

Capacity, flow and values of ecosystem services: finding ways for representation in the cascade model

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Matthias Schröter, Environmental Systems
 Analysis group, Wageningen University

Outline

1. Representation of capacity and flow
2. Representation of different forms of “value”

ECOSPACE project

- Environmental Systems Analysis Group, Wageningen University, The Netherlands
- Funded by European Research Council
- modelling, mapping, economic valuation, accounting of ecosystem services on a provincial level
- three case studies



Telemark (Norway)



Limburg (Netherlands)



Central Kalimantan (Indonesia)

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1. Capacity and flow of ES

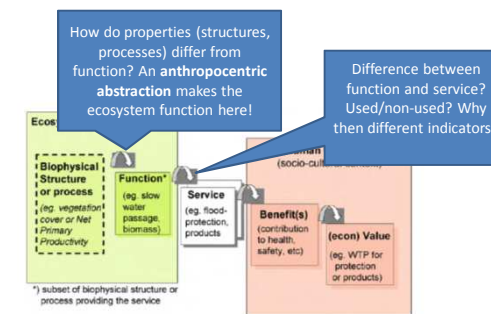


Fig. 2. Framework for linking ecosystems to human wellbeing (adapted from Haines-Young and Potschin, in press).

1. Capacity and flow of ES

(Schröter et al. 2012, Ecol Indic, Schröter et al. in progress)

- We need to distinguish capacity to provide services and their actual use (Luck et al. 2009; De Groot et al., 2010; Haines-Young and Potschin, 2010; van Oudenhoven et al., 2012; Burkhard et al., 2012).
- Empirical studies often do not consider actual use or use terms interchangeably
- “Capacity and flow” have been referred to (in slightly different meanings) as
 - supply and demand (Burkhard et al., 2012; Schröter et al., 2012; Tallis et al., 2012) or
 - ecosystem function and service (Petz and van Oudenhoven, 2012)

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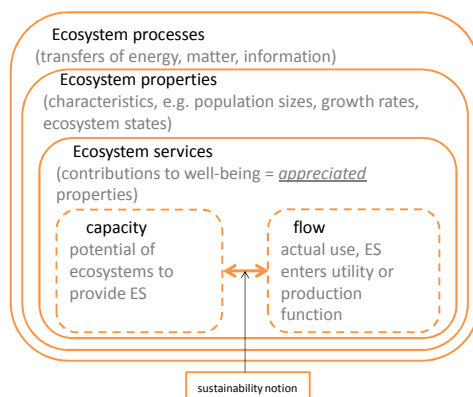
1. Capacity and flow of ES

(Schröter et al. 2012, Ecol Indic, Schröter et al. in progress)

- terms are variously used in economics (Fisher et al., 2008) or ecology (Bastian et al., 2012; Jax, 2005; Wallace, 2007)
- Supply/demand:
 - economic concepts (including potential ability/willingness to pay, price elasticity – supposes marketization)
- Function/service:
 - function in this sense is an anthropocentric abstraction from the ecosystem already
 - difference function and properties, structures, processes? Which functions are meant, how do they relate to other functions?

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1. Capacity and flow of ES



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Capacity and flow can differ (sustainability notion)

1. Capacity > flow

Restrictions (accessibility, absence of beneficiaries, low management pressure)

2. Flow > capacity

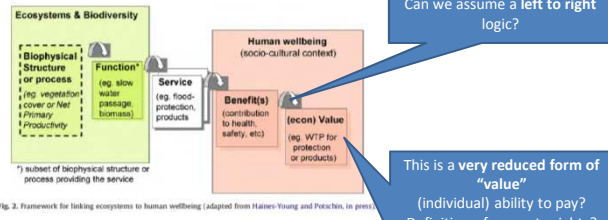
Overuse (harvest rate > growth rate)

1. Capacity and flow of ES: recommendation for cascade model

- ES as subsets of properties that are appreciated by humans
- Two-sidedness of ES: capacity and flow
- Could provide a parsimonious, policy-relevant and operational indicator for sustainability

