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.

We have divided our comments into two parts. The first part addresses more fundamental aspects of this work and the second part provides more detailed comments to the text as it currently stands in this version.

Part 1. Fundamental Aspects of concern

1) Whereas SEEA-Central Framework (2012) was rather limited in terms of coverage and was very close to the national accounts (SNA2008) – it is not clear what the relationship of this document is to SNA since some of the proposed treatments (especially in chapter 6) are not integrated with the framework of SNA. It is certainly not simply an expansion of SNA or of SEEA. The specific relationships between these three documents are still unclear.

With regard to possible integration between ecosystem accounting and national accounts, we question the possibility of simply “including" ecosystem accounts into national accounts, and we point to the potential of satellite accounts as a fruitful avenue to integrate the accounting of non-market values more closely with the national accounts. Hence, we suggest that the editorial group will consider, initiate and perform a thorough discussion of how important elements of the Experimental Ecosystem Accounting can be included as satellite accounts to the national accounts. This may be a suitable task to be addressed by the countries contributing to performing the "experimental" ecosystem accounting, with the potential to gain valuable experiences on the possibility to develop satellite accounts for ecosystems and ecosystem services.

2) Statistical Units
Of the six persons that have read and commented on chapter 2 from Statistics Norway, not one had the same understanding of the discussion of statistical units. To us, this indicates that the current text does not communicate this topic very successfully. We provide some description of the different topics that we have discussed to help provide input into the revision of this chapter.

From the draft text one might get the impression that ecosystem accounts are basically some type of advanced area or land statistics since ecosystems are defined in relation to spatial areas with each area considered an ecosystem asset containing a combination of biotic and abiotic components and other characteristics that function together (§2.7).

Although it seems that the units simply appear to be area and aggregates of a geographic grid (aggregating BSU/LCEU to an EAU), we understand that this is not necessarily so, hence, the concept of statistical unit in the draft text is

somewhat misleading and the distinction between geographical unit and statistical unit needs to be clarified.

A standard approach to biodiversity measurement would be to distinguish between the extent of the ecosystem in terms of geographical unit (administrative unit or geo-biophysical unit like watershed) and the quality or condition of the ecosystem in terms of the attributes of biodiversity and ecosystem functioning of this land, relevant to the particular context. Considering the relevant attributes involves the choice of statistical unit.

By definition a statistical unit is a variable with certain properties that are relevant for the particular purpose of statistical survey. For example, the statistical unit for carbon storage in forests could be standing forest volume if the emphasis is on the potential for carbon storage or million tonnes carbon accumulated if the emphasis is on the actual flow of ecosystem service. In either case the statistical unit operationalizes an attribute of the land delineated by the geographical unit defined. These distinctions between geographical units and different statistical units for different purposes need to be clarified at the outset. Another point needing clarification is whether or not the individual ecosystem is an Ecosystem accounting unit.

We appreciate the proposed flexibility to encompass different types of geographical areas, depending of the purpose of the analysis, but we strongly recommend that the geographical unit, as basis for the statistical units describing ecosystem condition, will be defined in accordance with international statistical recommendations for advanced land accounting, and that the distinction between geographical units (extent of ecosystem) and statistical units (condition of ecosystem quality relative to purpose of analysis) are clarified and illustrated with examples useful for guiding the countries contributing to the "experimental" ecosystem accounting.

§2.28 The paragraph starts out stating that “Ecosystem assets are spatial areas”. The point that the accounts are about the ecosystem services obtained from aggregations of spatial areas like BSUs or LCECs or from one EAU is difficult to understand. Potentially the reason may be that Tables 3.2 and 3.3 are without content in terms of examples. So are also Tables 4.2, 4.3 and 4.4. The question asked is, What is going to be measured? It would be useful to suggest examples of ecosystem services and expected “baskets” of ecosystem services.

