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**Items for discussion and decision:
environmental-economic accounting**

Background document
Available in English only

**System of Environmental-Economic Accounting—Ecosystem Accounting:
Revision process note**

Prepared by the Committee of Experts on Environmental-Economic Accounting

Introduction

The System of Environmental-Economic Accounting 2012—Experimental Ecosystem Accounting (SEEA EEA) was undertaken under the management, responsibility and direction of the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA) chaired by Bert Kroese, Deputy Director General of Statistics Netherlands and in particular the SEEA EA Technical Committee chaired by Anton Steurer of Eurostat. The United Nations Statistics Division (UNSD) served as the secretariat of these groups.

The revision process was launched in 2018 as agreed by the United Nations Statistical Commission at its 49th session. The Commission at its 51st session, in March 2019 “emphasized the importance and urgency of providing a standardized methodology for ecosystem accounting that reflects the progress made over the revision and reinforces the role of national statistical offices as data stewards; and supported the aspiration to elevate the revised SEEA Experimental Ecosystem Accounting to SEEA Ecosystem Accounting.” As requested by the Commission, the revision aimed to develop an agreed statistical framework for ecosystem accounting, including agreed terminology, concepts, definitions and classifications for ecosystem assets and services in both physical and monetary terms using an accounting approach.

Revision process

The revision process is organized along four main research areas and five working groups were established. For each working group, an area lead has been appointed:

- Research area #1 (Working Group 1) – Spatial units. Area lead: Sjoerd Schenau (Statistics Netherlands)
- Research area #2 (Working Group 2) – Ecosystem condition. Area lead: Joachim Maes (Joint Research Centre, European Commission)
- Research area #3 – Ecosystem services
 - Working Group 3 – Concepts and measurement issues. Area lead: Lars Hein (Wageningen University, the Netherlands)
 - Working Group 4 – Measurement and valuation of specific ecosystem services. Area lead: Rocky Harris (Department for Environment, Food and Rural Affairs, United Kingdom)
- Research area #4 (Working Group 5) – Valuation concepts and accounting treatments. Area lead: Juha Siikamaki (International Union for Conservation of Nature)

Working Groups each consisted of smaller number of experts from the relevant communities of interest (see Table 2 at the end of the document for the working group membership). Most members of the groups contributed in kind to drafting and reviewing papers. In exceptional cases, consultants were recruited to draft specific issues papers.

UNSD, as secretariat of the UNCEEA and of all the groups and subgroups, provided an overall coordination of the process together with the Editor of the SEEA EA. The Technical Committee provided technical guidance and direction to the revision process. In practice, each working group was supported by (i) the Editor (Carl Obst), (ii) a UNSD staff member, and (iii) the area lead who is also a member of the Technical Committee.

Role of the Technical Committee

The UNCEEA, at its meeting in June 2019, discussed and endorsed the proposal that an extended SEEA EEA Technical Committee (TC) will serve as the editorial board of the SEEA EA for the duration of the revision. The extended TC consists of its original members, plus the area leads of the five working groups and the international organizations that are expected to co-publish the SEEA EA (see list of members in Table 1). Members are experts from countries and international agencies and are encouraged to coordinate and engage with all relevant experts from within the countries, organizations and relevant networks they are active in.

The extended TC first met in June 2019 at the time of the 2019 Forum of Experts on SEEA EA in Glen Cove and remained operational in this composition until the completion of the document for submission to the

Commission. The extended TC met monthly to provide technical input into the process and review and approve the drafts ahead of their release.

