System of Environmental Economic Accounting

Forum of Experts in SEEA Experimental Ecosystem Accounting 2018

Summary Report

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INTRODUCTION

In March 2013, the United Nations Statistical Commission endorsed the System of Environmental-Economic Accounting 2012 – Experimental Ecosystem Accounting (SEEA EEA) as an important step in the development of a statistical framework for ecosystem accounting for commencing testing and further development of this new field of statistics. The SEEA EEA offered an initial synthesis of the knowledge in ecosystem accounting and served as a platform for its development at national and sub-national levels. It also provided a common set of terms, concepts, classifications, and an integrated accounting structure for measuring ecosystem services and ecosystem condition in both physical and monetary terms. In December 2017, the SEEA EEA Technical Recommendations were released to provide an update of knowledge about ecosystem accounting and clarifying various aspects of the original SEEA EEA.

The SEEA EEA has now been recognized as the main statistical framework for ecosystem accounting in various other international and regional policy initiatives. These include, but are not limited to, the World Bank-led Wealth Accounting and the Valuation of Ecosystem Services (WAVES) partnership, the EU projects on Mapping and Assessment of Ecosystems and their Services (MAES) and the Knowledge Innovation Project-Integrated Natural Capital Accounting (KIP-INCA), the UNDP Biodiversity Finance (BIOFIN) initiative, the Convention on Biodiversity Aichi Biodiversity Targets (in particular Aichi target 2), the UNCCD initiative on Land Degradation Neutrality and the UN Environment-led initiative on The Economics of Ecosystems and Biodiversity (TEEB).

Reflecting the rapid progress in the development and practice of ecosystem accounting since 2013, the United Nations Statistical Commission endorsed a revision process of the SEEA EEA. Initial planning for the revision process commenced in mid-2017 and activities have increased since early 2018. The objectives of the revision process are to move towards a consensus on concepts and methods on ecosystem accounting building on the testing and experimentation that has been going on since the release of the SEEA EEA, as well as learning from the experience of various initiatives working on related projects and topics, including, for example, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and natural capital assessment projects, and taking advantage of the availability of new technologies and data sources.

To date, there are currently over 40 countries undertaking piloting of ecosystem accounting at various scales. Under the auspices of the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA), UNSD supports the methodological development of the SEEA EEA and implementation of ecosystem accounting in countries through its regular work program and externally-funded projects including the recently-finished Norwegian-funded Advancing Natural Capital Accounting (ANCA) project and more recently the European Union-funded Natural Capital Accounting and the Valuation of Ecosystem Services (NCAVES) project. The latter project aims to assist five partner countries (Brazil, China, India, Mexico, South Africa) to establish an institutional mechanism in countries, compile selected ecosystem accounts based on countries priorities to measure ecosystem extent, condition and ecosystem services in physical and monetary terms. The project supports also global activities including this Forum, regional workshops and fosters sharing of experience among countries.

This Forum of Experts built on two earlier Forums organized in 2013 and 2015 by the United Nations Statistics Division (UNSD) to advance the theory and practice of ecosystem accounting, considering the fast-evolving nature of the topic and the increasing policy interest. Bringing together a broad range of expertise and experiences, the Forums have contributed to the development of guidance documents

on ecosystem accounting, including the SEEA EEA in 2013 and the Technical Recommendations in support of the SEEA EEA issued in December 2017.

As detailed in this report, the Forum achieved three primary outcomes, namely:

- Direct technical input into the SEEA EEA revision process and the work of the various working groups
- Engagement among the broader expert communities and presentation of the plan for the SEEA EEA revision
- Sharing of experience among the different expert disciplines, communities and countries, as well as providing information on various data and tools.

All information, papers, presentations and similar materials that were discussed at the Forum are available on the event website[1] and readers are encouraged to access these materials.

