



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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Organization & country:	Eurostat

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?**

Eurostat considers the chapter is extremely well written. Very clear and to the point. Congratulations to the authors!

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

The outline looks good mostly, but should be extended to cover the conditions under which markets yield efficient prices, the consequences of different forms of market failure, and the extent to which shadow prices/valuation methods can be used to produce values in such situations. More generally, it's important that the annex cover the limitations/critiques of valuation, both exchange and welfare methods, which should be kept in mind when interpreting accounts, appraisals and any other application of valuation evidence.

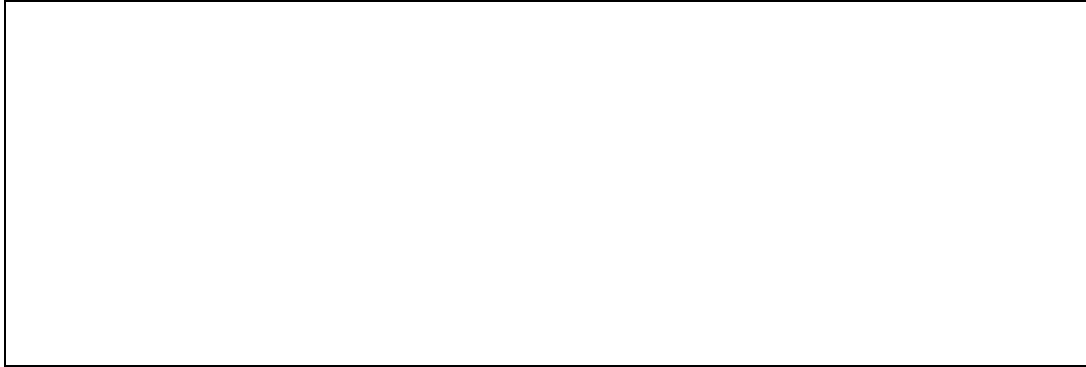
I have concerns regarding the outline for part 3, in particular "Assumptions in using GDP to measure aggregate welfare" – to paraphrase Robert Kennedy, the main assumption would be ignoring "that which makes life worthwhile"; to quote Kuznets, "The welfare of a nation can scarcely be inferred from a measurement of national income."

I think it is vitally important that chapter 8, annex 8.1, and indeed the whole process, avoid falling into the trap of presenting exchange values and accounts as "close enough" to welfare that the differences can be ignored. It should be possible to establish the usefulness of the accounts without claiming that they can achieve everything and without diminishing the importance of welfare measures. Otherwise, there is a clear risk of perversely hindering decision-makers' ability to think appropriately about human-environment interactions.

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

8.1 "Without market prices or some other form of economic valuation, there is no economic signal for scarcity and quality" – as previously pointed out, quantity/demand is also an economic signal, and should be picked up in physical accounts. So that statement is not correct.

8.2 "assessing the relative **importance** of ecosystem contributions to production in specific industries and their supply chains" – again as previously indicated, this is incorrect. Exchange values might be good for assessing relative scarcity, but are largely useless for assessing relative importance (some of the most important inputs are not scarce). Consider using a different term.



### **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?**

While the range and description overall is comprehensive, it does not cover deliberative or group methods. These may not be preferred methods (but might be better than no data) and this could be worth explaining to avoid impression they are ignored as options. It is unclear to us if these will feature elsewhere in the guidance, but an active database of studies that demonstrate application of these methods specifically for accounting would be helpful. It is also worth considering that deliberative methods could explicitly target exchange values rather than welfare value – i.e. focus on what participants would consider a “reasonable price” (in contrast to a focus on maximum willingness to pay as in stated preference surveys).

As an important comment, the methods are all described as if exchange value compatibility is key (as also stated in para 9.18: “However, the techniques are discussed here exclusively in relation to their ability to support the imputation of exchange values for ecosystem accounting purposes.”). It could be up to countries to decide to what extent exchange values and/ or welfare values best fulfil their decision-support requirements (or similarly, which hypothetical institutional arrangements they consider most appropriate for imputing simulated exchange values). This needs to be mentioned clearly and to some extent also in the introduction to this chapter, referring to the discussion on welfare values in in the (forthcoming) chapter 12 and Annex 8.1. (see related note in the current chapter 9.5).

