Value integrated services - not integrated functions!

Jan Barkmann
*jbarkma@gwdg.de

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Overview

1. The valuation challenge
2. Case Study: Hydrological impacts of Upland deforestation
3. Implications for integrated decision-making
I The valuation Challenge

METHODS

Confronting unfamiliarity with ecosystem functions: The case for an ecosystem service approach to environmental valuation with stated preference methods


*Department of Agricultural Economics and Rural Development, Environmental & Resource Economics, Georg-August-Universität Göttingen, D-37073 Göttingen, Germany

1Institute of Geography, Landscape Ecology, Georg-August-Universität Göttingen, D-37077 Göttingen, Germany

2Institute of Geography, Social and Cultural Geography, Georg-August-Universität Göttingen, D-37077 Göttingen, Germany
Economic – mainstream - valuation

- Welfare economics & cost-benefit analysis
  - inclusion of non-market goods
- Economic value = exchange value
- Valuate natural capital via services (benefits)
  - changes in capital stocks
  - direct consumption
  - intermediate input into production
  - net present value
- Chose action with best b/c ratio
Economic – mainstream - valuation

- Welfare economics & cost-benefit analysis
  - inclusion of non-marketed goods
- Economic value = exchange value

Please take for granted!

- Valuate natural capital via services (benefits)
  - changes in capital stocks
  - direct consumption - method?
  - intermediate input into production - method?
  - net present value - discounting?

- Chose action with best b/c ratio - distribution?
**Economic – mainstream - valuation**

- Welfare economics & cost-benefit analysis
  - inclusion or exclusion of external effects
- Economic value = exchange value

**Please take for granted!**

- Valuate natural capital via *services* (benefits)
  - *changes* in capital stocks
  - *direct consumption* – *stated preference methods*?
  - intermediate input into production – “–?”
  - net present value
- Chose action with best b/c ratio
Functions vs. Services I

• Functions
  – descriptive
    • Whigham, Costanza, Freeman, Heal...
  – normative
    • DeGroot, Bastian, v. Haaren, Barkmann...

• Services
  – towards the normative side (MA!)

→ Know what you are doing!
  – service (or normative) function is
    RELATION between human interest and
    ecosystem structure, process, state
(descriptive) Functions
- scientific constructs
- mostly „unfamiliar“ to social survey respondents
- cannot be valued by “lay” persons (Nunes & Bergh 2001)
Hydrological Function

Fig. 3 – Exceedence time graph 2002, Nopu catchment, Central Sulawesi (Keil et al., 2003).
Functions vs. Services II

- **(descriptive) Functions**
  - scientific constructs
  - mostly „unfamiliar“ to social survey respondents
  - cannot be valued by “lay” persons

- **Services**
  - relate to human (lay person) interests & perceptions
  - sufficiently familiar
  - can be valued
II Case Study: Hydrological Impacts of Upland Deforestation
Choice Experiment

• Stated preference (survey) method
  – village development & conservation options
  – >90% small farmers (rice, cacao)
  – trade-off between 3 environmental attributes & tax

• Valuation of hydrological function via ecosystem service approach
  – qualitative interviews („demand driven“)
  – change in irrigation water for wet rice during dry season
    • 0-3 months scarcity
  – visual aids
  – familiarity: „respondent comprehension rating“ (RCR) ...
Results

• 3 months with better water availability: rice grower WTP ~ 15 USD/yr (4% cash income)
  – water not always scarce; other investment options (cocoa)!
  – Pattanayak & Kramer (2001): 2-3 USD/yr (Flores)

• Significant but small impact of RCR on WTP

  ➔ Ecosystem service approach works

• Critique
  – missing „agronomic & engineering models“
  – irrigation water is partly subsidized
  – v. Beukering et al. (2003): 0.3 vs. 33m USD/yr (Sumatra)
  • off-site and other uses, unconstrained cost calculation
III Implications for integrated Decision-Making
Implications

• Need for very applied, integrated models
  – upland deforestation
    • main ESS impacts
    • realistic assessment of direct and indirect production effects (cocoa vs. rice)

• Valuate only what respondents care about
  – concrete impact on consumption/production
  – ecosystem service approach!
    • stated preferences … but all „efficiency“ studies!