

SEEA Experimental Ecosystem Accounting: Revision 2020

SEEA Experimental Ecosystem Accounting

Preliminary outline

Version 4.0, 30 September, 2018

Background

There has been widespread enthusiasm and support for the development of ecosystem accounting since the finalisation of the SEEA Experimental Ecosystem Accounting manual in 2013. This support is evidenced by the numerous case studies and programs of work that have been initiated since then by international organisations, national government agencies, environmental NGOs, academics and in the corporate sector using the SEEA EEA framework.

Recognising this broad base of support, the UN Statistics Commission through the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA) endorsed a revision of the SEEA EEA to incorporate the important advances in thinking and practice in ecosystem accounting since 2013. The revision process is now underway. The revision will use the SEEA EEA and the more recent SEEA EEA Technical Recommendations (UNSD, 2017) as the starting points for the updated document with the intention to submit an updated document to the UN Statistical Commission for their March 2021 meeting.

While the work on ecosystem accounting remains a new area for official statistics, it builds on a wide range of long-standing expertise in measurement from a range of disciplines. The challenge thus lies primarily in the synthesis of measurement alternatives rather than the development of new techniques. It is hoped that from using both the experience gathered over the past 5 years, and the learnings anticipated through the next two and half years of the revision process, consideration can be given to removing the “Experimental” tag.

Further, there is a general ambition to raise the concepts and definitions in a revised SEEA EEA to the level of a statistical standard and thus support as high a degree of harmonisation in measurement as possible. It is accepted that this ambition may not be able to be met in all areas of ecosystem accounting. Assessment of the conceptual progress will be made through the concluding stages of the revision process so that appropriate advice can be provided to the statistical community ahead of the UNSC 2021 meeting.

This document provides a draft outline for the proposed content of the revised SEEA EEA. It builds on the framing of ecosystem accounting that has been developed in the SEEA EEA and in the Technical Recommendations.

One feature of the engagement of many disciplines in the ecosystem accounting work is that the understanding of the purpose of a statistical standard is not well understood. As a result, it is clear that to receive wide endorsement, it will be important to make connections to other perspectives, approaches, applications and extensions related to ecosystem accounting.

For this purpose, a number of sub-sections have been incorporated into the outline that describe these connections, for example between the use of exchange values in accounting

and measures of consumer surplus. The intent is to place the concepts of the SEEA EEA in an appropriate context, much as the SNA has a range of commentary on its links to the wider discussions on welfare, income, externalities and corporate accounting.

In addition, a final chapter has been proposed that describes a number of potential applications and extensions related to ecosystem accounting, for example the development of indicators to support measurement of progress towards the SDGs. It is noted that consideration is being given to updating or complementing the SEEA Applications and Extensions (SEEA A & E) to incorporate ecosystem accounting related topics. Currently SEEA A & E only focuses on topics related to the SEEA Central Framework.

A number of annexes are being considered including a glossary, classifications and a research agenda as developed for other similar documents. Further, it is planned to incorporate stylised data to support better description and understanding of the relevant concepts. Finally, as part of the SEEA EEA revision process, work will be undertaken to continue the development of technical guidance to support current testing and future implementation of ecosystem accounting.

This preliminary outline reflects discussion and feedback from the UNCEEA at their June 2018 meeting and takes on board the discussions at the Forum of Experts on Ecosystem Accounting held in New York, 18-20 June, 2018. It will be subject to ongoing development and refinement through to November 2018 at which time the drafting process is expected to commence.

Revised System of Environmental-Economic Accounting: Experimental Ecosystem Accounting

Draft Outline

V4.0, September 2018

Notes

This version of the outline of the revised SEEA EEA takes on board comments following the SEEA EEA Technical Committee meeting of 11 September. There is general agreement on the scope and coverage of the document but, as yet, less clarity on exactly how the material might be best organised. This version adopts a two level structure of four “sections” and twelve “chapters”. A challenge lies in effectively separating the discussion of measurement in physical and monetary terms and reflecting this in the titles of the various sections and chapters.