Table 1: Members of the extended Technical Committee

1	Australia	Jonathon Khoo / Steven May / Peter Meadows
2	Canada	Francois Soulard
3	India	Bhanumati
4	Netherlands	Sjoerd Schenau (AL)
5	South Africa	Gerhardt Bouwer
6	United Kingdom	Rocky Harris (AL)
7	European Environment Agency (EEA)	Jan-Erik Petersen
8	United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)	Michael Bordt
9	Eurostat	Anton Steurer (Chair)
10	Food and Agriculture Organization (FAO)	Francesco Tubiello
11	International Union for Conservation of Nature (IUCN)	Juha Siikamaki (AL)
12	Joint Research Centre (JRC), European Commission	Joachim Maes (AL)
13	Organisation for Economic Co-operation and Development (OECD)	Peter van de Ven
14	Wageningen University	Lars Hein (AL)
15	World Bank (WB)	Raffaello Cervigni / Glenn-Marie Lange / Sofia Ahlroth / Juan-Pablo Castañeda / Stefano Pagiola
16	International Monetary Fund (IMF)	James Tebrake
17	Conservation International (CI)	Rosimeiry Portela
18	SEEA EA Editor	Carl Obst
19	United Nations Statistics Division (UNSD) (Secretariat)	Alessandra Alfieri / Jessica Chan / Julian Chow / Bram Edens / Marko Javorsek

Note: (AL) indicates the member of the TC is an area lead of one of the working groups.

Operation of the working groups

Initial work of the working groups (WG) focused on extensive clarification and description of the revision issues and engagement of an appropriately broad network of associated experts and the production of a detailed work programme and action plan. Initial drafts of the programs and plans were completed in the autumn 2018 and regularly discussed and endorsed by the TC whose primary role was to ensure appropriate coherence and co-ordination across the work programs.

All WGs have prepared discussion papers for discussion at the June 2019 Forum of Experts on SEEA Experimental Ecosystem Accounting.¹ The five working groups drafted 23 discussion papers and 4 supporting background papers.² See Figure 1 for a summary. All of the discussion papers underwent a revision as a result of a broad

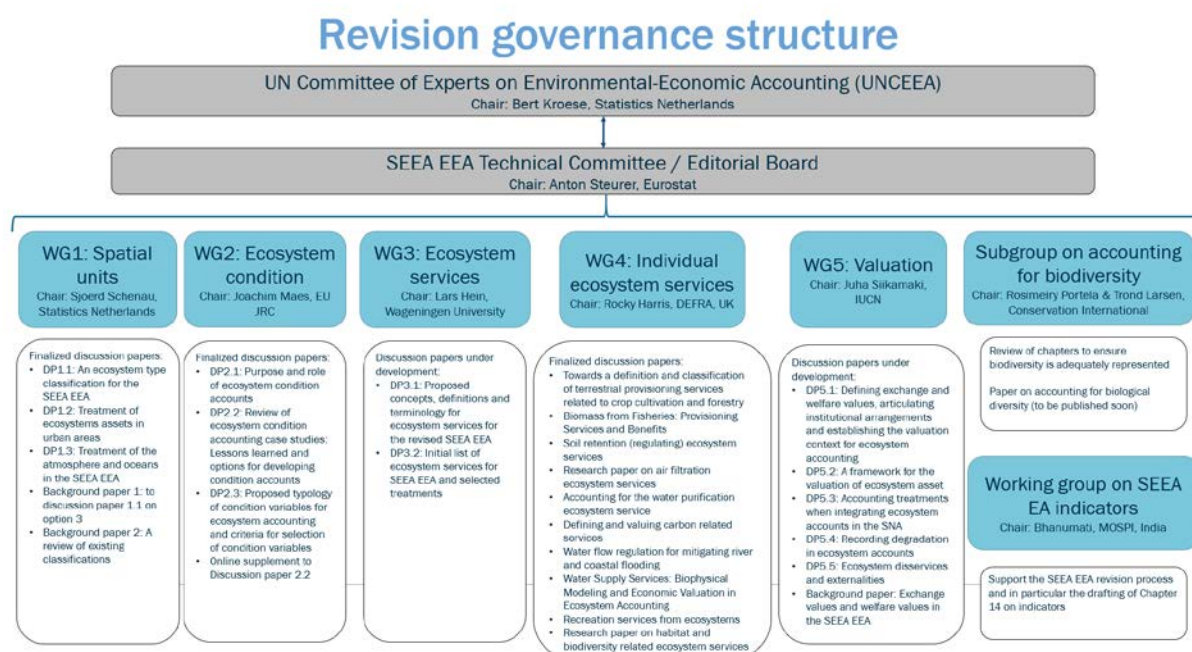
¹ <https://seea.un.org/events/2019-forum-experts-seea-experimental-ecosystem-accounting>

² All papers can be accessed at: <https://seea.un.org/content/seea-eea-revision-research-areas>

consultation with relevant experts. In the last year of the revision, some of the WGs conducted testing of the proposed solutions.

