Valuation in the Context of SEEA Experimental Ecosystem Accounting

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Contents of the presentation

- Valuation in SEEA EEA: where do we stand?
  - The SEEA Technical Recommendations
- Key conceptual and measurement issues
- Communicating values in the accounts

Valuation of transactions / flows

- Objective: valuation in the SEEA EEA aims to measure the contribution of ecosystems to production and consumption, in monetary terms. This is not reflecting the welfare generated by ecosystems.
- Compared to the SNA, the production and the asset boundary are relaxed in the SEEA EEA allowing the inclusion of regulating and cultural ecosystem services.
- Valuation is to be carried out aligned with the valuation principles of the SNA, using exchange values - reflecting the price at which ecosystem services and ecosystem assets would be exchanged between buyer and seller if a market existed.
- SNA 3.123: " when market prices for transactions are not observable, valuation according to market-price equivalents provides an approximation of market prices"

Valuing flows and assets (SEEA EEA TR)

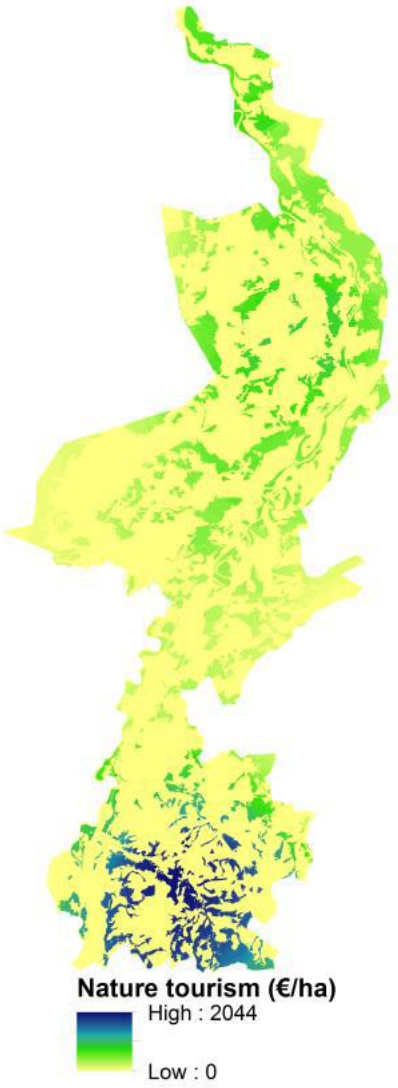
- Ecosystem (Assets) will generally supply a ‘ basket’ of ecosystem services including market and non-market services
- Ecosystem Accounting therefore requires the valuation of individual ecosystem services. This requires finding an appropriate price for the exchange of ecosystem services between a given ecosystem asset (e.g. a forest) and an economic unit or individual (e.g. a forester).
- Valuing ecosystem assets will generally require assuming and pricing a flow of ecosystem services, with the value of the ecosystem asset then equal to the net present value of the future flows of expected ecosystem services.

Valuation principles (SEEA EEA TR)

- For many provisioning and some other services, a close connection can be made to the values used in the SNA to estimate production and consumption ('near-market'), for instance:
  - Contribution of ecosystems to crop and timber production
  - Contribution of ecosystems to providing a pleasant living environment with recreational opportunities (the 'amenity service')
- For other services ('far-market') the link between the ecosystem services and the institutional unit benefiting from the service is more indirect as typically in the case of regulating services. For instance:
  - Water purification (spatial dimension)
  - Air filtration (spatial and temporal dimension)
  - Carbon sequestration (temporal dimension)