There seems general agreement that material on the so-called thematic accounts (land, water, carbon and biodiversity) should be incorporated but exactly how is not clear. In this version, a separate chapter (chapter 6) is included in Section B.

There seems some agreement that material on applications and extensions should not be exhaustively covered in the SEEA EEA. With that in mind this version proposes a short annex on this topic, with the complementary plan to include text in relevant chapters as appropriate.

There is considerable interest in making the connection to the SEEA Central Framework as clear as possible. Some specific sections have been allocated for this task. In addition, it would be expected that appropriate references would be made in all relevant places in the draft text.

Further discussion is needed on the question of the extent to which the revised SEEA EEA would be considered “experimental”. There is little doubt that in terms of practical measurement the number of examples remains limited, although growing rapidly. From this perspective a status of compiled accounts being experimental would appear appropriate. However, a separate consideration may be that the concepts and definitions underlying a set of accounts might be beyond experimental. Indeed, this is the focus of the revision process, to achieve as much standardisation and agreement as possible on the appropriate concepts, definitions and classifications for ecosystem accounting. From this perspective, determination of the experimental status of the SEEA EEA itself must wait until the conceptual discussions currently underway are much further advanced.

Section structure

Section A: Introduction and overview

Section B: Accounting for ecosystem extent and condition

Section C: Accounting for ecosystem services

Section D: Valuation and integrated accounting for ecosystem services and assets

Annexes

Section A: Introduction and overview

1. Introduction
2. Overview of the ecosystem accounting framework

Section B: Accounting for ecosystem extent and condition

3. Spatial units for ecosystem accounting
4. Accounting for ecosystem extent
5. Accounting for ecosystem condition
6. Accounting for key components and characteristics of ecosystems

Section C: Accounting for ecosystem services

7. Ecosystem services concepts for accounting
8. Accounting for ecosystem services in physical terms

Section D: Valuation and integrated accounting for ecosystem services and assets

9. Principles of valuation for ecosystem accounting
10. Approaches to accounting for ecosystem services and assets in monetary terms
11. Accounting for ecosystem capacity, degradation and enhancement
12. Integrated accounting for ecosystem services and assets

Annexes

- i. Updates from the SEEA EEA (2014) and the SEEA EEA Technical Recommendations (2017)
- ii. Summary of connections to the SEEA Central Framework
- iii. SEEA EEA Classifications
- iv. Applications and extensions of the ecosystem accounting framework
- v. Ecosystem accounting research agenda
- vi. Glossary
- vii. Bibliography

Chapter outline

Section A: Introduction and overview

1. Introduction

- a. Role and purpose of the SEEA EEA
- b. Motivation and context for the ecosystem accounting approach
- c. History and development process
- d. Connections to the SNA and the SEEA Central Framework
- e. Connections to other statistical standards and guidance
- f. Relationship to other global environmental measurement initiatives (e.g. SDG, IPBES, CBD, UNCCD, GEO, TEEB, wealth accounting)
- g. Summary of data sources and the role of National Statistical Offices
- h. Structure of SEEA EEA document / Reading guide

2. Overview of the ecosystem accounting framework

- a. Key concepts and definitions for ecosystem accounting
 - i. Ecosystem assets
 - ii. Ecosystem extent and condition
 - iii. Ecosystem services and benefits
 - iv. Ecosystem capacity, degradation and enhancement
- b. General national accounting principles
 - i. Production and asset boundaries
 - ii. Valuation principles
- c. Summary of the set of ecosystem accounts
- d. Introduction to stylised example/case study

