



DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
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System of
Environmental
Economic
Accounting

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

Name:	Dennis Fixler
Organization & country:	Bureau of Economic Analysis, United States

*With comments and contributions from Ken Bagstad (kjbagstad@usgs.gov), Julie Hass (jlhass@gmail.com), and Scott Wentland (scott.wentland@bea.gov)

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.

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

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?

1. The renewed emphasis on the use of exchange value as defined by the SNA is one of the key strengths of the chapter, though the chapter at times seems in conflict with paragraph 3.121 in SNA 2008 that exchange value means price—the chapter generally takes exchange value as price X quantity but occasionally implies that it means price. For the most part, the chapter is geared toward National Statistical Offices (NSO) who would compile national ecosystem services accounts, rather than environmental economics studies (as stated in 8.8: “monetary valuation undertaken for the purpose of accounting will regularly differ from estimates of welfare values obtained in environmental economic studies”). This is essential for purposes of both comparability to the SNA accounts within a country and comparability across countries with a more uniform approach.
2. Acknowledging cost-based techniques in paragraph 8.12 as being analogous SNA valuations of public sector education, health, and defence expenditures was a useful parallel, but there are important caveats with cost-based techniques (some of which we discuss below) where it should be clearly noted when they are appropriate in the context of SNA-based value.
3. The chapter should expand its discussion of separability issues and move it to earlier in the chapter. There is a brief mention of this issue near the end in paragraph 8.27, but describing the ecosystem service flow in the beginning of the chapter should cause the reader to view the valuation discussion somewhat differently. Ecosystem services might be properly classified as joint production of the service flow from the asset and not a separable service. However, when valuing the asset value of a forest, paragraph 8.24 mentions multiple services: “this EA is considered to supply a number of ecosystem services to different users (e.g. timber provisioning services, air filtration services, recreation related services).” If a forest is sold for its timber, and the trees are logged, it cannot then continue to provide the other services simultaneously. Paragraph 8.27 uses the hotel example, where there are multiple services flowing from an asset, but the services mentioned are often mutually exclusive unlike ecosystem services. These separability issues do not seem to be sufficiently clear in this chapter.

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

1. To what extent will the chapter 8 annex undermine the chapter’s current emphasis on SNA-based valuation? Specifically, p. iii mentions that, “An annex will be drafted for Chapter 8 describing the conceptual connections between the exchange value approach used in the SEEA and other monetary valuation concepts.” While a draft of the annex is not yet available, and it is difficult to discern what its content will be at this stage, one possibility is that deviation from the SNA-based exchange value approach could overly broaden the definition of value by including a tacit endorsement of consumer surplus and welfare value approaches via this annex.
2. Footnote 5 points out that, “the term benefits is used to reflect the concept of output (rentals) and is not intended to be considered in a context of a description

of the outcomes or well-being associated with economic activity,” which is an important idea that should be carried through the annex, too.

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

1. The chapter cites the part of the definition of market prices from SNA 3.119 3.120 and 3.121, but that SNA paragraph goes on further to say that, “A market price defined in this way is to be clearly distinguished from a price quoted in the market, a world market price, a going price, a fair market price, or any price that is intended to express the generality of prices for a class of supposedly identical exchanges rather than a price actually applying to a specific exchange.” This definition is difficult to reconcile with proposed valuation techniques like simulated exchange values or state preference approaches like contingent valuation and choice experiments.
2. §8.2 clearly states that the motivation is to make ‘consistent comparisons’ in the context with standard measures from the national accounts based on economic activity. This means that the valuation is supposed to be compatible with the national accounts, closely following SNA-based valuation concepts. However, at the end of this paragraph it also clearly states that deriving degradation adjusted aggregates is another goal. To what extent are these two goals in conflict?
3. §8.20: It may also be possible that benefits generated by ecosystems within a country are enjoyed by users outside that country (e.g., soil erosion control that benefits downstream/downwind nations). That may also contribute to different users of the same ES having different exchange values.
4. Paragraphs 8.21-8.22 discuss ecosystem services that are inside or outside the production boundary of the SNA – but there is only one reference to this – and this topic is not very clear in chapter 9. The example provided is that of pollination which is within the production boundary for agricultural output, but air filtration services are not implicitly included in the national accounts measures of output. Determining if an ES service is in or out is an important factor in figuring out valuation, i.e., whether the valuation is included or excluded from products already included in the national accounts. The text does not provide enough guidance on this topic – and could lead to double counting of values already included in the national accounts.

