System of Environmental Economic Accounting

Report of the 31th meeting of the London Group on Environmental Accounting

Tallinn, Estonia
22 - 25 September 2025

Summary and Conclusions

1. The London Group on Environmental Accounting (LG) is a city group of the United Nations Statistical Commission, established in 1993 to provide a forum for experts from national statistical institutions, international organizations and researchers to share experiences, discuss conceptual, methodological and practical issues related to environmental economic accounting and advance its development. It gathers experts from statistical offices, environment agencies, international organizations as well as research institutes, universities, and individual researchers.
2. The 31st meeting of the LG was hosted by the Statistics Estonia in Tallinn from 22 to 25 September 2025. It was attended by approximately 60 participants from 25 countries, mostly from national statistical offices, and also international organizations and academia.
3. The main agenda topic of the meeting was the Update of the SEEA Central Framework (SEEA CF). The 31st London Group meeting provided ample time to present and discuss the work in progress (scoping or guidance notes) of the task teams. Fitting country presentations were added to the respective sessions. The SEEA CF Technical Committee is asked to carry the London Group's opinions and conclusions on selected update issues over to the Task Teams.
4. Besides the SEEA CF, focused sessions on important issues in ecosystem accounting – indicators for the Global Biodiversity Framework (GBF) and monetary service accounts – were held.
5. The position papers on accounting for *Human-induced Flows in Nature, Water Accounting and Climate Change Mitigation and Adaptation Expenditures* from the 2024 London Group Meeting were used as inputs in the work of the task teams established under the SEEA CF Technical Committee. The position papers on *Environmental Taxes, Transfers (Subsidies) and Emissions Trading Schemes* and *Monetary Values Connected to Ecosystem Services* were developed further and have been revisited at the 2025 meeting.
6. The London Group discussed an advanced draft of its revised terms of reference that, among other issues, foresees a name change from "environmental accounting" to "environmental-economic accounting". The revised terms of reference will be submitted to the UN Statistical Commission for endorsement in March 2026.
7. All of the documents related to the 31th meeting of the LG, including the agenda, papers and presentations, are available on the meeting website.
8. The next LG meeting will take place in Antigua, Guatemala, kindly hosted by Banco de Guatemala.

Session Overview

I. Opening Session

9. The 31th meeting of the LG started off with opening addresses by Sven Kaumanns (Chair of the LG, Federal Statistical Office Germany), Urmet Lee (Director General, Statistics Estonia), Kristi Klaas (Deputy Secretary General of Green Transition, Estonian Ministry of Climate) and Kaia Oras (Statistics Estonia).
10. Marko Javorsek (United Nations Statistics Division), provided an update on the work of the Committee of Experts on Environmental-Economic Accounting (UNCEEA) over the last year. He reported on the election of new UNCEEA co-chairs and the endorsement of the revised UNCEEA Mandate and Governance. Regarding the SEEA CF Update, he updated the group

about the process, the work of the four task teams and the general timeline. After the finalization of all scoping notes in Q3 2025 and a UNCEEA consultation, the SEEA CF Technical Committee will hold an in-person work meeting in New York in November 2025. The first tranche of guidance notes will go to global consultation in Q1 2026.

11. Sven Kaumanns presented an advanced draft of the revised London Group Mandate, now *Terms of Reference* for discussion. Besides renaming the group to London Group of Environmental-Economic Accounting the revision foresees a stronger focus on members and meetings and harmonization with other groups. After taking on board comments by the Group and consultation of the London Group Bureau, the revised terms of reference will go to the UN Statistical Commission in March 2026 for endorsement.