FORUM OBJECTIVES AND STRUCTURE

The Forum's main objectives were to:

- Share best-practices in compiling ecosystem accounts; in particular, but not exclusively, in the context of the Natural Capital Accounting and Valuation of Ecosystem Services project;
- Advance the research agenda in support of the revision of the SEEA EEA;
- Showcase methodological and technical advances; and
- Identify priority areas for testing and experimentation to support the advancement of the research agenda.

To meet these objectives a wide-ranging agenda[2] was established. It was broadly structured around the four main research areas of spatial units, ecosystem condition, ecosystem services and valuation and accounting. Discussion of these areas was based on papers describing research issues in each area[3] and complemented by sessions that looked at the issues from the perspectives of different ecosystem types and with regard to cross cutting issues, such as on aggregation and classification.

Discussion on the research issues was further complemented by sessions on data and tools for ecosystem accounting, SEEA EEA based indicators, connections to wealth accounting work, presentations on seven country experiences of ecosystem accounting (Brazil, China, Costa Rica, Czech Republic, Indonesia, Mexico, and the Philippines) and a panel session on linking SEEA EEA to other global statistical and measurement initiatives.

A key feature of the Forum was the mixture of plenary and breakout sessions as well as the use of an "out-of-town" conference venue. This combination provided substantive opportunities for engagement and discussion across the breadth of topics covered by ecosystem accounting. Around 100 people[4] participated in the conference from all UN regions and from a wide variety of backgrounds

[1] https://seea.un.org/events/forum-experts-seea-experimental-ecosystem-accounting
[2] https://seea.un.org/sites/seea.un.org/files/documents/Forum_2018/seea_eea_expert_forum_agenda_final.pdf
[3] Discussion papers are available at https://seea.un.org/events/forum-experts-seea-experimental-ecosystem-accounting together with a selection of reference material on the various aspects of ecosystem accounting
[4] https://seea.un.org/sites/seea.un.org/files/documents/Forum_2018/seea_eea_expert_forum_2018_-_list_of_participants_web.pdf

and disciplines. In terms of sector representation, it was primarily from government agencies, international organizations and academia and it is recognized that as the revision process moves forward, engagement with the business and finance sector will be an important requirement.

A highlight of the Forum was the opening session with presentations from a number of senior people in the global environmental policy and measurement space. Mr. Elliot Harris, Assistant Secretary-General for Economic Development and Chief Economist of the United Nations spoke eloquently on the important role that environmental-economic accounts can play and exhorted us all to apply the SDG philosophy of "leaving no-one behind".

This talk was followed by a series of video presentations from:

- Mr Zachary Mwangi Chege, Director General of the Kenya National Bureau of Statistics and Chair of the UN Statistics Commission
- Mr Daniel Calleja Crespo, Director General of the Directorate-General for Environment, European Commission
- Ms Cristiana Pasca Palmer, Executive Secretary of the Secretariat of the Convention on Biological Diversity
- Mr Mark Gough, Executive Director of the Natural Capital Coalition

A short statement was also provided on behalf of Ms Inger Andersen, Director General of the International Union for the Conservation of Nature.

Collectively, these presentations reinforced the essential importance of biodiversity and ecosystems in underpinning economic activity and human life more broadly and highlighted the potential for accounting to play a key role in achieving the broad ambitions of the 2030 Development Agenda. The following introductory presentation from Ms Alessandra Alfieri, United Nations Statistics Division, spoke to the role of the SEEA and official statistics more generally in providing credibility in measurement and hence a common platform for evidence-based decision making.

TECHNICAL FINDINGS AND DIRECTIONS

Introduction

This section provides an overview of the main technical findings and directions that emerged from the Forum. The presentation of these findings is structured according to the four SEEA EEA revision research areas. At the Forum itself, some discussions were focused on these specific areas but there was also a proportion of time spent considering the issues from the perspective of selected ecosystem types and cross-cutting conceptual issues. Here, the key findings from these other perspectives have been integrated.