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?

1. The range of valuation methods is too broad and includes methods that do not estimate exchange values. For example, the stated preference methods do not correspond to SNA-based exchange values. Specifically, with a contingent valuation method, “respondents are asked about their willingness to pay for, or willingness to accept, a hypothetical change in the level of provision of a good” in paragraph 9.52. Willingness to pay, by definition, traces out the demand curve, *not* the market price. Paragraph 9.51 admits that, “A typical application of these methods yields values that include consumer surplus,” as one would take the willingness to pay and subtract the price paid to yield a consumer surplus (and if there is no price, the surplus is simply the willingness to pay). Hence, including stated preference methods here makes no sense. Further, the simulated exchange value (SEV) method does not seem to be consistent with SNA-based conception of exchange value as described in §3.119 of the SNA either. SEV may be more appropriate for welfare-value and consumer surplus, which is explicitly out of bounds here (as stated in 9.18). Conceptually, the replacement cost method also raises concerns about whether it fits with the conception of exchange value. To the extent that any of these methods can estimate exchange values, the chapter should be revised to say more explicitly how, or remove the method entirely. Please note that Figure 9.1 and Table 9.2 would need to be revised accordingly.
2. Paragraph 9.21: It states that, “However, it should be recognized that different techniques may generate substantively different estimates of exchange values and hence, convergence-validity between methods would need to be checked to quality-assure all estimates.” This is an important point. How should it be reconciled if certain techniques generate very different results? Should a rule of thumb be conservative? Should there be a hierarchy of values that more closely approximate exchange values? If this is left to the discretion of the compilers, without detailed guidance here, the result will be wildly incomparable estimates of the same types of assets across countries due to differences in valuation technique. Nor will it be obvious to the general public why the same type of asset seems to be valued so differently. Part of the problem is that Figure 9.1 implies the various methods are equivalent substitutes and they are not.
3. Paragraph 9.47: How is the hedonic method aggregated? Or, any of these methods for that matter? Once you obtain a marginal value for an ES based on home prices, for example, this is only representative to people who actually value this service. Do you only use the people who live in the homes surrounding the ES (assuming the amenity valuation decays with distance)? Or, is it assigned to the population?
4. The discussion of many of these methods seem steeped in micro-studies that value these ecosystem services on a small scale, but one of the major challenges for a national statistical office would be scaling these estimates up to the national level, and there is little attention to these details in the chapter.

5. Section 9.4.4: Conceptually, the benefits of cultural services seem to be, in large part but perhaps not exclusively, measuring consumer surplus and welfare value, which is why it alludes to stated preference methods. This is problematic.
6. The issue of separability comes up in 9.67 indirectly, as it is stated that, “Furthermore, ecosystems are likely to be highly interdependent. The value of one unit of an ecosystem is therefore likely to be contingent on the existence or proximity of other ecosystem components. In these situations, asset values are known to be interdependent rather than unique (as is the case with values revealed on regular markets).” To what degree does this interdependence create double-counting issues or separability problems for aggregation?

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

1. Para 9.18 seems to indicate that some of the techniques will also include consumer surplus and thus be giving a ‘total welfare value’ but there is no indication how or if this can be avoided or eliminated. This seems to be unclear.
2. Paragraph 9.33: It states: “The value of the change in the ecosystem service is therefore estimated as the change in the market value of production consequent upon a change in the supply of the ecosystem service.” Should there be a qualification here that this is conditional on the production continuing to use the ecosystem service the same way over time? One could imagine production processes changing or responding to relative prices of inputs, thus impacting the estimates using the productivity change method.
3. Tables 9.1 and 9.2 have a note stating that the table will include ‘an agreed set of ecosystem services.’ This seems to be a fundamental missing piece of this manual – should not there be agreement on a set of ecosystem services to populate these tables? When is this going to happen and how will this be decided? Further, are there examples of countries that have actually filled in these supply and use tables with real data for a country or region? Or is this just a theoretical exercise that has not been tested? Is it even possible to fill in these tables?