In addition to the five Ws, a Subgroup on accounting for biodiversity was established at the beginning of 2020 to ensure biodiversity is appropriately represented in the revised SEEA EA. The Subgroup reviewed the draft chapters of the SEEA EA from the biodiversity perspective and drafted a discussion paper on accounting for biological diversity. In August 2020, a Working group on SEEA EA indicators was created with the aim to support the drafting of Chapter 14 on indicators, which supported the drafting of Chapter 14 of the SEEA EA.

Figure 1: Revision governance structure



Expert review groups

Expert review groups were established to obtain input from a broad range of experts from different communities on the relevant research papers and draft chapters. Those experts also participated in meetings as appropriate. Efforts have been made to expand the involvement of experts from different disciplines through a targeted strategy which involved communication and outreach of the SEEA revision process through various technical and policy meetings of various groups.

Expert review groups were consulted regularly providing input and reviewing various stages of the draft documents. In the first half of 2019, discussion papers on spatial units (WG1) and ecosystem condition (WG2) were drafted and revised by a broad group of expert reviewers. In the second half of 2019, the expert review group on valuation reviewed 5 discussion papers from WG5. The two discussion papers from WG3 have been finalized and submitted to the expert review group in March 2020. Engaging experts throughout the revision process was key in ensuring the buy in of the final product by the various communities and support the implementation and uptake in countries.

Meetings and workshops

A number of meetings and workshops were held to encourage engagement and build on expertise of different communities. While the Forum of Experts on SEEA Experimental Ecosystem Accounting represented an opportunity for experts from a broad range of topics to come together on an annual basis, several meetings and workshops were held throughout the revision process to allow for detailed discussions on issues that were required to make substantive progress on technical matters. Below is a list of workshops that have been undertaken during the revision process and a list of relevant outreach meetings.

Completed meetings

- 24-26 April 2018 (Bonn): Expert Workshop on Valuation for Ecosystem Accounting
- 18-20 June 2018 (Glen Cove): Forum of Experts on SEEA Experimental Ecosystem Accounting
- 21-22 June 2018 (New York): Thirteenth Meeting of the UN Committee of Experts on Environmental-Economic Accounting
- 1-4 October 2018 (Dublin): Meeting of the London Group on Environmental Economic Accounting
- 28-29 November 2018 (Paris): Expert meeting on Spatial Areas and Ecosystem Condition
- 30 November 2018 (Paris): Strategic meeting on accounting for biodiversity and ecosystems with IUCN and selected biodiversity experts
- 22-24 January 2019 (New York): Expert Meeting on Advancing the Measurement of Ecosystem Services for Ecosystem Accounting
- 24-25 June 2019 (New York): Fourteenth Meeting of the UN Committee of Experts on Environmental-Economic Accounting
- 26-27 June 2019 (Glen Cove): Forum of Experts on SEEA Experimental Ecosystem Accounting
- 28-29 June 2019 (Glen Cove): Technical Expert Meeting on advancing the SEEA EEA Revision
- 1-3 October 2019 (Washington DC): Meeting of the Advisory Expert Group on National Accounts
- 7-10 October 2019 (Melbourne): Meeting of the London Group on Environmental Accounting
- 4-8 November 2019 (Paris): OECD Working Parties on Financial Statistics and National Accounts
- 13 March 2020 (virtual): Meeting of the London Group on the general context of the revision
- 16-18 March 2020 (virtual): Technical Meeting on Valuation and Accounting for the revised SEEA EEA
- 21 April 2020 (virtual): Meeting of the London Group on draft Chapters 3-5
- 4 June 2020 (virtual): Presentation of the revision process and engagement to African countries as part of the African Community of Practice on Natural Capital Accounting
- 18 June 2020 (virtual): Meeting of the London Group on draft Chapters 8-11
- 23-24 June 2020 (virtual): Virtual Forum of Experts on SEEA Experimental Ecosystem Accounting – Session 1: Ecosystem extent and condition
- 6-9 July 2020 (virtual): Fifteenth Meeting of the UN Committee of Experts on Environmental-Economic Accounting
- 14-15 July 2020 (virtual): Virtual Forum of Experts on SEEA Experimental Ecosystem Accounting – Session 2: Valuation and accounting treatments
- 18 August 2020 (virtual): Meeting of the London Group on draft Chapters 6-7
- 24-25 August 2020 (virtual): Virtual Forum of Experts on SEEA Experimental Ecosystem Accounting – Session 3: Ecosystem services
- 5-12 October 2020 (virtual): Meeting of the London Group on Environmental Accounting
- 28 October 2020 (virtual): Presentation of the revision process and engagement to Latin American countries as part of the Latin American Community on Natural Capital Accounting
- 9-10 November 2020 (virtual): Virtual Forum of Experts on SEEA Experimental Ecosystem Accounting – Session 4: Thematic accounts and indicators
- 16-18 November 2020 (virtual): Extraordinary Meeting of the UN Committee of Experts on Environmental-Economic Accounting
- 4 February 2021 (virtual): High-level webinar on the finalization of the revision of the SEEA EA for Latin American and Caribbean countries co-organized by ECLAC and UNSD

