System of Environmental Economic Accounting
SEEA EXPERIMENTAL ECOSYSTEM ACCOUNTING: PERSPECTIVES ON VALUATION

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Webinar overview

• Background and context
• Overview of ecosystem accounting
• Valuation context and concepts

<< Clarifying questions >>

• Research and revision program

<< Open discussion and questions >>

• Taking things forward
Background and context
The System of Environmental Economic Accounting (SEEA)

Two standards, one approach:

- The SEEA Central Framework (SEEA CF) was adopted as an international statistical standard by the UN Statistical Commission in 2012 to measure the environment and its relation with the economy.

- The SEEA Experimental Ecosystem Accounting (SEEA EEA) complements the Central Framework and represents international efforts toward coherent ecosystem accounting.
Revision of the SEEA EEA

- **Mandate:** Forty-eighth UN Statistical Commission (2017) supported efforts of UNCEEA to revise SEEA EEA by 2020
  - In June 2017 UNCEEA determined to initiate the process of revision

- **Base for revision:** The revision will be based on the two main publications
  - SEEA 2012–Experimental Ecosystem Accounting (published in 2014)
  - Technical Recommendations in support of the SEEA EEA (published in 2017)

- **Scope:** Revision process will draw upon experience of ecosystem accounting initiatives and projects

- **Involvement:** We seek for broad involvement of partners and experts in the process, as well as for financial and in-kind contributions.

- **Oversight** will be provided by the SEEA EEA Technical Committee (established by UNCEEA) and the Bureau of UNCEEA with broad involvement of experts in the field.
Research agenda for the revision

• Revision structured around **four research areas**:
  > **Spatial areas**: Classification of ecosystem types
  > **Ecosystem condition**: Characteristics and indicators of ecosystem condition
  > **Ecosystem services**: The description and classification of ecosystem services
  > **Accounting treatments and valuation**:
    • Valuation concepts for ecosystem services and ecosystem assets
    • Valuation methods for key ecosystem services
    • Accounting for ecosystem capacity, degradation and enhancement

• There is also a number of **crosscutting domains**, such as oceans and marine ecosystems, freshwater ecosystems, urban ecosystems, etc..
Revision process: keystones & timeline

- January 2018: Broad consultation of the revision issues
- March 2018: Establishment of four Working Groups according to the research issues
- June 2018: Working Group leads discuss initial set of issues and work plans at the Forum of Experts
- March 2019: Working Groups work on the research issues supported by an Editor
- March 2019: Working group papers and SEEA EEA draft is discussed at the Forum of Experts
- April 2019: Alternative research co-ordination structure adopted with a focus on coherence
- November 2020: New groups work on finalization of SEEA EEA & Global consultation processes
- December 2020: Revised SEEA EEA is finalized for discussion at UNSC in March 2021
Overview of ecosystem accounting
Stocks and flows in ecosystem accounting

- Individual & societal well-being
- Benefits SNA & non-SNA
- Ecosystem services
- Inputs from other “capitals”

ECOSYSTEM ASSET

Ecosystem processes

SEEAA
Delineating spatial units

BSU

Ecosystem Accounting Area (EAA)

ET1 (EA1)

ET2 (EA2)

ET3 (EA3)

ET4 (EA4)

ET2 (EA5)

ET3 (EA6)
Steps in ecosystem accounting

1. Ecosystem extent (by ecosystem type)
2. Ecosystem condition (by ecosystem type)
3. Ecosystem services supply (by ecosystem type)
4. Ecosystem services use and benefits (economic units – incl. h/holds)
5. Ecosystem services supply and use values
6. Ecosystem asset values (by ecosystem type)

Integrated accounts
- Combined presentations
- Extended supply & use tables
- Sequence of sector accounts
- Balance sheets
Valuation context & concepts
Context for SEEA EEA valuation work

- Main aim is **integration with national accounting** values of production, income, consumption and assets
- For integration need to apply a valuation concept that is consistent across economic and environmental stocks and flows – i.e. **exchange values** or transaction prices
- Recognise other purposes and frameworks for valuation
  - Social cost-benefit analysis
  - Externality assessments
  - Inclusive wealth / green accounting
- One part of the valuation challenge has been a **lack of ongoing dialogue** between those leading the work on valuation in environmental economics and those in the national accounts community
- SEEA based valuations should be a **complement** among valuations much as national accounting estimates complement other economic valuation work
Key concepts for valuation