It is clear that there are many challenging issues, all of which will require much further discussion and research through the revision process. At the same time, it was excellent to see the strong engagement with the issues and the broad ranging participation. Also, from the perspective of the longer history of ecosystem accounting discussions since 2011, there is a clear maturing of the discussion in the sense that a wide number of aspects of the ecosystem accounting framework are clearly understood and appreciated and the SEEA EEA is providing a strong basis for the exchange of views and knowledge that is required to take this area of work forward.

Research area #1: Spatial units

Spatial units provide the conceptual starting point for ecosystem accounting by delineating ecosystem assets that in turn are considered to generate ecosystem services. The basic model for the description of spatial units for ecosystem accounting was described in the SEEA EEA and, while refinements and improvements have been made over the past 5 years, the core design of ecosystem accounting areas, ecosystem assets of different ecosystem types and basic spatial units has remained consistent.

The focus for discussion at the Forum was on how different ecosystem types (e.g. forests, wetlands) might be established leading to the design of a classification. Relevant considerations were the principles to define ecosystem types, the potential structure for a standard classification covering terrestrial, freshwater and marine areas and dealing with special cases of for example, urban and rural areas where there is a mosaic of ecosystem types.

It was considered that any classification should be credible (scientifically sound), salient (with respect to policy needs) and legitimate (reflecting different values and beliefs). It should also be consistent with principles for statistical classifications and be able to build on and connect to the range of existing classifications of land, freshwater and marine areas.

Presentations were made by a number of experts covering both country experience and scientific investigations. The key points and issues raised from the discussion over the course of the Forum were:

- To consider potential alternatives to using spatial areas in the definition of ecosystem assets
- The need to consider the purpose of the classification with regard to users' needs, with a sense that the primary use should be some level of aggregate reporting on ecosystems. However, to identify users' needs, some proposals for classes would be needed in the first instance.
- To this end, a more limited number of higher-level classes would be appropriate but recognizing the need to establish a hierarchy to allow for connection to more detailed classes that would be needed to support analysis, policy advice and local/landscape scale applications.
- In establishing classes there was a preference to give priority to ecological factors rather than land use factors. The number of criteria needed to define ecosystem classes was not clear.
- The effect of scale on the approach to establishing classes needs to be carefully considered both in terms of determining the criteria and in terms of understanding purpose and application of the classification.
- There are some specific challenges in delineating freshwater ecosystems taking into account the mixture of relevant ecosystem types and the integral nature of linear features (rivers and streams). The treatment of groundwater systems will also need to be clarified.

Based on the discussion, the participants agreed on the need for discussion papers to be developed that examine the existing classification approaches; describe the principles to be applied both in ecological terms and in statistical terms, including how to deal with mutual exclusivity; apply a greater use of ecological and ecosystem language; and recognize the need for multiple attributes in defining ecosystem types and certainly not limited to land cover and ecosystem services.

Research area #2: Ecosystem condition

The measurement of the condition of ecosystem assets is a key component of ecosystem accounting since it is the condition which drives the capacity of an ecosystem asset to generate services in a sustainable way. Monitoring the level of and changes in condition is thus a key feature of accounting for ecosystem assets and the measurement of ecosystem degradation and enhancement.

The measurement of ecosystem condition is, at its core, an ecological task, but in the early development of SEEA EEA the involvement of ecologists was relatively limited. Consequently, establishing robust concepts and approaches to the measurement of ecosystem condition is a key aspect of the SEEA EEA revision process. The positive story is that a range of ecologists have been willing to engage with ecosystem accounting and the Forum represented a clear launching pad for discussions in the coming years.

A focus at the Forum was on establishing the idea of a condition measurement framework drawing out distinctions between the ecosystem characteristics of interest, the relevant variables and associated indicators and measurement units, the types of indicators (pressure, state, performance), the links to reference conditions and thresholds, and the potential for aggregation.