Outreach meetings

- Natural Capital Policy Forum for Better Decision Making (Paris, 26-27 November 2018)
- ISAR Corporate Transparency Accounting (UNCTAD) (Geneva, 24-26 October 2018)
- CBD - COP 14 (Sharm El-Sheikh, 17-29 November 2018)
- 2019 Natural Capital Symposium (Stanford, 18-21 March 2019)
- UNCCD COP-14 (New Delhi, 2-13 September 2019)
- Natural Capital Policy Forum for Better Decision Making (Kampala, 18-20 November 2019)
- IUCN World Congress (Marseille, 3-11 September 2021)
- COP-15 UN Biodiversity Conference (Kunming, TBD in 2021)

Ensuring coherence

Particular attention has been given to ensuring coherence among the five working groups. In particular, the following was undertaken:

- The SEEA 2012 EEA and the recently completed Technical Recommendations in support of the SEEA EEA served as the starting point for the groups to advance the research areas.
- The Editor participated in the WGs and was involved in the development and review of issues papers, thus having a general overview of the direction of all the papers.
- The area leads met regularly via teleconference together with the Chair of the TC, the Editor and the Secretariat to ensure ongoing awareness and alignment of progress and connect all parts of the project to the wide range of meetings, forums and related developments.
- The TC met on a regular basis to review progress of the different research areas and highlight issues of coherence. From June 2019 the extended TC is functioning as the editorial board of the revision with regular monthly meetings.
- Regular technical meetings, including small workshops, expert forums and London Group meetings, provided opportunities to identify issues of coherence.

Engagement approaches

The 2020 Forum of Experts on SEEA Ecosystem Accounting was scheduled as a sequence of four online sessions between June and November. The Virtual Forum was organized by the United Nations Statistics Division in collaboration with the United Nations Environment Programme, and the World Bank, and is an activity under the “Natural Capital Accounting and Valuation of Ecosystem Services” project funded by the European Union. It built on the previous Forums which contributed to the advancement of the theory and practice of ecosystem accounting and its objective is to provide a general overview of the status of the revision process, present the practical examples from countries and discuss remaining methodological issues.

Each of the four sessions consisted of two 3-hour meetings on consecutive days to allow for the maximum overlap among the global time zones. Each session had a distinct list of participants. Overall, more than 800 participants took part in one of sessions of the forum. The sessions held were the following:

- Session 1: Ecosystem extent and condition – 23-24 June
- Session 2: Valuation and accounting treatments – 14-15 July
- Session 3: Ecosystem services – 24-25 August
- Session 4: Thematic accounts and indicators - 9-10 November

The London Group on Environmental Accounting supports the revision process through contributing to the advancement of the research agenda, reviewing papers and draft chapters and testing. Starting in March 2020,

a set of regular calls of the London Group were held to discuss particular topics related to the revision. A number of topics linked to the revision process were also discussed at various London Group meetings the last was held virtually in October 2020.