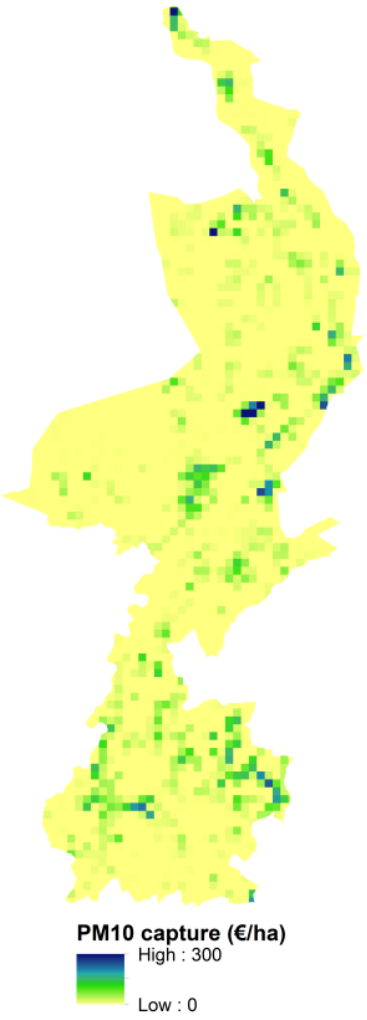
Valuation methods: Near market

- Potentially applicable valuation techniques include (but are not limited to):
  - Unit resource rent
  - Production factor
  - Hedonic pricing
- Long experience with these approaches in environmental economics, several pilot studies have been carried out in the context of SEEA EEA.



Valuation methods ‘ far-market’

- Often, spatial models are need to connect ecosystem service (e.g. capturing air pollutants) and the institutional unit benefitting from the service (e.g. the households facing lower exposure to pollutants and thereby lower health costs)
- There may also be a temporal dimension, as in the case of carbon sequestration (reduction of future climate change impacts) or flood control (reduction of flood impacts during flood events including events in the future)
- Potentially applicable valuation methods include:
  - Replacement cost methods
  - Avoided damage cost method
  - Marginal values from revealed demand functions



Progress in valuation

- We are learning fast: various case studies have been implemented in particular for the Ecosystem services supply and use account (e.g. UK, Limburg the Netherlands, Indonesia, Philippines, etc.)
- There is some variation in how spatial models have been applied and maps with values have been produced
- A range of valuation methods has been tried and there is guidance on which methods are applicable to value ecosystem services. However there is no clear guidance yet on when and how to apply the methods (e.g. different methods can be used to value a service) – or on data quality assurance
- Much less experience with producing Monetary Asset Accounts

For monetary aspects of SEEA EEA to become (eventually) part of a standard: Need for better understanding the fundamentals of valuation

- Fundamentals
  - When do we use which valuation system ?
  - What are appropriate assumptions for the individual valuation methods (e.g. when long-term effects are translated to values at present)
- Helpful concept: 'Channels' through which changes in environment / ecosystems can affects individuals' welfare (after Freeman, 1993, 2003)
  - Changes in prices paid for goods bought in the market
  - Changes in the quantities or qualities of non-marketed goods (e.g. public goods such as air quality)
  - Changes in prices of factors of production
  - Changes in the risks people face (e.g. storms, floods)

Challenges in valuation, specific questions

Sources: SEEA EEA TR, Obst et al. 2016, Edens and Hein, 2013

- Accounting for Low or Negative Resource Rents (as found in many open access-common pool resources)
- Derivation of Values for Ecosystem Assets
  - Assessing flows of ecosystem services in the future
  - Different ways of valuing degradation (see presentation on defining assets)
  - Which discount rate to use ? (can the case for a social discount rate be made for public good ecosystem services?)
- Dealing with disservices
- Valuation of intermediate services (?)
- Valuing non-use services ? (additional set of information?)
- Are there valuation methods that require further attention?

The Simulated exchange value approach

- The simulated exchange value approach conceived by Campos and Caparrós (2011).
- The approach aims to measure the income that would occur in a hypothetical market where ecosystem services are bought and sold. It involves estimating a demand and a supply curve for the ecosystem service and then making further assumptions on the price that would be charged by a profit-maximizing resource manager.
- The method analyses the hypothetical revenue associated with this transaction (but not the associated consumer surplus) in order to estimate the value of the ecosystem service.

A key concern for all of us

- Ensuring proper **communicatio**n of **what value means** in the context of SEEA EEA
- Note that many users will not be familiar with the accounting context...
- ...and may assume that the monetary values in the accounts represent 'the value of ecosystems'
- We need to be mindful of this - and work towards better understanding of the **uncertainties** in valuation (values are often most tangible for users, but at the same time uncertainties may be highest)

Thank you