Presentations were made by a number of experts in the measurement of ecosystem condition with the following key issues emerging:

- The usefulness of distinguishing between condition across terrestrial, freshwater and marine ecosystem types.
- The need to develop a typology of characteristics to measure condition that takes into account both ecological and non-ecological characteristics.
- The need to distinguish different perspectives or purposes for the measurement of condition. Three main purposes were identified – a neutral measure, an ecosystem services-based measure and a policy/management-based measure.
- The importance of describing the connection to measures of biodiversity
- The need to ensure data quality and methodological transparency and to understand the required level of scientific review
- The connection to defining and measuring ecosystem capacity and capability including the distinction between persistent and variable characteristics
- The connection between the measurement of condition and the delineation of ecosystem assets requires careful consideration particularly as incremental changes in condition may eventually lead to a single spatial area changing ecosystem type.
- More broadly, time lags and non-linear effects on condition and associated flows of ecosystem services (both positive and negative) need to be carefully accounted for.

Based on the discussion, a number of discussion papers will develop these ideas further. The proposed papers will focus initially on clarifying the purpose of accounting for ecosystem condition, reviewing existing work on ecosystem condition in the context of the SEEA EEA framework, and describing a typology of condition variables and associated issues. Based on progress in these areas, attention would turn to linking condition indicators with reference values, considering issues of aggregation and expanding on the connection between ecosystem condition and capacity.

Research area #3: Ecosystem services

Ecosystem services is the concept that established the accounting link between ecosystem assets on the one hand and economic activity, including household consumption, on the other. Indeed, the concept of ecosystem services was a missing element of the discussion on accounting for ecosystem degradation in the early versions of the SEEA. The SEEA EEA development through 2011-2013 was able to take advantage of the rapidly increasing research and practice on the measurement of ecosystem services and use this to create the core ecosystem accounting framework that is broadly analogous to the treatment of other assets in the national accounting system.

While the core ecosystem accounting framework remains robust with ecosystem services providing the bridge between ecosystems and existing measures of economic activity, there remain a range of issues in the definition and measurement of ecosystem services for accounting purposes that are unresolved.

The focus of discussion at the Forum was clarifying the set of issues to be resolved, making progress on proposed treatments where possible, and considering the way in which it would be best to establish a classification of ecosystem services to support ecosystem accounting. Representatives of current ecosystem service classification systems worked with UNSD from 2015 - 2017 to discover how these systems could best inform or contribute to the ecosystem accounting framework, and the Forum could build on these insights.

Presentations from a number of experts gave insights to the potential ways forward. Through the ensuing discussion the following key findings emerged:

- In progressing the discussion of a classification, it will be important to apply general statistical principles for classifications as well as taking as much benefit as possible from existing work on the classification of ecosystem services.
- It will be important to understand the role of a classification, the extent to which it might serve both local and global needs and to develop guidance for the use of the classification
- There was a preference in the development of a classification that it be as simple as possible in terms of levels/hierarchy, while being supportive of future more wide-ranging application of the SEEA EEA. The application of the commonly used top level framing of provisioning, regulating and cultural services was broadly supported as a starting point, in particular for communicating with current ecosystem service practitioners.
- Discussion on identifying a set of key ecosystem services was productive in being able to find between 15-25 key services although it was recognized further work is required to clarify potentially overlapping descriptions.
- On a number of conceptual issues, the discussion identified some areas of agreement but it is also clear that much further discussion is required on issues such as the treatment of cultivated biological resources, carbon storage and habitat related services.

Further work in this area will build on this input with the focus on developing discussion papers that cover the relevant conceptual and measurement boundary issues, the principles and proposals for a classification of ecosystem services for ecosystem accounting making use of current experience. A concrete next step that emerged is the description and measurement of a range of key ecosystem services, including a specific focus on marine ecosystem services. There was also strong encouragement to explicitly investigate the perspective of the end users and policy makers such that the measurement of ecosystem services is well aligned with their needs.