II. Session 1: Physical Flow Accounts – SEEA CF Update

(Chair: Marko Javorsek, UNSD)

12. Session 1 dealt with selected topics belonging to Task Team B **Physical Flow Accounts**. Presentations of scoping and guidance notes were matched with fitting country presentation/experiences. The session opened with Roberto Astolfi (OECD) providing an overview of Task Team B to set the context.
13. Sjoerd Schenau (Statistics Netherlands) presented the guidance note on the *Treatment of Carbon Flows* (**Topic B3**).
    - Regarding the definition of so-called human-induced flows as *physical flows that are caused directly by human activity but occur within the environment rather than flowing between the economy and the environment, and which have meaningful, policy-relevant impacts*, the group suggested to try to define *direct* causation more clearly.
    - Regarding the inclusion of LULUCF-related emissions in the SEEA CF air emission accounts, the guidance note provided three options. The group showed broad support for including LULUCF in air emission accounts. Most participants favored either options 2 or 3, though further discussion is needed to refine the details.
    - Extension of the description of the air emission accounts. The group welcomed the approach, but remarked that the scope in terms of different emissions other than carbon dioxide should be clarified.
14. Roberto Astolfi (OECD) introduced the initial research questions (scoping note) on *Quarterly Accounts* (**Topic B4**), complemented by Jane Harkness' presentation (Statistics New Zealand), who shared New Zealand's national experience with quarterly air emission accounts.
    - The group showed general support for incorporating quarterly accounts into the SEEA CF, with a recommendation to carefully consider the scope and level of detail. The importance of seasonal adjustment was emphasized, and the New Zealand example highlighted the application of the residence principle at sub-national levels.
15. Carl Obst (SEEA CF Editor) led the discussion on *Residual Flows by Ecosystem Type* (**Topic B6**), drawing on country experiences from Estonia and the Netherlands.
    - Work on the guidance note on the residual flows is still in early stages. The presentation primarily outlined research questions and the intended direction for the guidance note. As a result, there was no consensus on terminology or the scope of a potential pressure account. The relevance of linking this work to SEEA Ecosystem Accounting was also noted.

III. Session 2: Asset Accounts – SEEA CF Update

(Chair: Silvia Ferrini, University of East Anglia)

16. Session 2 focused on water-related topics belonging to Task Team D **Asset Accounts**. Presentations of scoping and guidance notes were matched with fitting country presentations. The session opened with Task Team Co-Chair Riaan Grobler (OECD) providing an overview of Task Team B to set the context.
17. Michael Vardon (Australian National University) presented the guidance note on the treatment of *Water in Artificial Reservoirs as a Produced Asset* (**Topic D4**). He argued that the definition of water stocks and flows between SNA, CF and SEEA could be confusing, and the revision of the CF can help clarify the terminology and support the engagement with water stakeholders.
    - A consensus emerged on the need to reconsider water as produced asset, given that it can be produced in one period (stored) and used in another, matching the definition of inventories in 2025 SNA (goods held for future use). The accounting proposition is to reclassify water as a produced asset once it enters artificial reservoirs.
    - The group noted that it is paramount to establish a consistent treatment of natural resources as such or as produced assets (e.g. for forests, agricultural land, fish, minerals).
    - Steven May (Australian Bureau of Statistics) contributed a country presentation of such a reclassification with implications for the hydroelectricity industry. He argued that reclassifying reservoirs is particularly relevant to monitor the role of produced water to face water demand in dry and wet seasons. The Australian case study presentation considered the role of water as produced assets in reservoirs for energy and the functioning of other economic sectors when water seasonality hit. Faith Cabrera (Philippine Statistics Authority) highlighted the Philippine experience in generating water accounts.
18. Kirsten Oleson (University of Hawaii) introduced the scoping note on *Valuation of Water* (**Topic D7**).
    - The work on this update issue is in an initial stage. The group's discussion underlined the importance to first clarify the target and scope of valuation, including the relation for water-related ecosystem services.
    - Currently, a systematic literature review is ongoing to uncover the variety of value for water stocks and flows estimated globally.
    - Steven May (Australian Bureau of Statistics) presented a country example on how the Australian tradable water scheme operates and can facilitate the valuation of water, although controversy remains in claiming that the water abstraction charge is the price that proxies the value of water.