Regarding the summary table 9.2, and while they are most commonly used for regulating and maintenance services: replacement costs, avoided damage costs and defensive expenditures costs methods can be used for all three service categories and should be noted as such.

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

Regarding section 9.5:

We suggest to change “benefit transfer” to “value transfer” since the value can be positive or negative, not necessarily a benefit, and this accords with current common terminology in economics.

Updating the information on value transfer is crucial, since the majority of environmental valuation is done by value transfer (rather than primary research) and significant developments have taken place since 2012 on the issue. The summary of relevant work to be completed by Mid-2020 (see note in chapter 9.5.1) to be included here is welcomed, as well as in a related (more detailed) guidance.

Para 9.13: is very useful and should be expanded by: “Data about non-priced ecosystem services in physical terms will remain relevant for policy making. Key (or all) “non-valued services” need to be recorded so policy makers know what is not covered by the values.”

Para 9.39 states that “expenditures incurred are considered a lower bound estimate of the benefits of mitigation, since it is assumed that the benefits derived from avoiding damages are at least equal to the costs incurred to avoid them”. However this is not always appropriate, in particular where there are secondary benefits. The cited example of “air conditioning for avoiding polluted air” is one such case, because air conditioning will also contribute to thermal comfort, so it becomes necessary to estimate how to split the cost across these different benefits.

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

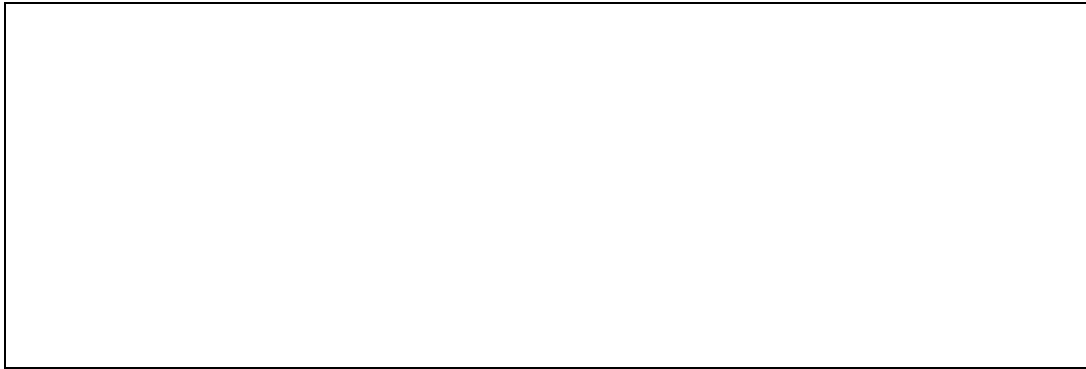
#### **Question 6. Do you have comments on the definitions of entries for the ecosystem monetary asset account including ecosystem enhancement, ecosystem degradation and ecosystem conversions?**

In general definitions are ok.

In 10.7: ‘The additions and reductions shown in that account in physical terms will align with the additions and reductions in monetary terms that are recorded under ecosystem conversions’. Rather than align, isn’t it that they are an input to.

In Table 10.1. You might not always be able to calculate the value of enhancement and degradation separately. It is acceptable to net them in physical terms and calculate the resulting value.

In 10.12, I don’t think the distinction between restoration and rehabilitation will be practical in relation to calculating ecosystem services values (especially since both activities have the same practical examples: “...may be achieved by reducing the degree of human impact, for example by reducing stocking rates on grazing land, by reducing the release of pollutants, or by separating or re-zoning areas as being the focus of restoration and rehabilitation”).



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

Para 10.64 and 10.65 suggest different discount rates for different benefits and this is contradictory to the idea of time preference for utility driving discount rates.

The guidance should also consider the influence of income uplift, and whether some future benefits from the environment do not decline with income (due to a lack of substitutes – as per the approach to discounting human health effects in the UK).