Research area #4: Valuation and accounting treatments

The area of valuation and accounting treatments is commonly the most contentious area of ecosystem accounting due to the challenges and perceptions associated with environmental valuations. Nonetheless, for a full national accounting of ecosystem assets and services valuation in monetary terms is required and engagement with the broader economics and financial communities requires the capacity to talk meaningfully about approaches to the valuation of ecosystem assets and services.

The discussion of valuation and accounting treatments at the Forum benefited greatly from a workshop on these issues held in Bonn in April, 2018[5], a summary of which was provided by Mr Bram Edens (UNSD) at the start of the Forum. Key issues identified there were revisited at the Forum. In addition, presentations from a number of experts considered criteria for determining appropriate valuation methods for ecosystem accounting and approaches to recording ecosystem degradation. Key points to emerge from the discussion were:

- The need for increased clarity on the description of ecosystem services and associated benefits to ensure common understanding in the selection and application of valuation methods. A close link between area #4 and area #3 on ecosystem services is therefore essential.
- The need for clarity on the link to the SNA production boundary and beyond this the link to well-being.
- Establishing a set of criteria for valuation methods seems sensible and plausible and further refinement of the proposals at the Forum is required.
- In some contexts, assessment of values in non-monetary terms may be highly relevant.
- An understanding is required on the national accounts approach to the valuation of time, e.g. with respect to people's time spent in natural environments
- Consideration is needed on the appropriate way of accounting for improvements (or declines) in health outcomes that may be associated with the flow of ecosystem services.
- There are numerous challenges in providing global guidance on valuation of ecosystem services because of the diversity of contexts including with respect to ecosystem types, institutional arrangements, and the different uses and users of ecosystem services.
- Determining the appropriate counterfactual and thresholds for the valuation of ecosystem services will be challenging.
- The valuation of ecosystem assets, as distinct from services, needs to be considered, thus bringing into play issues of discount rates, projecting expected ecosystem services flows and related issues around the use of net present value approaches.
- There are a number of alternative accounting treatments for dealing with ecosystem degradation and enhancement, including recognition of liabilities. Consequently, extensions and reworkings of the proposed Models A and B in the SEEA EEA should be considered.

Based on the discussions at the Forum and taking advantage of the successful workshop in Bonn, a range of discussion papers are planned to further consider these issues. They will focus on conceptual

[5] https://seea.un.org/events/expert-meeting-ecosystem-valuation-context-natural-capital-accounting

issues related to measurement, especially on clarifying the links between exchange value concepts and standard environmental valuation methods; on practical issues in the measurement of key individual services, and on accounting for ecosystem assets and associated flows of degradation and enhancement.

EXPERIENCES AND INITIATIVES

The Forum explored a wide range of experiences and initiatives in five separate sessions. There was an "open mic" session where all participants were invited to share a brief description of an ecosystem accounting project or related initiative. In less than 30 minutes, 21 participants provided such descriptions highlighting work going on around the world. The work ranged from broad global projects to national and sub-national projects and covered a range of ecosystem types (including urban, forests, oceans and freshwater) and areas of focus (including corporate accounts, poverty and development, earth observation data, biodiversity and sustainable tourism). A positive sign for ecosystem accounting is that the work is not at all solely focused on the development of accounts as a statistical product, but commonly is motivated by the use of the ecosystem accounting framework to inform decision-making.

Two short sessions considered the links between indicators and the SEEA EEA and the links to World Bank work on wealth accounting. There is clearly potential to derive indicators from the SEEA EEA for example in terms of measures of changes in extent of certain ecosystem types (e.g. forests and wetlands) but further work is required to develop alignment of definitions and development of data sources. More conceptual investigation will be required to develop indicators relating to ecosystem services and also ensure effective applications of ecosystem accounting results are made in wealth accounting work. While much focus is on the current suite of SDG indicators, the importance of maintaining connections to the discussion of the Aichi targets which will expire in 2020 was noted.