IV. Session 3: Environmental Activity Accounts – SEEA CF Update

(Chair: Nina Hiltunen, Statistics Finland)

19. Session 3 focused on the issues in Task Team C **Environmental Activity Accounts**. The session opened with Alec Jacobs (Office for National Statistics UK) providing an overview of Task Team C on behalf of the task team co-chairs to set the context.

20. Isabelle Rémond-Tiedrez (Eurostat) presented the guidance note on *Extending the Scope of Environmental Activities* (**Topic C3**).
    - The guidance note develops three main areas: a. environmentally friendly, b. environment-related and c. environmentally harmful. The London Group supported the distinction between these areas.
    - Questions regarding the criteria of differentiation (e.g. a. protecting the environment; b. protecting humans from the environmental and c. recognized as unfriendly for the environment), the operationalization and mutual exclusiveness and comprehensiveness of the categories were raised.
21. Julia Hass presented the scoping note on *Climate Change Mitigation and Adaptation Expenditures* (**Topic C5**).
    - The group stressed that climate change expenditures are a priority for the update and noted that while mitigation activities are relatively well defined, adaptation is more ambiguous and requires further clarity. Clean definitions to avoid double counting are critical since many expenditures contribute to both.
    - Additionally, Raúl Figueroa (National Institute of Statistics and Geography Mexico) and Viveka Palm (Statistics Sweden) showed country examples of accounting for climate change investments and expenditures. These examples highlighted that it is possible to pull together relevant information from public budgets (Mexico) and environmental-economic accounts such as EPEA, EGSS and ESST (Sweden), but also that issues around completeness and risks of overlaps remain a challenge.
22. Sven Kaumanns presented a follow-up on the LG's position paper on *Issues in Taxes and Subsidies Accounts* from the previous London Group meeting.
    - With a few amendments and additions, which are now being implemented, the LG accepted the draft position paper submitted.
    - The London Group agreed that the definition of PEDS should follow definition of ETEA and that an overlap of ESST and PEDS must be possible and should be presented. Tax abatements should in general follow the rules of ESST and PEDS.
    - It was emphasized that accounts for taxes and transfers (ESST and PEDS) must allow analysis of the government sector and other sectors, ensure consistency with national and physical accounts be flexible to serve different uses.
    - The group welcomed the suggested more detailed classification of environmental taxes and reiterated its opinion on treating cap and trade emission certificates as non-produced non-financial assets rather than as taxes.
23. Ivo Litera (Federal Statistical Office Germany) presented the scoping note on the related on *Potentially Environmentally Damaging Subsidies* (PEDS) (**Topic C6**)
    - The London Group noted that using a similar approach and definition to Environmental Taxes by Economic Activity Accounts (ETEA) would be appropriate. The Eurostat ETEA product list could be a suitable starting point for a list-based operationalization.
    - For areas where ESST and PEDS may overlap the group acknowledged the usefulness of highlighting these areas separately and transparently.
24. Ivo Litera (Federal Statistical Office Germany) presented the scoping note on *Environmental Tax Abatements* (**Topic C7**).
    - The group noted that any approach would have to be aligned with ETEA definitions.

- It was remarked that a two-fold approach may be warranted: one for tax abatements with the purpose of improving the environment and one for abatements that carry potentially harm. Similar to topic C6, particular attention should be given to potential overlaps between those categories.
- Furthermore, the group noted the necessity for the accounts to cover also resource fees and tax credits, which currently fall outside of the definition. A "similar to taxes" category could be envisaged.
- Effective carbon rates were deemed a very useful tool to compare tax systems in the context of topics C6 and C7. However, PEDS and tax abatements account should in principle cover all types of potential environmental damages.

25. Finally, Alessandra Alfieri (International Monetary Fund) gave a talk on the update of the Government Finance Statistics (GFS) Manual. She highlighted overlapping issues between the two standards (GFS and SEEA CF) and introduced the proposed coordination process that foresees a coordination group and joint drafting teams for these issues.