- Accounting has a focus on recording transactions between units

- Types of transactions in SNA
  - Monetary transactions
  - Non-monetary transactions
  - Imputed transactions

- Defining ecosystem services
  - Ecosystem services as products that are transacted
  - Ecosystem services are not the same as benefits
  - Challenge of establishing quantification of service
  - Coverage of final and intermediate services
Valuing non-monetary transactions

• In SNA
  • Market price equivalent / similar markets
  • Cost of production

• Idea of valuation “as though a market existed”

• Connection to ideas of Nordhaus – near and far market values
Exchange and welfare values

Consumer surplus

Exchange value
Valuing ecosystem services: Environmental economics methods

- **Methods considered to date**
  - Resource rent, production function, hedonics
  - PES and environmental markets
  - Replacement cost, damage cost, averting behavior
  - Travel cost
  - Restoration cost
  - Stated preference
  - Simulated exchange values

- **Using channels of ecosystem services** (from Freeman)
  - Inputs to production, household consumption & well-being
  - Consider both type of services and user characteristics
Current thinking on application to EEA

• **Methods considered to date**
  • Resource rent, production function, hedonics
  • PES and environmental markets
  • Replacement cost, damage cost, averting behavior
  • Travel cost
  • Restoration cost **tbd**
  • Stated preference
  • Simulated exchange values

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Valuation of ecosystem assets

• Starting point is to apply Net Present Value approaches
  > Broadening the set of benefits from a single asset will, ceteris paribus, increase the asset value

• Requires estimation of / assumptions regarding
  > Expected streams of services – links to condition and capacity of the ecosystem asset and expected demand profiles
  > Estimated asset lives
  > Discount rates

• Need to consider overlaps/connections with observed transactions in land, e.g. for agricultural land
Connection to SEEA Central Framework

- SEEA Central Framework (& SNA) based estimates for natural resources reflect valuations for **specific provisioning services** – e.g. timber and fish

- In ecosystem accounting, this SEEA CF based valuation is incorporated but then extended with other ecosystem services that are expected to be supplied from the same ecosystem asset – e.g. air filtration services

- Expect that for the same service, physical and valuation estimates from **SEEA CF would align with SEEA EEA**

- Expected flows for non-provisioning services are likely to depend on understanding of expected harvesting profiles
Clarifying questions
Research and revision program
Key steps since 2013

• Experiences at country level in valuation
  > UK
  > Netherlands
  > Pilot countries across UNSD and World Bank programs

• Drafting of the SEEA EEA Technical Recommendations

• Extending engagement with the ecosystem services and environmental economics communities
  > Bonn workshop on valuation – April 2018
  > Forum of Experts on ecosystem accounting – June 2018
  > Research papers on individual ecosystem services – Oct-Nov 2018
  > Links to broader networks incl: IPBES, Ecosystem Services Partnership, ACES, European Assoc. Environmental & Resource Economics
General valuation issues

• Placing exchange values in context
  • Clarifying the policy and analytical question and matching valuation requirement with appropriate concept and method
  • Considering potential of complementary accounts
  • Understanding connection to non-monetary valuation

• Broad conceptual challenges
  • Determining extent to which different valuation methods can be used to estimate exchange values
  • Describing the institutional assumptions/arrangements that should underpin exchange values for accounting purposes
  • Treatment of non-use, intrinsic, bequest and existence values
Specific valuation issues

- Measuring exchange values for provisioning services where resource rents are low or negative
- Potential of cost based approaches
  - Appealing to accountants and mixed views among economists
  - Distinguishing cost of securing benefits from cost of supplying service
  - Distinguishing costs already recorded in the accounts in the valuation of ecosystem services (e.g. travel costs)
- Potential of simulated exchange values and using marginal values from demand functions
- Use of prices from PES schemes and environmental markets
- Linking the value of ecosystem services to human health outcomes
Open discussion and questions
Taking things forward
Next steps

• Progress research through working groups on individual ecosystem services and valuation & accounting (to end February 2019)

• Discussion and consultation in expert meeting (end January) and open expert review (February-March 2019)

• Discussion at next Forum of Experts (April or May 2019)

• Drafting of chapters for revised SEEA EEA and global consultation (May 2019 onwards)

• Ongoing research on outstanding issues (May 2019 onwards)

• Discussion at London Group (October 2019) and other relevant events

• Global consultation processes (May 2019 – Nov 2020)

• Discussion at UNSC (March 2021)
THANK YOU

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