Another session focused on country experiences with short presentations from Brazil, China, Costa Rica, the Czech Republic, Indonesia, Mexico and the Philippines. From measurement perspective, these presentations highlighted the tremendous relevance, potential and feasibility of ecosystem accounting in all countries. An intriguing statistic is that together these seven countries account for around 60% of the world's biodiversity, indicating that their interest in SEEA is both important for them and for other countries. The countries are showing that collaborative work involving statisticians, economists, ecologists and geographers can serve to advance the discussion and mainstreaming of biodiversity and ecosystems. A lesson from all countries was also to "just start" and progressively improve data sources and tighten up processes and procedures. More broadly, the presentations demonstrated the power of having a common language of the SEEA EEA framework to support the exchange of experiences and comparison of results. Readers of this report are encouraged to see the country presentations on the meeting website.

A final session on experiences and initiatives was part of the conclusion of the workshop where a panel of eight representatives of international agencies and global processes provided their thoughts on the connections to the SEEA EEA and the opportunities for engagement. Included in the range of initiatives were:

- those from the European Union (OPERA, OPENNESS and KIP-INCA) recognizing the potential for conceptual work and data emerging from these projects to contribute to the SEEA EEA revision and also highlighting the importance of ecosystem accounting within the EU.

- the OECD work on environmental performance reviews and the use of SEEA to underpin headline indicators concerning land, and work on agriculture and biodiversity policy and the use of SEEA to support identification of relevant condition indicators.
- the work of UNCCD on land degradation and SEEA's potential to inform the quantification and monitoring of land degradation and to support associated policy development.
- the UN GGIM project which is advancing the discussion of geospatial data in the context of official statistics and where there are significant opportunities to align data advances to support the SEEA EEA, for example concerning data on soil and water.
- the proposed revision to the 2008 System of National Accounts within the national accounts community where a research agenda is currently under development and could incorporate advances from the SEEA EEA revision process.
- the Inter-governmental Science-policy Platform on Biodiversity and Ecosystem Services (IPBES) where there are potential connections with respect to cataloguing policy support measures, describing ecosystem values and capacity building at country level.
- the development of indicators to measure progress towards the UN SDGs and the role of SEEA as a tool to support integrated approaches to assessment, especially in the lead up to the 2020 re-assessment of SDG indicators;
- the work on the successor framework to the current CBD strategic plan (expiring in 2020) which will consolidate Aichi Target 2 with a focus on specific sectors and potentially highlight a direct role for the SEEA
- the work of the UN World Tourism Organization on measuring the sustainability of tourism, including environmental flows, environmental condition and application of some of the spatial approaches of ecosystem accounting.

The strength of the ecosystem accounting framework in providing a pathway for ecosystem and biodiversity to be considered in an integrated manner across all of these initiatives is something to both recognize and work actively to promote and build.

DATA, MODELS AND TOOLS

It is well accepted that substantive progress in ecosystem accounting will depend on using the best available data, data management practices and ecosystem modelling approaches. It is equally well accepted that there is no one-size fits all solution. To support implementation of ecosystem accounting an important part of the Forum involved the discussion of models, data and data management approaches.

The session on models discussed general issues in the use of models and highlighted the existence of criteria that can be used to evaluate whether a particular model or tool is useful or appropriate in different contexts. Such criteria may be of direct support for agencies investing in modelling. Three models were then presented: ARIES, INVEST and LUCI. Each has similar features but operates in different ways. Key points to emerge in the discussion were that:

- All three models can be applied to support ecosystem accounting, for example in providing data to compile supply and use accounts for ecosystem services.

- It is important to adjust or calibrate the models to each specific situation.
- While interoperability across models might be a worthy conceptual objective, it is not by any means a simple or straightforward task and may not bring the anticipated benefits in terms of improved decision making.
- Assessing the accuracy of the models can be challenging and assessment of varying scenarios might be more realistic than absolute values.
- A balance needs to be struck between investing in models and investing in underlying source data – it may be that models are sufficient to provide a solid starting point but that improvement over time in underlying data will be an important step.