Section B: Accounting for ecosystem extent and condition

3. Spatial units for ecosystem accounting

- a. The role of spatial units in the ecosystem accounting framework
- b. Definitions of spatial units for ecosystem accounting
 - i. Principles in establishing spatial units (e.g. mutually exclusive, comprehensive)
 - ii. Types of spatial units (BSU, EA, EAA)
- c. Considerations in the delineation of spatial units
 - i. Connection to land use and land cover (SEEA CF)
 - ii. Delineating spatial units in marine areas
 - iii. Connections to economic units

- iv. Other considerations (e.g. treatment of linear features, atmosphere, subterranean)

Annex: The role of geo-spatial data and national spatial data infrastructure (NSDI)

4. Accounting for ecosystem extent

- a. Purpose in accounting for ecosystem extent
- b. The scope of ecosystem accounting
 - i. Terrestrial
 - ii. Freshwater
 - iii. Marine
- c. Classification of ecosystem types
- d. Ecosystem extent accounts
- e. Considerations in accounting for ecosystem extent
 - i. Ownership and land tenure
 - ii. Defining accounts at sub-national and landscape scales
 - iii. Defining accounts for urban areas

5. Accounting for ecosystem condition

- a. Purpose in accounting for ecosystem condition
- b. Definition of ecosystem condition
 - i. Structure (including types of indicators, e.g. state, pressure) for the measurement of ecosystem condition
 - ii. Key characteristics in measuring condition
 - Terrestrial ecosystems
 - Freshwater ecosystems
 - Marine ecosystems
- c. Ecosystem condition accounts
- d. Reference conditions for ecosystem accounting
- e. Methods for aggregating measures of ecosystem condition

6. Accounting for key components and characteristics of ecosystems

- a. Accounting for biodiversity
 - i. The role of biodiversity measurement in ecosystem accounting
 - ii. Accounting for ecosystem diversity
 - iii. Accounting for species diversity

- iv. Other considerations in accounting for biodiversity (e.g. spatial scale, aggregation across species and ecosystems, accounting for genetic diversity)
- b. Accounting for land (to be developed further pending agreement on structure)
- c. Accounting for carbon (to be developed further pending agreement on structure)
- d. Accounting for water (to be developed further pending agreement on structure)

Section C: Accounting for ecosystem services

7. Ecosystem services concepts for accounting

- a. Purpose of accounting for ecosystem services
- b. Definitions and concepts concerning ecosystem services
 - i. Transactions in ecosystem services
 - ii. Final ecosystem services
 - iii. Intermediate ecosystem services
 - iv. Benefits
 - v. Users and beneficiaries
 - vi. Connections to alternative conceptions of ecosystem services
- c. The ecosystem services production boundary
 - i. Definition and role of the ecosystem services production boundary
 - ii. Connection to the production boundary of the SNA
 - iii. The treatment of ecosystem services related to biological resources
 - iv. The treatment of abiotic services
 - v. The treatment of services related to biodiversity
 - vi. Treatment of ecosystem disservices
 - vii. Treatment of non-use related services
- d. Classification of ecosystem services
 - i. Principles of the classification
 - ii. Description of the classification of ecosystem services
 - iii. Description of key ecosystem services

8. Accounting for ecosystem services in physical terms

- a. Accounting for the supply and use of ecosystem services in physical terms
 - i. Ecosystem Services Supply and Use Account in physical terms
 - ii. Links to measuring the sustainable supply of ecosystem services

- b. Considerations in accounting for ecosystem services in physical terms
 - i. Complementary and competing generation of services
 - ii. Spatial allocation of ecosystem services to ecosystem assets
 - iii. Allocation of ecosystem services flows to use categories (e.g. ISIC classes, household consumption, government consumption, exports)
 - iv. Methods for the aggregation of ecosystem services (within and across ecosystem assets)
 - v. Connection to ecological production functions