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?

1. The explanations of degradation and conversion are confusing and need further clarification. The description for degradation seems to also include conversion – for example, timber harvesting which in the case of clear cutting is both a conversion and a degradation. Harvest is a discrete and recognizable event – so would it be considered degradation (10.15)? But then this is also described as an ecosystem conversion (10.21). The treatment of harvesting is not clearly explained in the text. The chapter should be able to speak to these types of examples in order to facilitate implementation of these concepts.
2. Paragraph 10.13 states that, “Since measures of ecosystem enhancement are linked to activities undertaken in the landscape, the changes in extent, condition and value can be directly related to estimates of expenditure and other measures of human input (e.g. volunteer hours) associated with that activity.” The chapter

needs to be careful here, as expenditure in many cases does not coincide with the SNA conception of exchange value. Consider a non-ES example. As an asset, a bad film or television show produced with highly valued labor (famous actors, etc.) is not valued based on its inputs, but its potential output. So, in this case, adding another expensive star to the project does not necessarily enhance the value of the asset, which could analogously be true for some ES asset enhancements. A qualification here would be helpful, because this point is not necessarily obvious.

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

1. There seems to be some degree of discretion over the decision of when to use a market-based discount rate and a social discount rate, and where there is a recommendation the lines seem somewhat arbitrary (e.g., see the next comment below). More importantly, comparability internationally and domestically across accounts could be an issue. Given that discount rates make very large differences in asset valuations, in theory, different countries could have the same quantity of an ES asset and valuation technique, but a choice of a social discount rate vs. a market discount rate could generate large differences that might not be well understood by the general public. Further, if the national accounts based on the SNA are using market discount rates, while the ES assets being compared to them are using social discount rates, then this could result in further confusion for the general public and policymakers assessing these estimates. Further discussion is needed to justify discretion among different discount rates to ameliorate these potential issues. Furthermore, there are different conceptual frameworks for determining a social rate of discount—are these to be viewed as equivalent?
2. The recommendation that provisioning services/SNA benefits should always use individual/market-based discount rates while non-SNA benefit ecosystem services should use social discount rates raises a number of problems. For example, the distinction could be based on institutional management of the resources underlying the ecosystem service, not the service type itself. For instance, communally managed assets may have “strong public good characteristics” that suggest the use of social discount rates even if they supply provisioning services (e.g., communal woodlots, fisheries, grazing land, or water management). Similarly, land or resources owned by the government but leased to private entities might be better considered under a social discount rate. Paragraphs 10.64-10.65 could be rewritten to put greater consideration on whether the resources in question are managed in an individual/private fashion or a collective/public fashion as the determining factor in recommending how the discount rate is chosen. One could respond that common ownership is not a large segment of the economy, but SEEA should not assume this will always be the case, and should enable proper recording of ecosystem use across the private, public, and commons sector (the latter potentially being represented by “households”).

3. There is a blanket recommendation against using declining discount rates in paragraph 10.66, but given that they have already been in use by some governments, as noted in Markandya's 2020 note "Guideline on valuation of ecosystem services in the context of the SEEA-EEA," this should garner further discussion about the reasoning behind this recommendation.

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

1. The Annex is a very helpful one, but could be presented more clearly by: 1) noting at the outset that in the initial example (Fig. 10.1) extent remains the same in both time periods, i.e., changes in physical supply and asset value are driven by degradation, 2) in Tables 10.2, 10.3, and 10.6 rather than just referring to "ES 1, 2, and 3" actually name the ES, and 3) have Figures 10.1 and 10.2 show areas proportional to the 5/4 area split – right now the image doesn't seem to match the volume. These are hypothetical examples, but these small changes would make them easier for readers understand. Because they are hypothetical examples, they assume away the separability problem. How in fact can such specific service entries be obtained for real world data?