V. Session 4: Overarching Topics – SEEA CF Update

(Chair: Michael Nagy, UNECE)

26. Session 4 was centered around selected issues from Task Team A on **Overarching Topics**. Carl Obst (SEEA CF Editor) provided an overview of the work in Task Team A on behalf of the task team co-chairs. The session also featured several country presentations on related topics.
27. Carl Obst (SEEA CF Editor) presented the scoping note on *Links between SEEA EA, SEEA CF and SNA* (**Topic A1**).
    - The note recommends to show the relationships in the three frameworks in a dedicated chapter of the SEEA CF. The London Group emphasized the need to establish and communicate very clear definitions and boundaries for natural resources, the treatment of depletion and degradation, biotic and abiotic flows. The different perspectives (SEEA CF, SEEA EA and SNA) and their added value for different uses should be explained in the text.
    - The work carried out by Statistics Estonia in collaboration with Estonian researchers on the valuation of timber flows and stocks was presented collaboratively by Paavo Kaimre (Estonian University of Life Sciences), Grete Luukas (Statistics Estonia) and Kaia Oras (Statistics Estonia). Presentation showed that different perspectives and methods can serve different uses and purposes and that a transparent and clear distinction between perspectives and definitions is warranted.
    - The presentation from Ningiree Daleen Kavezepa (Namibian Ministry of Environment, Forestry and Tourism) explored the links between the three frameworks and showed the feasibility, but also challenges, of pulling together information from these accounts to inform policy.
28. Carl Obst (SEEA CF Editor) introduced the guidance note on the *Consistency with the 2025 SNA Revision Issues* (**Topic A9**)
    - The following discussion focused largely on the issue of accounting for depletion and degradation. The London Group agrees to treat depletion as a subset of degradation and highlighted the need to deepen, compared to the SNA, the discussion on boundaries (cultivated vs. non-cultivated), asset life and negative resource rents. The treatment of renewable energy in the SEEA CF should be clarified.

- A presentation from Gang Liu (Statistics Norway) showed the feasibility to decompose changes in petroleum resources into different components, including depletion, other changes and revaluation. Scott Wentland (US Bureau of Economic Analysis) presented work on the valuation of subsoil energy assets and highlighted open challenges regarding asset life (classification of net acquisitions) and negative resource rents relevant to the SEEA CF update.

29. Nils Brown (Statistics Sweden) presented the scoping note on the planned *Update of Existing Information on EE-IOT* (**Topic A3**)
    - The group stressed the importance of EE-IOT for consumption-based indicators and agreed to the inclusion of key methodological considerations in the SEEA CF. It was noted that a potential update of the SEEA Applications and Extensions could include further detailed considerations for implementation.

VI. Session 5: Poster Session

30. The poster session featured five posters centered around opportunities and challenges of using the ecosystem accounting framework for policy and decision-making at multiple governmental, and geographical levels, for fisheries and related policy, biodiversity and forestry.

VII. Session 6: SEEA EA and the Global Biodiversity Framework

(Chair: Raúl Figueroa, National Institute of Statistics and Geography Mexico)

31. Session 6 focused on the use of ecosystem accounts for indicators of the Global Biodiversity Framework (GBF), in particular the headline indicators A.2 *Extent of Natural Ecosystems* and B.1 *Services provided by Ecosystems*. Marko Javorsek (UNSD) set the scene by explaining these indicators and introducing the EU-funded project on *SEEA-related indicators for the GBF* at the UNSD.
32. Madli Linder (Estonian Environment Agency) showed how to combine highly detailed extent and condition data to identify natural and semi-natural ecosystems. She argued to use information on ecological condition and integrity, when calculating indicator A.2. Mexico contributed to the discussion by presenting a similar approach, which begins with ecosystem extent accounts and links them to condition accounts, using an Ecosystem Integrity Index to assess ecosystem health. In his presentation Jan-Erik Petersen (European Environment Agency) focused on the identification of semi-natural ecosystems in Europe. He argued that regarding European ecosystem types (as defined in the European Ecosystem Typology) condition data may be used to identify the semi-natural component. Steven May (Australian Bureau of Statistics) presented the use of national ecosystem accounts for the GBF headline indicators as well as potential use of species metrics. Finally, Mark Henry (Statistics Canada) showed the possibility to derive complementary ecosystem condition indicators for GBF Goal A.
33. The London Group noted that while there appears to be substantial on-going work on indicator A.2, more implementation test for B.1 are warranted. Regarding indicator B.1. the group discussed the difficulty of aggregating different supply/use ecosystem services in a single indicator by the use of a geometric mean of trends. Trade-offs between services are partially acknowledged by foreseeing "three sub-indices, one for each broad category of ecosystem services", since these often have "differing directions of change" (B1 metadata).