3) The ecosystem concept needs a more extensive explanation. Traditional environmental economics has introduced the idea that nature submits several types of services to society. The text introduces ecosystem services – and it should be explained if these services are a set of various services that are linked together in a ecosystem or if the ecosystem gives an aggregate service to society. We prefer the first approach. The accounting structure (definition of each account and balancing items) is crucial and the discussion in Chapter 3 including the appendix need to be elaborated. The figures in Appendix to Chapter 3 need a more simultaneous presentation.

4) We have two substantive comments to models A and B in Chapter 6 (see comments 4a and 4b) – neither model do we think should be in a statistical manual. But before discussing the models there is a more important problem of lack of harmonization that needs to be dealt with first. In §6.66 – the next to last paragraph in the report – it is stated, "…SEEA Experimental Ecosystem Accounting does not recommend or endorse any specific approach to adjusted measures of income or any particular approach to valuation." In other words, the conclusion of this chapter, as stated in §6.66, is basically rejecting the content of the chapter or at least it seems to be in conflict with what is presented in the chapter. This is rather concerning. The conclusion and what is presented in the chapter text need to be harmonized.

4a) From Chapter 6 it appears from model B that ecosystems shall be considered a "sector" just as, for example, households are a sector. The question then becomes, why is nature treated as a "sector" when it comes to the treatment of ecosystems. Nature is not a sector when wild fish are fished, oil is extracted, natural forests are cut for timber, etc. according to the SEEA-CF. By treating ecosystems as a sector implies that there is an economic institutional unit that controls them – but that type of treatment does not make much sense in relations to ecosystems. We conclude that treating nature as a "sector" is not consistent with SNA or SEEA-CF treatment so we do not support the Model B approach.

4b) From model A in Chapter 6, where ecosystems are not treated as a sector, the production of goods and services from ecosystems then have no source of production. So then the question becomes, what then is the point of putting together the ecosystem production and the economic production (GDP)? Adjusting GDP in this manner simply is not acceptable within the statistical system and any type of statistical manual which proposes this treatment cannot be supported by Statistics Norway. That research institutes or Ministries make these calculations is within their mandate but it is not within the mandate of official statistics.

5) In §2.113 it states that: "regarding valuation, the valuation principles of market prices is applied in SEEA Experimental Ecosystem Accounting in a manner consistent with the SEEA Central Framework and the SNA." This statement seems a bit strong since many of the ecosystem services are not marketed.

Valuation approaches (Chapter 5): There is no market for most ecosystems or for their services, in particular supporting, regulating and cultural ecosystem services – so there are no market prices. The various surrogate techniques proposed produce widely differing results based on the assumptions made in the calculations. To say that the national accounts uses estimates for non-market prices to justify the methodologies proposed is not a good argument in our view. Yes, there is some small scale estimation of missing information that is applied in the National Accounts but these small additions are not comparable to the scale needed for ecosystem valuation where the entire valuation procedure is based on surrogate techniques due to the absence of

market prices. It is even less clear how we are "to assess the consistency of these approaches with the principle of market price valuation" (§2.113).

6) It is very difficult to understand exactly what is going to be included in the tables – assumed it would be numeric values but then statements like in §2.75, "it may be useful to show entries in the tables in terms of up and down arrows" are confusing. A clarification is needed on the suggested use of quantitative information and qualitative assessments for various purposes. Measurement approaches were to be included in an annex (stated in §2.76) which is missing. Perhaps this discussion should be moved to where this is discussed in physical units – it seems out of place here. In general the tables and the discussion about the tables are very abstract so it is very difficult to understand how to get from a starting point to the tables.

7) We do not find a discussion about ecosystem degradation in physical units – only in monetary terms. A wider discussion about ecosystem degradation is needed to better understand this concept/phenomenon from a physical flows perspective.