Section D: Valuation and integrated accounting for ecosystem services and assets

9. Principles of valuation for ecosystem accounting

- a. Purpose and focus of valuation in ecosystem accounting
 - i. Valuations and assessments in monetary and non-monetary terms
 - ii. The purpose of valuation in monetary terms in ecosystem accounting
 - iii. Frameworks for considering ecosystem valuations (links to TEV, IPBES, use/non-use values)
- b. Defining exchange values for accounting
 - i. National accounting valuation concepts and principles
 - ii. Defining non-monetary transactions
 - iii. The role of institutional settings and assumptions for estimating non-monetary transactions
 - iv. Distinguishing non-market valuations and monetary valuations of non-monetary transactions
 - v. The valuation of public goods in the national accounts
 - vi. Decomposing value into price and volume components
- c. Principles of accounting for assets in monetary terms
 - i. Concept of Net Present Value
- d. The connection to welfare-based valuations
 - i. Principles in the description of welfare changes
 - ii. Relating exchange values to concepts of shadow prices and consumer surplus
 - iii. Connections to externalities in an accounting context

10. Approaches to accounting for ecosystem services and assets in monetary terms

- a. Ecosystem services Supply and Use account in monetary terms
- b. Techniques for valuing non-monetary transactions

- i. Situations where a direct connection to market prices exists (including connections to monetary transactions recorded in the national accounts, the values of benefits and asset prices)
 - ii. Situations where revealed expenditures can be related to individual ecosystem services
 - iii. Situations where the connection to revealed economic behaviour is not close
 - iv. The use of welfare-based valuation techniques to support estimation of exchange values
 - c. Considerations in the valuation of ecosystem services
 - i. The use of benefit transfer techniques
 - ii. Aggregation of ecosystem service values within and across spatial areas
 - d. Ecosystem asset account in monetary terms
 - e. Considerations in the valuation of ecosystem assets
 - i. Estimating expected ecosystem service flows
 - ii. Estimating asset lives
 - iii. Selection of discount rates
 - iv. Connections to the valuation of natural resources (SEEA Central Framework)
 - v. Connections to market-based land valuations

11. Accounting for ecosystem capacity, degradation and enhancement

- a. Accounting for ecosystem capacity
 - i. Definition of ecosystem capacity (including links to related measures – potential supply, capability)
 - ii. Integrating measures of capacity in ecosystem accounts
- b. Defining and measuring ecosystem degradation
 - i. Definition of ecosystem degradation
 - ii. Link to ecosystem capacity
 - iii. Allocation of ecosystem degradation to economic units
 - iv. Considerations in the valuation of ecosystem degradation
- c. Defining and measuring ecosystem enhancement
 - i. Treatment of environmental protection and resource management expenditure
 - ii. Allocation of ecosystem enhancement to economic units
 - iii. Considerations in the valuation of ecosystem enhancement

12. Integrated accounting for ecosystem services and assets

- a. Combined presentations for ecosystem accounting
- b. Extended supply and use accounts (linking ecosystem services to standard SNA supply and use tables)
- c. Integrated sequence of institutional sector accounts and adjusted income aggregates
- d. Extended and integrated balance sheets
- e. Considerations in integrated accounting for ecosystem services and assets
 - i. Connections to wealth accounting
 - ii. Connections to ecological debt and expected liabilities for ecosystem restoration
 - iii. Complementary valuations for ecosystem services and ecosystem assets
- f. Ecosystem accounting at alternative scales
 - i. Considerations in accounting at sub-national and landscape scale
 - ii. Ecosystem accounting for urban areas
 - iii. Connections to corporate natural capital accounting

Annexes

- i. Updates from the SEEA EEA (2014) and the SEEA EEA Technical Recommendations (2017)**
- ii. Summary of connections to the SEEA Central Framework**
- iii. SEEA EEA Classifications**
 - a. Ecosystem types
 - b. Ecosystem services
- iv. Applications and extensions of the ecosystem accounting framework**
 - a. Using the SEEA EEA framework to derive indicators
 - b. Linking ecosystem accounting to analytical techniques
 - c. Connections to policy applications
- v. Ecosystem accounting research agenda**
- vi. Glossary**
- vii. Bibliography**