With regard to data, presentations from representatives of NASA, Conservation International and FAO provided excellent insight into the continually expanding world of earth observation data and tools. The datasets covered topics such as land cover, water, climate, habitat, net primary productivity, soil, agricultural production and forests; and were available at various resolutions and time scales. Commonly, data sets are developed for specific purposes and an important step for ecosystem accounting will be articulating the data requirements and specifications for accounting purposes. This task will be supported by the GEO Earth Observation for Ecosystem Accounting (EO4EA) initiative.

In terms of data management and systems, two presentations from the EU and Australia spoke to the importance and challenges of this work for ecosystem accounting where the integration of data from multiple sources is an abiding feature. This is a standard challenge in the national accounting context but becomes a more difficult task for ecosystem accounting where spatial data are involved. While recognizing the challenges both presentations provided pathways forward in terms of understanding data characteristics, building associated data structures and allowing for flexibility to meet multiple objectives. In this regard, an important step is understanding the desired functionality and applications of these systems and underpinning data. This leads to a task for ecosystem accountants to effectively describe what is required for accounting purposes.

PLANS FOR MOVING FORWARD

The Forum provided an excellent start for the revision process by bringing a large number of experts together from a range of disciplines and areas of interest. This had the benefit of re-connecting with experts who had been previously engaged in work on SEEA EEA and establishing links to new experts. The socializing of the key features of the ecosystem accounting challenges where many disciplines are required to come together was an essential outcome from the Forum.

A second key benefit of the Forum was that it provided the opportunity early in the revision process for experts to raise questions, propose alternative approaches and suggest relevant materials. The inclusive nature of ecosystem accounting, bringing together as it does expertise from geography, ecology, economics and statistics, means that these opportunities for sharing experiences and ideas is an essential part of the process.

In terms of next steps, there are a number of aspects involved covering the development of technical content across the research areas, engagement with experts and development of the revised SEEA EEA. Specifically, it was noted in closing that:

- Following the Forum, comments were invited on all papers and background documents by the end of July.
- Participants were encouraged to propose relevant materials and names of additional experts
- In relation to the drafting of discussion papers it was indicated that topics would be confirmed by the end of July with papers being drafted from September through to January 2019. There would be progressive review of these discussion papers by Expert Review Groups, including the use of a dedicated wiki for the revision.
- Four Expert Review Groups are planned to be established by end July.
- The outline of the revised SEEA EEA will be discussed at the June 2018 UNCEEA meeting and drafting of chapters is to commence later in 2018. Global consultation of the draft chapters is planned to commence in mid 2019.
- The next Forum of Experts will be held in April 2019 with the intention of discussing position papers on key issues and potentially some draft chapters of SEEA EEA, and also assessing the remaining research and testing requirements.
- An Editorial Board is proposed to be established in April 2019.

While the Forum of Experts is an important engagement event, it was indicated that the revision process will also look to use a range of related meetings and conferences to support awareness and understanding of ecosystem accounting and the revision process. Examples include the World Congress on Environmental Resource Economics in late June 2018, the London Group meeting on Environmental-Economic Accounting in Dublin (October 2018), the World Bank Policy Forum and other natural capital events in Paris (November 2018), the Geospatial Congress in China (November 2018) and the regular UN Committee of Experts on Environmental-Economic Accounting (UNCEEA) in June each year. Overall, it is intended that the process is as inclusive as possible.

Those managing the revision process will aim to be in regular contact with Forum participants to keep them abreast of progress and, at any stage, questions, clarifications and suggestions are welcome. Please address them to seea@un.org.

ANNEX: SEEA EEA Related experiences

The following were provided as examples of projects and initiatives of relevance to the advancement of SEEA EEA.