More broadly, considerable effort has been put on engaging with the wider statistical community, and in particular the national accounts community. A cross-fertilization of experts between the national accounts and the environmental-economic accounts have started with national accounts experts participating in the working group on valuation and environmental-economic accountants participating in national accounts meetings such as the Advisory Expert Group on National Accounts (AEG) and the OECD Working Party on National Accounts. Also, several experts from the environmental economic accounting community are participating in the SNA update process subgroup on Well Being and Sustainability dealing with the SEEA.

The revision has involved experts from different communities to ensure that technical matters are as well founded as possible and to build as broad a consensus as possible around the accounting framework proposed. Experts were from a range of sectors including the academic community, government and international agencies, non-government organizations, the private sector, and those involved in related international processes and networks such as IPBES, IUCN, TEEB, GEO EO4EA, GEO BON, Ecosystem Services Partnership (ESP), A Community of Ecosystem Services (ACES) and associations of environmental and resource economists.

In addition, the revision built on the expertise and experience of those involved in testing the SEEA 2012 EEA at various scales. There are many such projects now in operation and relevant experts were connected to the revision process to the greatest extent possible, including through the EU-funded Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project, the Knowledge Innovation Project on an Integrated system of Natural Capital and ecosystem services Accounting for the European Union (KIP-INCA), Mapping and Assessment of Ecosystem Services (MAES), the MAIA project, etc.

Establishing connections to natural capital assessment activities at the corporate level also provided useful avenues for engagement. The UNCEEA, at its 15th meeting in July 2020, adopted the roadmap for alignment between the SEEA and business accounting. The roadmap was developed as a result of a meeting organized under the auspices of the NCAVES project bringing together national statistical offices and representatives from the business community.

More broadly, the UNCEEA, UNSD and SEEA community have recently produced non-technical papers and narratives on how the SEEA can or has been used to inform policies. These include four recent GIZ-funded publications³ which outline policy applications and case studies on using the SEEA for biodiversity, climate change and macroeconomic policies. An extensive reference list of ecosystem accounting applications will also be made available under the IPBES Values Assessment and was included as a background document for the extraordinary meeting of the UNCEEA in November 2020.⁴

General process for review and consultation

In line with past practice in the development of the SEEA, an open and inclusive approach to gathering comments and feedback was applied in the revision process. This is somewhat more challenging than in the past with a much wider set of stakeholders now aware of and interested in the SEEA and its potential role.

The process to develop the technical papers covering various issues in the research agenda involved small groups including environmental accountants and experts from various communities. The draft papers were reviewed by a larger group of experts to ensure that current knowledge was taken into account and no obvious errors or inconsistencies with the wider SEEA system. The papers were revised to take into account the comments received and served as input in the drafting of chapters.

The core draft chapters were distributed for global consultation on individual chapters between March and August 2020 to all national statistical offices and experts that have participated in the revision process as well as interested experts/communities. All comments received have been posted on the revision website⁵ and were addressed in the final complete draft. A separate document explaining the comments received and how they

³ <https://seea.un.org/content/enhanca-enhance-natural-capital-accounting-policy-uptake-and-relevance>

⁴ https://seea.un.org/sites/seea.un.org/files/seea_eea_uptake_in_policy_references.pdf

⁵ <https://seea.un.org/content/global-consultation-individual-chapters>

have been addressed was released together with the complete draft.⁶ The complete draft of the SEEA EA was distributed for the global consultation on the complete draft in October 2020. 92 sets of comments were received in the second global consultation, including 58 from government agencies, 20 from regional and international organizations, and NGOs, and 14 from individual experts. All comments received have been posted on the revision website⁷ and a summary of the comments with proposed treatments is submitted as a background document to the Commission.