However, no consideration is given in the calculation guidelines to a more severe kind of problem: single ecosystem services may vary for different reasons, with completely different or even opposite value, as for the biodiversity and sustainability implications or preconditions of the change. This problem may be amplified by relative prices when it comes to "measures in monetary terms". Additionally, the statement that their "aggregate [...] can be derived by summing total supply or use for each ecosystem service for the same period" (B1 metadata) may be questionable in the light of several years of LG work on the semantics of those measures, as reflected by the conclusion reported under paragraph 36 below.

34. Regarding indicator A.2 limitations in the suggested data sources for tracking this indicator were highlighted. In particular, restrictions were discussed regarding the ability to identify natural ecosystems individually. Additionally, it was observed that extent data does not address the condition of ecosystems, their integrity, connectivity, or degree of degradation. It was noted that for international comparison the current metadata for the global indicator A.2, in contrast to the presented national approaches, would not foresee the use of condition data, but rather the identification of natural and semi-natural ecosystems based on IUCN functional groups. The group remarked that potential inconsistencies between national and global approaches should be clarified. The group encouraged the use of ecosystem accounts for additional and complementary GBF indicators.

VIII. Session 7: (Monetary) Ecosystem Services Accounts – SEEA EA

(Chair: Alec Jacobs, Office for National Statistics UK)

35. Session 7 focused on issues related to Ecosystem Service Accounts, a first part with a focus on monetary flows and a second part on bio-physical models and potential application.
36. In a follow up contribution to the paper discussed at the 2024 London Group meeting Aldo Femia (Istat) presented the theoretical aspects of the *Treatment of Multiple Economic Values connected to Ecoystems.* As requested by the group in the previous year, Kaia Oras, Kätlin Aun, Aki Kadulin (Statistics Estonia), Aveliina Helm (University of Tartu), Üllas Ehrlich (Tallinn University of Technology) and Sjoerd Schenau (Statistics Netherlands) showed how the paper's reference framework can be populated with multiple empirical values to give a comprehensive picture using different valuation concepts related to ecosystem services.
    - The London Group acknowledged the feasibility and transparency of the approach and remarked that including a guide for interpretation and/or a mapping to different uses and users of these values would be valuable.
37. Presentations by Vittoria Reas (University of Siena), Valentina di Gennaro (University of East Anglia) and Alice Bartolini (University College London) focused on water/marine-related ecosystem accounts and highlighted challenges in data consistency and comparability of valuation methods as well as methodological developments.
38. In a follow-up to her paper from the 2024 London Group meeting Alessandra La Notte (European Commission's Joint Research Centre) demonstrated how the *Green Sudoku Approach* draws upon existing environmental-economic and national accounts to track nature-based solutions or disaster risk activities through the environment and the economy. Presentations by Nils Brown (Statistics Sweden) and Ivone Batista and Leonardo Bergamini (Brazilian Institute of Geography and Statistics) showcased national progress and challenges in modelling local climate regulation (cooling in cities by vegetation) and pollination, respectively.

IX. Session 8: Closing Session

39. The closing session saw a concluding discussion on the London Group's revised terms of reference and the meeting's main take-aways. The hosts of the next meeting, Banco de Guatemala invited participants to the 2026 London Group meeting in Antigua, Guatemala and used the opportunity to showcase national efforts for a comprehensive implementation of SEEA accounts.