- David Barton (NINA, Norway): Urban experimental ecosystem accounts being developed for greater Oslo. A challenge is how to convince people that a city is an ecosystem.
- Steven King (UNEP-WCMC): Working on integrating biodiversity in the SEEA EEA and working in countries, such as Uganda, to develop ecosystem accounts.
- Neville Crossman (UNCCD consultant): Inter-American Development Bank is investing in their research program in terms of how SEEA and ecosystem accounting can support their decision-making with respect to environmental investments.
- Matias Piaggio (EfD-CATIE, Uruguay): Undertaking an ecosystem accounting for development project including valuation of three ecosystem services and linking to biophysical changes. First phase involves collaborative exercises and in the second phase starting to link to NSOs.
- Michael Bordt (UNESCAP): Supporting advancement of SDG14 in Pacific island states, hence developing ocean accounts. Expert workshop to be held in Bangkok (1-3 August) to provide input into SEEA EEA revision and support countries with case studies.
- Daniel Juhn (Conservation International): EO4EA initiative to collate current and emerging experiences in using earth observation for ecosystem accounting. Membership is open and everyone is welcome to join.
- Lisa Bersales (Philippines Statistics Authority): Pilot study underway in measuring sustainable tourism, using SEEA framework to analyze energy and water resources in the Philippines.
- Octavio Tolentino (INEGI, Mexico): Project on ecosystem accounting has helped to consolidate a technical working group in Mexico, coordinated by INEGI. It has helped all institutions to know what others are doing, and allow sharing of knowledge and validation of proposals.
- Francois Soulard (Statistics Canada): Annual publication *Human activity and the environment* has showcased forest, water and urban ecosystems accounts. Next year plan is to publish all environmental accounts in this publication.
- Carl Obst (UNSD consultant): Project underway in Tasmania applying SEEA EEA principles for a forestry company and integrating the accounts into their standard corporate accounts.
- Richard Mount (Australian Department of Environment): In Australia interest in SEEA on regional scale, in particular looking at natural capital accounting in forestry and fishing using SEEA framework.
- Emily Connors (UK Office for National Statistics): Project to produce ecosystem accounts by 2020. This year they are planning to publish urban accounts for the UK. They will produce a roadmap on what are they doing on the other habitats.
- Miriam Barbuda (IBGE, Brazil): IBGE published water accounts in March 2018, with the national water agency and MoE. Now looking at forest and energy accounts.
- Sjoerd Schenau (Statistics Netherlands): Last phase of testing and implementing ecosystem accounts in the Netherlands. Later in 2018 they should publish the condition account.
- Beyham Ekinci (BfN, Germany): Ecosystem accounting for Germany project planning to have first results early next year.

- Edwin Horlings (Statistics Netherlands): Focus of a new national monitor is natural capital and wellbeing. Also looking at effects of human activity broadly, including the effects of Dutch emissions on other countries.
- Greg Gong (UN ECA): Ten countries in Africa are doing something related to SEEA. Running a capacity development project to support these countries, including e-training.
- Terry Hills (Australian Department of Environment): Australian national strategy and action plan for environmental accounting recently launched.
- Carl Obst (UNSD consultant): Poverty environment accounting framework has been developed with UNDP and a test case completed in Bangladesh. Also, TEEB Agriculture & Food foundations report launched last week, on agriculture and food systems with an evaluation framework across multiple capitals that incorporates the SEEA.
- Mandy Driver (SANBI, South Africa): Recently decided on the compilation of 6 ecosystem accounts: national land and terrestrial accounts (extent & condition), city region, protected area accounts, marine extent & condition accounts, species accounts for selected economically important species and a full suite of accounts for 1 province in South Africa.
- Francesco Tubiello (FAO): SEEA for Agriculture, Forestry and Fisheries (SEEA AFF) white cover version was released this year, which offers some elements that could be brought into the EEA revision.
- Lisa Wardlaw-Kelly (Australian Bureau of Statistics): Australia released its annual environmental-economic accounts today.