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2. Representation of "value"

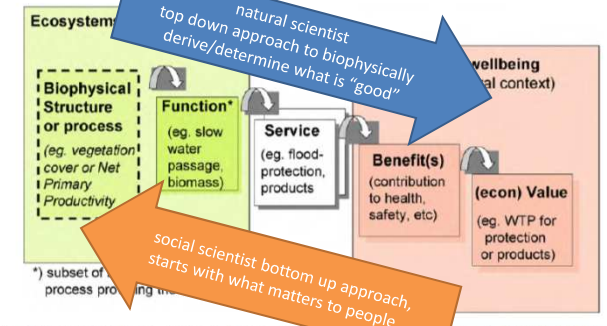


Is this the endpoint of the cascade? Can we assume a left to right logic?

This is a very reduced form of "value" (individual) ability to pay? Definition of property rights? Are all ES necessarily to be expressed in a monetary value?

Openness of the cascade to other forms of value?

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natural scientist top down approach to biophysically derive/determine what is "good"

social scientist bottom up approach, starts with what matters to people

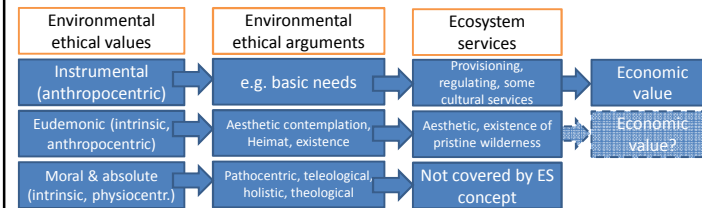
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Which values do we economically value?

- Value (general)
 - "worth, usefulness, importance of something" (Oxford English dictionary)
 - "the contribution to a goal, objective, desired condition" (Farber et al. 2002)
- Value (economic)
 - measure of scarcity in relation to its ability to fulfil preferences = anthropocentric, instrumental
- Value (environmental ethics)
 - Anthropocentric (instrumental) vs. physiocentric (for its own sake)

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Which values do we economically value?



cf. for ethical values and arguments: Krebs 1999, Ethics of Nature: A Map

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Example: Existence value

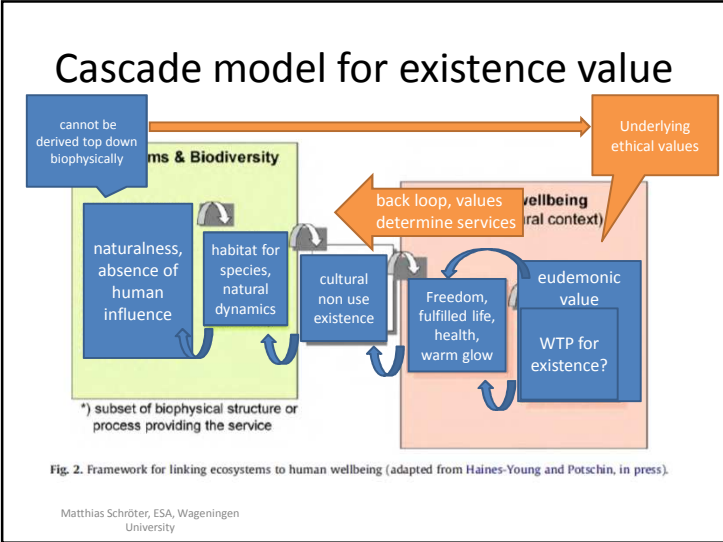


Which value?
Existence value

Which benefits?

Which service?

Which ecosystem processes/structures & function?



2. Representation of different values: recommendation for cascade model

- no objective run-down the cascade, but feedback loops
- Underlying ethical values (and norms) determine existence of ES
- Inclusion of broader values that are not covered by economic values
- Discussion: openness for broader forms of values beyond utilitarian, instrumental values?

Matthias Schröter, ESA, Wageningen University

Thank you for your attention.
Contact: matthias.schroter@wur.nl

Matthias Schröter, ESA, Wageningen University