accounting, but may be worthwhile highlighting since some of the audiences for the document may not be so familiar with this aspect of accounting.

10.32. revaluations of service flows is one thing but what about revaluations due to changes in management and changes in risk? E.g. from agricultural land rezoned to urban land, and changes in risk associated with an asset such as coastal erosion or bushfire risk that change property values? Not sure if this is exactly the right place for this but an issue that needs consideration somewhere.

Section 10.3. This seems entirely based on valuing ecosystem service flows based on NPV. There are exchanges of the land on which terrestrial ecosystems occur and some attention should be given to this (and maybe it is elsewhere?)

**Question 7. Do you have comments on the recommendations concerning the selection of discount rates for use in NPV calculations in ecosystem accounting?**

A tricky area of much discussion and the text covers this. The text in para 10.65 is a good framing.

**Question 8. Do you have comments on Annex 10.1 describing the derivation and decomposition of NPV?**

Table 10.3 It would be easier to follow the table if the numbers added exactly (presumably a problem of rounding errors).

**Question 9. Do you have any other comments on Chapter 10?**

Chapter raises the issue of how the type of ecosystem is determined and when a particular area of an ecosystem converts (or changes) from one ecosystem to another. In this the definition of ecosystem type is physical. How to define ecosystem extent, ecosystem condition and ecosystem conversion and then identify the time of conversion in individual spatial units is an area that is being considered in different chapters and this will need coherence. In this the definition of ecosystems and condition, and their characterisation in physical and monetary terms are critical and interlinked. In particular, the distinction between ecosystem condition described as physical characteristics related to ecosystem integrity, or related to ecosystem services supplied (or could be supplied, hence ecosystem capacity). Further developments on the concept of ecosystem capacity will be needed.

Para 10.1 The statement in the last sentence, *'The estimates provide a measure of the exchange value of the asset and therefore are not intended to be a comprehensive measure of the value of nature'* is very important and good to note at the beginning of this chapter to distinguish between 'total value' and 'exchange value'.

## Questions related to Chapter 11

### **Question 10. Do you have comments on the proposed structure of the extended balance sheet that integrates the monetary values of ecosystem and economic assets?**

Table 11.2 and para 11.24 is not clear on where urban land should be placed. It is clearly excluded from the environment assets terrestrial ecosystems division and it seems it is included in the next subheading of “Land (provision of space)”, and with the additional split “of which land under buildings”. This raises a few questions: (1) is it right that the ecosystem is considered separate from the land on which it occurs? (2) is “land under buildings” the entire block of land on which the building occurs or just the footprint of the building (i.e. a house does not take up all space on a residential block), and; (3) given this, is it right that all other urban is under “Land (provision of space)”? If so, then I assume that there is scope to include other “of which” categories (e.g. land under roads, land in parks), (4) is there a place for the asset of the urban ecosystem, as distinct from just the provision of space?.

This then leads to other questions on what is included in the “*Terrestrial ecosystems (excl urban areas)*”. Here there is also land under buildings (e.g. in agricultural ecosystems) as well as land under roads and other human infrastructure (e.g. powerlines, pipelines). It seems that more consideration needs to be given to accounting for the land and where it placed. Paragraphs 11.43 to 11.45 are a start. It would be useful to note the definition of land in the SNA as an asset in the context of the traditional SNA balance sheet (perhaps add to para 11.44). It is noted that “provision of space” is not an ecosystem service and no doubt this will explained in the forthcoming chapters on ecosystem services.

If land is an asset for provision of space, then would this also apply to waterways that provide space for transport, aquaculture, recreation etc?

We support the addition of geological systems and atmospheric systems being included as environmental assets.

Para 11.46 on atmosphere and high seas is interesting. It can be argued that the various treaties and international agreements give effective ownership of at least part of these assets to countries and that it might be possible to attribute a value based on this. Conceptually I think there is a good case for them being recognised as assets and the question is really are these ecosystem assets or environmental assets – either way they are non-produced assets and for atmosphere this goes beyond radio spectrum. Specifically including in “Other non-produced assets” is an option (and could be explicitly suggested in para 11.47, effectively extending the definition of natural resources.

The atmosphere needs to be included as an ecosystem asset so that the transfers of carbon and GHGs can tracked in the accounts.

Section 11.4 is important and addresses key issues. The paragraphs within the section are all good. Our view is that multiple perspectives of the supplying units needs to be outlined. In this the supplying unit can be allocated based on its ownership/management by sector or industry or by ecosystem type with ecosystem type being defined in two way:

biophysically according to composition, structure, and function of units and (2) production of ecosystem services from the units.

Para 11.50 is very good!

**Question 11. Do you have comments on the approaches to assigning the ownership of ecosystem assets that underpins the structure of the extended sequence of institutional sector accounts?**

Paragraphs 11.55 and 11.56 seem odd. Our understanding from this paragraph is that the user of the services, where ever they are, is owner of the ecosystem asset that produces the services, where ever this is. It would seem more intuitive if there was producer or supplier based approach whereby the owner of the area (land) from which the ecosystem services originate was the owner of the ecosystem asset.

**Question 12. Do you have any other comments on Chapter 11?**

11.2 Is important as it gets to the issue of what is and is not within the SNA production boundary. Tradable emission permits are one example of an ecosystem service being brought within the production boundary but there are others (e.g. increasing phenomena of payments for ecosystems services) and reference to this could be here.

Para 11.4: Linking of spatial areas to economic units is something that should be explicitly mentioned in the second sentence (or could be added as a new sentence).

Para 11.5: In addition to the notion of ownership, it may be worth highlighting the notion of effective ownership as this may not be familiar to those unfamiliar with the SNA or SEEA.

Para 11.6: The economic units (establishments, enterprises, households) and the ways economic units are aggregated to sector and industry is important. The issue could be covered here or in chapter 3 with a reference made back to chapter 3 and the relevant parts of the SNA.

Para 11.8: a very nice summary

Para 11.12. Since Chapter 7 is not yet available, part of this paragraph cannot be fully interpreted (and here we are thinking of abiotic services and in particular nutrient provision from soil and water provisioning from ecosystems).

Table 11.1: This works. An alternative presentation would also be useful. This presentation would show the ecosystem services being supplied by the industry or sector supplying the services based on land ownership/management. This allocation of services to industry and sector would be based on ownership of the land on which the services are produced. Works for terrestrial and marine areas. (e.g. government for marine and could be extended to other sectors and industry in the case where catch rights are assigned or “zoning” for fishing and other activities occurs).

Section. 11.5 on an integrated sequence of sector accounts is very useful and the example presented in Table 11.3 and described in the text help greatly. Here an issue is that ecosystem services are defined by use rather than by production. The SNA sequence of accounts starts with a production account. In the case of ecosystem accounts the sequence would start with an ecosystem services use account and work back to the production.