8) And finally it is not clear exactly what the role of the statistical system is/should be in the development of ecosystem accounts. It is not obvious that this proposed system is connected to the statistical system through any of the usual statistical units with which we are accustomed to working. We have drafted some text which may be helpful with regards to the role of the statistical institutes and attach this proposed text:

The role of statistical offices in extending statistical accounting to biodiversity and ecosystem services:

Biodiversity measurement, in our experience exemplified by the Nature index for Norway, is an important part of the information basis for ecosystem accounting. While the basic ecological data in such information systems often belong outside the competence and comparative advantage of national statistical offices, other aspects of biodiversity measurement and its application are clearly within the scope of the national statistical offices, including the information basis on the geographical areas of ecosystems as fundamental unit for ecosystem accounting. Another aspect of high relevance for the statistical offices is to provide knowledge on the role of human impact factors on ecosystems, which clearly brings biodiversity measurement into the socio-economic arena. Here national statistical offices have a certain role in integrating the ecological knowledge basis with knowledge on human economic activity and how it impacts on ecosystems via production and consumption. This calls for interdisciplinary cooperation between the national statistical office and ecological research institutes in order to develop and extend the ecological accounting framework and improve the statistical basis for knowledge on ecosystem services and ecosystem wealth. Index methodology and handling the uncertainty are issues within the core competence of a statistical office.

In accounting for ecosystem services, information on the provisioning services – harvesting of natural resources - is partly within the traditional domain of national statistical offices, while the integration of provisioning services with the "non-market" regulating, supporting and cultural parts of ecosystem services are, has so far been more or less outside the scope of responsibility for most statistical offices. Nonetheless, some information on these "non-market" services still exists, directly or indirectly, and needs to be utilized.

Part 2. Detailed comments to portions of the current draft text

a) In §1.3 (also §1.15 and §3.3) it states that ecosystem accounts can "organise information relevant to the assessment of trade-offs between different uses of ecosystems." This claim is not supported or illustrated in the rest of the draft report. Making this type of unsubstantiated claim is inappropriate for such work in such an experimental condition. We suggest re-writing to indicate that this is an ambition and not part of this system at the current time.

b) It is unclear what is meant in §1.22 – what are cross-border ecological cycles? Which borders? – between different ecosystems or countries? This should be clarified in the text.

c) In §1.42 and §2.8 the concept of "resilience" is introduced and it would appear that this is an important concept – and something that should be measured – but then it is not explained much more in the draft report – although it is used (§2.30). What is the purpose of introducing this term?

d) Footnote 5: Annex 1 is missing. Annexes named in §2.69 and §4.96 are missing.

e) In §2.24 it is stated that the term ecosystem services is used to include the "various ways in which humans relate to ecosystems." Does this mean that the portion of the ecosystem service that is not related to humans is excluded from the system? And how is "relate" defined/determined? Apparently the annex to chapter 3 provides some information about this but then it is unclear why this important information is in the annex. It is important to have an understanding of what is excluded – since in these cases there is no relation to humans. Is the focus only on the services arising from ecosystems that humans can use or is information on changes of the physical quality of the ecosystem also to be part of the accounting system? This is unclear.

f) The use of the term "CICES" is not explained before it is used in this figure – not explained for pages. A list of abbreviations for reference for readers is also needed.

g) §2.105 argues that wind is an ecosystem process and not an ecosystem service. But if the atmosphere is an ecosystem – which is what is stated in §2.70, then wind is an ecosystem service and should be included. But it is not clear what the difference is between an ecosystem process and an ecosystem service.

h) §3.23 uses the abbreviations MA and TEEB – these need to be replaced with the complete name.

i) §3.24 uses the expression “apply the harvest approach” – what does that mean? This is not explained in the text at all.

j) §3.57-3.60 give a rather simplistic version of constructing a composite indicator – this discussion needs to be more robust – see JRC/OECD handbook on constructing composite indicators for their 10 steps for doing this.

k) Tables 4.2 and 4.3 are “extensions” from SEEA-Central Framework tables. Theoretically this may be reasonable but it is difficult to understand what would go into the tables.