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

In 10.1 chapter talks about the 'exchange value of an asset'. This makes it sound like ecosystems assets can be bought and sold, and while some can, others are public goods and cannot be. This phrase invites criticisms that accounting leads to commodification of nature, which is not what SEEA-EEA is trying to encourage. Should be: '...measure of the exchange value of the goods an asset produces'.

In Table 10.2, it would be useful to explain why  $t_0$  yr2, is not the same as  $t_1$ .

For Table 10.6 and related text: There might be interactions here, such as a change in volume affecting price. But generally most EAAs will be price-takers for commodities like crops, fish etc that are widely traded, so effect likely to be very marginal. That might be worth explaining.

A key issue being described on page 20 is threshold effects: If the change in an asset/ service is too large, the marginal pricing assumptions no longer hold. Explicit mention of thresholds would be useful.

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

Para 10.48 seems a bit confused.

In para 10.50, the caveats are right, but apply equally to market and non-market values. Please avoid putting stricter criteria on values for ecosystem services than for other goods and services.

Section 10.3.4 is good, but would recommend good practice as a table laying out assumptions on future trends of physical flows and monetary values, to demonstrate consistency.

A major area of technical progress required is in translating CC scenarios into accounting trend assumptions to estimate asset values.

**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?**

The examples are useful and make the main body text descriptions much clearer.

It basically builds in ES add-ons to SNA data which in principle is fine but SNA values may be a constraint in some cases (e.g. market based valuation of land)

It seems to allow other (non-SNA) values but this chapter does say much about the basis of valuation and what is suitable or permissible.

New values are add-ons (new line or columns) to make these additions transparent which is a good principle. The practical risk is it may need too many lines/columns to adequately account for an area and so drive complexity.

In response to the above, items to be included in accounts will need to be selected on a materiality basis which will need some thought.

The accounting framework structure is ok, question is how feasible this is in practice (e.g. to populate). Tables are straightforward and show 'units of ecosystem service' as intermediary services contributing to units of economic production. But what does that mean in practice, what is a 'unit of ecosystem service' and how do you disentangle and remove them from the current 'unit of economic production', where is the data going to come from, and how readily are the economic producers of 'units of economic production' going to 'let go' of the value added assigned to them to be reassigned to environmental assets. There was some discussion in earlier chapters seeking to define "ecosystem service providing units" which had challenges.

**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?**

It is interesting and probably requiring of more thought to how it is applied in practice, a bit difficult to interpret what the implications are in 'real life' of such an approach without further example of its application.

The text states "solely for the purpose of integrating ecosystem accounts data with standard sector accounts", this may be the purpose but does defining ownership in this way potentially lead to other complications? Are there cases where the same portion of value might be 'owned' by multiple sectors? Or, where disaggregating value is not sensible? What is the policy implications of which sector shows that value in the accounts? Does recording ecosystem service to a hypothetical 'ecosystem trustee' lead to preferable understanding of value than just recording against the environmental asset more generally? Does this affect how natural capital maintenance and depreciation costs are conceptualised, and where that would be recorded?

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

Some discussion of the 'purpose' and the 'how', which is good and has been missing from other chapters.

The text talks about non-substitutability of assets and their thresholds (great observations) but this type of accounting doesn't seem suited to providing an early warning of assets under threat (a problem with historic reporting and may be too much to ask from a system of accounting).

Some phrasing is a bit unclear, we can interpret the implied meaning but could be phrased more straightforwardly – e.g. 11.2 last sentence; 11.22 "included as categories of other natural resources" (?), 11.44 (see comments below).

11.2 – under point (b) – yes this is true for national level accounts (intermediary benefits netting out), but not sub-national or ecosystem / benefit specific accounts, in which case reporting intermediary benefits would be useful.

11.17 – seems to imply wealth accounting only in terms of exchange values, does not clearly mark distinction between different types of accounts.

11.19 – Good to acknowledge issues around substitutability, but not clear why the accounts will help framing concepts of strong sustainability/CNC? Information on these things is important alongside accounts but more something to be fed into accounts than arising out of them

11.20 – assumption of constant flows, while practical, is problematic, basically 'assuming things are fine until they are no longer fine' (ie again this info feeds into accounts but does not arise out of them).