Outstanding changes to be made in the SEEA EA

The draft of the SEEA EA as submitted to the Commission for discussion at its 52nd session is conceptually and methodologically complete. The draft will still, however, need to undergo some minor stylistic and editorial adjustments after the deliberations at the Commission session. The changes that will still be needed to finalize the SEEA EA for final publication are:

- Drafting of preface to the document;
- Graphical design of the figures and tables;
- Review of the list of references, content tables, glossary and the list of abbreviations;
- Development of a stylized example to illustrate practical examples in the SEEA EA tables, possibly in the form of an online excel sheet illustrating calculations and connections between the accounts;
- Finalization of online (supplemental) annexes, including the logic chains of the ecosystem services included in the reference list and correspondence tables between the ecosystem services in the SEEA EA reference list and other related classifications, namely the CICES, NESCS+, IPBES and others; and
- Language editing by a United Nations English language editor.

These changes will be made after the discussion at the Commission session and will be reviewed and approved by the SEEA EEA Technical Committee.

⁶https://seea.un.org/sites/seea.un.org/files/documents/EEA/Revision/2_seea_ea_global_consultation_on_complete_draft_october_2020_an_overview.pdf

⁷ <https://seea.un.org/content/global-consultation-complete-draft>

Table 2: Working Group members

Working group	Area lead	Working group members	UNSD support
1. Spatial units	Sjoerd Schenau (Statistics Netherlands)	Roger Sayre (United States Geological Survey) Francois Soulard (Statistics Canada) Douglas Muchoney (Food and Agriculture Organization) Francesco Tubiello (Food and Agriculture Organization) Keith Gaddis (NASA, United States) Trond Larsen (Conservation International) David Keith (University of New South Wales, Australia) Patrick Bogaart (Statistics Netherlands)	Jessica Chan
2. Ecosystem condition	Joachim Maes (Joint Research Centre, European Commission)	Amanda Driver (South African National Biodiversity Institute) Heather Keith (Australian National University and Griffith University, Australia) Bethanna Jackson (Victoria University, New Zealand) Balint Czucz (Joint Research Centre, European Commission) Emily Nicholson (Deakin University, Australia) Simon Jakobsson (Norwegian Institute for Nature Research) Octavio Maqueo (Instituto de Ecología, Mexico)	Marko Javorsek
3. Ecosystem services	Lars Hein (Wageningen University, Netherlands)	Ken Bagstad (United States Geological Survey) Neville Crossman (Murray-Darling Basin Authority, Australia) Sander Jacobs (Research Institute for Nature and Forest (INBO), Belgium) Alessandra La Notte (Joint Research Centre, European Commission) Rocky Harris (Department for Environment, Food and Rural Affairs, United Kingdom) Jan-Erik Pedersen (European Environment Agency) Charles Rhodes (Independent expert)	Julian Chow
4. Individual ecosystem services (Work completed in Feb 2019)	Rocky Harris (Department for Environment, Food and Rural Affairs, United Kingdom)	Coordinators of 10 research papers: <ul style="list-style-type: none"> • Lars Hein • Anthony Dvarskas • Benjamin Burkhard • Rocky Harris • Alessandra La Notte • Neville Crossman 	Marko Javorsek

		<ul style="list-style-type: none"> • Rosimeiry Portela • David Barton • Steve King • Bram Edens 	
Valuation and accounting	Juha Siikamaki (International Union for Conservation of Nature)	<p>David Barton (Norwegian Institute for Nature Research)</p> <p>Jane Turpie (University of Cape Town, South Africa)</p> <p>Eli Fenichel (Yale University, United States)</p> <p>Dennis Fixler (United States Bureau of Economic Analysis)</p> <p>Matias Piaggio (Environment for Development Center)</p> <p>Peter van de Ven (Organisation for Economic Co-operation and Development)</p> <p>Brett Day (University of Exeter, United Kingdom)</p> <p>Nicholas Conner (New South Wales Office for the Environment, Australia)</p> <p>Alejandro Caparrós (Centre for Human and Social Sciences of the Spanish National Research Council, Spain)</p> <p>Mark de Haan (Statistics Netherlands)</p> <p>Joe St Lawrence (Statistics Canada)</p> <p>James Tebrake (International Monetary Fund)</p> <p>Peter Harper (Independent expert)</p> <p>Anil Markandya (Basque Centre for Climate Change, Spain)</p> <p>Rocky Harris (Department for Environment, Food and Rural Affairs, United Kingdom)</p> <p>Ivo Havinga (UNSD)</p>	Bram Edens