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

1. Paragraph 10.35: the terms could be formulated a bit more clearly, given that costs are not explicitly a term in the equation, but implicitly in the value of the asset. At first glance, it looks like a present value (PV) calculation that simply discounts a stream of benefits, but it is only in 10.48 that costs are discussed to make this a NET present value (NPV). Further, the discussion of the costs is very short, and exactly what costs are included receive little attention here.
2. Para 10.38 seems to only briefly discuss the important issue of separability to indicate that there will almost inevitably arise double counting of the values of the ecosystem service flows. How is this not going to happen? This issue seems underdeveloped in the manual and remains a significant barrier for countries to practically implement ES accounts that adequately deal with this.
3. Paragraph 10.50: It states that, "Therefore, where possible, future price changes should be taken into account, for example due to the effects of changing relative scarcity of resources or specific ecosystem characteristics." This is a very difficult if not impossible task for most commodity prices, even for markets that are well established. Not only will error be likely (as professional traders err in forecasting many commodity prices and future prices of all kinds), but it builds in a degree of discretion that can be manipulated, intentionally or not, that could further result in arbitrary differences across countries and in comparison to other national accounts. Recommending a simpler approach, like using current market prices, could solve this issue.

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?

1. Paragraphs 11.11 and 11.12 deal with assigning services to products and yet unavailable chapters are referred to so it is difficult to answer the question raised by the Products row in Ecosystem system types in Table 11.1—how can those cells be populated with real world data? Comments on the earlier chapters with respect to separability and joint production come into play here as does the issue of how to aggregate ecosystem services.
2. In Table 11.2 –are urban areas included? There is a category labelled ‘Terrestrial ecosystems (excluding urban areas)’ and then there is a category called ‘Land (as provision of space)’. It is unclear if these are mutually exclusive. And since these are the only two categories that ‘urban areas’ can be included as a part – where are they? ‘Land under buildings’ is more than ‘urban areas’. There is no discussion of urban areas later in the chapter – so, how this is treated is unclear.
3. Where would orchards be included in this scheme? As part of the SNA section (where they currently have a place) or as part of ‘of which: Cultivated biological resources.’ If they are part of the Environmental Assets section, then they need to be taken out of the SNA section. Same for cultivated forest? This is discussed in 11.32-11.33. The treatment seems to take these values out of the SNA Inventory and place them in the ‘of which: Cultivated biological resources’ category. Is the intention here really to change the SNA values? This is not ‘extending’ the balance sheet – it is redefining it. Wouldn’t this need to be revised in concert with the SNA revision?
4. One way to overcome the problem of weak vs. strong sustainability in these balance sheets would be to incorporate the concept of “critical natural capital” for which substitutes don’t exist, human dependency is high, and/or current ecosystem asset levels are at levels very near environmental thresholds. There was conceptual work on this in the early 2000s, but a Stanford/Conservation International team led by Becky-Chaplin Kramer (who’s been involved in parts of the SEEA EEA work) and Rachel Neugarten have been working to more rigorously define and measure it. The SEEA EEA author team could consider their work or reach out to them to see what insights could be incorporated here.

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?

1. There are some specific cases that require further discussion. Notably, as in our response to question 7, there is again a break between SNA benefits (private) and non-SNA benefits (government trustee). This is not always the relationship as, for instance, when 1) there’s common ownership of resources providing a SNA benefit and 2) government owns the land and resources but leases them to a private entity. In neither case would it seem appropriate for ownership of SNA benefits to belong with a private entity.
2. It might be useful to discuss what other countries have done in this regard. For example, Stats Canada has tangible experience with assigning ownership to institutional sectors in their natural resource asset accounts in their balance sheets (not ecosystems, however). This partitioning has caused problems and it is not clear that doing something similar with ecosystems will make this any simpler.

There is more detail about what they have done at the following link:
<https://www150.statcan.gc.ca/n1/pub/13-605-x/2015009/article/14239-eng.htm#a3>

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

1. References cited in 11.3 are not included in the reference list.
2. Table 11.1 – If the dark grey cells in the table are null by definition, what do the light grey cells for the row labeled ‘gross value added’ in the use table mean?
3. In addition to the Glossary, there is a desperate need of a list of abbreviations. There are so many abbreviations used throughout the chapter texts that they are nearly incomprehensible.
4. Paragraph 11.44: the word However is needlessly underlined.