11.24 - Inclusion of atmospheric systems as a 'realm' may need more thought. Sub-soil minerals assets included in natural capital accounts, but not generally ecosystem accounting.

Table 11.2 - Above spoke of 4 realms, now reporting different 'levels' alongside realms? Seems a bit inconsistent to mix together.

11.28 – a limited definition of value, and somewhat dependent on applied 'institutional context', to what degree is other value (e.g. TEV) additional to SNA considered? Especially where 0-pricing of assets or services is the most probably structure for some environmental assets / benefits.

11.33 – “THE value for all of these...” – yes, but only by a limited definition of value (should be stated).

11.36 - The fact that they can be used like a fossil fuel does not disqualify them as an ecosystem, they are the result of ecological processes and are an active component of ecological processes. Peat should be considered an ecosystem asset, or that it can be either based on different aspects of the asset. If considering a carbon store then recognise as an ES, if used as fossil fuel then treat as an energy source. Usually there is no/little conflict between minerals/fossil fuels and ES, but peat and hydro are two assets that rely on ES. Needs more thought. Should probably be recorded as both, if used as a fossil fuel, because as well as the energy, getting a decline in ecosystem quality/services/asset

11.39 - Not sure this is quite right, for solar power, fine land is effectively a passive recipient, for wind, there are some dynamic biophysical processes (evapotranspiration cools air, land cover types impact rate of heating / cooling of land, respiration of microbial sea life may impact sea surface / atmosphere dynamics, all of which may impact wind provision), but this may be hard to assess. However, the water cycle is clearly dependent on upstream interactions between ecosystem processes and other biophysical factors (e.g. rate of water retention), which should be attributed value of hydropower generation. Is this what is meant by 'surrounding area'? If so, could be made more clear, some of these processes may in fact occur very far from where the benefit is realised.

11.41 – So, water only has value where it is scarce enough to merit ownership. This is problematic.

11.44 – 1<sup>st</sup> sentence confuses with above statement that the value of solar, wind and hydropower resources should be attributed as value of land for provision space for the collection of energy from these sources.

A bit unclear on “the total value may be greater than the value of the aggregated ecosystem services”, but presumably that the provision of space is valuable but not counted as an ecosystem service and thus not aggregated in asset value which is sum of service flows? Could be clearer.

“Provision of space likely predominant aspect of total value” – not necessarily, the provision of ecosystem services from urban ecosystems very well may be greater than the economic value of the land (i.e. for other uses), but that this doesn't very readily show up on things like SNA. If the point is rather that the hypothetical economic value as currently measured by SNA is greater from alternate uses of the land than appears in SNA from ecosystem services - well yes, but this is the problem that is trying to be addressed (also, some clarity needed, as provision of space for recreational activities could be interpreted as an important ecosystem service). This is a failure of market-based valuation. The market value of land is assumed OK assumption for all urban land, forgetting that a mix of land use is in part what determine its value. Over the whole urban area, space provision may dominate, although the "ecosystem" parts of urban areas could be more narrowly defined.



The concept of the 'value of space', when divorced from the provision of ecosystem goods and services or economic activity associated with that space, implies alternative use of that space (opportunity cost). For urban ecosystems, the value of provision of space is likely high (e.g. land use for economic production), but so to is the value of ecosystem services (e.g. many more people benefitting from clean air, recreation, urban cooling, noise mitigation, iconic-ness of central parks, tourism, etc.). These values may not appear in SNA or SEEA-EEA, but they exist, and so it may be misleading to make a generalisation that the 'provision of space' is the predominant aspect of total value. Space provision may be predominant \*on average\* in urban areas, but probably not at the margin, where urban green space is under-provided.

11.46 – Value of radio spectrum – seems a bit odd for inclusion, is this an ecosystem service? The value of which is attributed to the 'atmosphere' as a realm, or an environmental asset? Or is some other use meant?

11.69 - Extended SNA described here ok, but wouldn't more focus on this (theoretical relationship between national accounts and welfare), and discussion on supplementary welfare accounts, be valuable here. References Annex 8.1 but note that annex 8.1 has not been written yet, there's just an outline (on which we have commented in review of chapter 8).