Examples of Ecosystem Accounts and Policy Applications

Dr. Lars Hein
Contents

- Scoping of accounts vis-à-vis policy questions
- Ecosystem accounting in comparison with other green development indicators
- Remaining challenges (and opportunities) in ecosystem accounting
- Illustrations of policy applications
Scoping of Ecosystem Accounts

- Which areas, which ecosystems, which services to include?

- Driven by policy needs, for instance:
  - Indications of rapid land use change of changes in natural resource use
  - Conflicts in natural resource use
  - Sustainability concerns or ambitions
  - Interest in ‘greening’ the economy and in identifying flows of funds and potential investment opportunities including PES

- Driven by capacities, resources and data (will differ per service)
  - GIS modelling, production statistics
Ecosystem accounting and the GDP/NDP

- Note that many ecosystem services are already included in national accounts – directly or indirectly
  - Provisioning services (including home consumption)
  - Most of the regulating services (exception: carbon sequestration)

- Ecosystem accounting makes the contribution of ecosystems clear (also spatially) and shows implications of degradation and rehabilitation

- Ecosystem accounting allows monitoring capacity and thereby sustainability
Ecosystem accounting versus the Central Framework

- Central Framework has been adopted as a standard
- Compartmental approach simpler, but leads to exclusion of many types of ecosystem services
- Central framework does not require spatial analysis
- Ecosystem accounting allows for more comprehensive understanding of sustainability trends
Ecosystem accounting versus (Inclusive or Comprehensive) Wealth accounting

- Ecosystem accounting does not include the Consumer surplus
- Ecosystem accounting allows linking to national accounts, and builds on concepts and definitions defined in SNA (2008)
- Ecosystem accounting does not require the use of shadow prices as in wealth accounting
Further reading on wealth accounting

- Inclusive and Comprehensive Wealth accounting studies, using shadow prices for all types of capital.
  - World Bank Comprehensive Wealth Accounting program:
Adjusted net savings

- Adjusted net savings (also: genuine savings) measure the true rate of savings in an economy.

- Expenditures on education are added to net domestic savings (investment in human capital)
- Pollution damages include health damages from urban air pollution and costs of CO2 emissions.

Source: World Bank
Challenges: Analysing ecosystem services

- Data availability, both physical and monetary
- Understanding uncertainties, in particular when there is a lack of data and only one suitable modelling approach that can be applied.
- Modelling the hydrological service
- Linking deposition of particulate matter to reduced concentrations of air pollutants
- Integration in accounts: to whom should we attribute public goods provided by ecosystems? Are they produced by the ecosystem manager or land owner or ??
Challenges: calculating capacity provisioning services

- There are thresholds that may be passed in ecosystem condition under current management.
- There is unpredictability moderated by ecosystem resilience, e.g. as a function of rainfall or fire.
- What time frame to consider?
Challenges: valuing ecosystem services

- Valuation of provisioning services: Valuation of open-access common pool provisioning services, where the resource rent approaches 0?

- Valuation of regulating services, for example
  - Wide price ranges for carbon
  - Values for hydrological service dependent on overall land cover in a watershed.

- Valuation of cultural services
  - Recreation
  - Comparison with biodiversity accounts

- Consideration of future price changes

- Selection of discount rate
Policy applications

- Ecosystem accounting for Land Use Planning (Central Kalimantan)
- Ecosystem accounting to monitor sustainability (Norway)
- Ecosystem accounting to analyse the benefits of new protected areas (Netherlands)
Stakeholders’ development scenarios

Environmentally sustainable scenario

- Exclusion of orangutan habitat (suitability > 50%).
- Excluding areas where the current carbon storage in the vegetation exceeds the carbon storage in a mature oil palm plantation.
- Excluding peatlands. Exclusion of areas with high potential for nature recreation.
- Maintaining the supply of areas important for timber, rattan and paddy rice production.
ES mapping for Land Use Planning

- Existing oil palm plantation
- Not suitable for oil palm expansion
- Suitable for oil palm expansion
Case 3. Limburg

- Analyse ecosystem services flows and ecosystem capital
- 8 ecosystem services
- Specific attention for biodiversity
- Analyse two management options
Policy application: comparing costs and co-benefits of new nature

- Costs may include loss of crop production, costs of reduced space for urban expansion.
- Co-benefits may include increase in water supply, recreation, flood control.
Conclusions

- Ecosystem accounting is a potentially highly useful new tool in support of policy making on natural resources.
- It allows evaluation and comparison of economic and sustainability criteria (and can be extended with tools focusing on stakeholder impacts).
- Economic criteria can be comprehensively covered, including a wide range of economic benefits provided by a wide range of ecosystems (land cover units).
- It can support a broad range of decision making processes.
- It is grounded in SNA, but further conceptual work needed.
- Ecosystem accounting requires significant resources and data (GIS, ecology, economics).
- And it is no panacea: e.g. long-term effects difficult to include.