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Environmental, Economic and Social Trade-offs

**Bettina Matzdorf
& Klaus Müller**

**Institute of Socio-Economic
Leibniz-Centre for Agricultural
Landscape Research (ZALF) e.V.**



ES Concept as an Eye-opening Metaphor



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TEEB FOR NATIONAL AND INTERNATIONAL POLICY MAKERS - CHAPTER 2



Lead Questions

How can the focus on trade-offs help us in ES research?

1. Definition of Trade-offs

Does the ES concept open up new perspectives in trade-off analysis ?

2. Ecosystem Services

Are there new answers within the ES concept to the question: how to make trade-off decisions?

3. Trade-off decisions within the Ecosystem Service concept

Definition of Trade-Offs





Definition of Trade-offs

- Trade-offs exist if components of a system are competing with or exclusive of each other. In this sense trade-off decisions are contrary to win-win situations – here we have a win-lose situation. It implies a decision to be made with full comprehension of both the upside and downside of a particular choice.
- In economics, trade-offs are mostly discussed in the context of the opportunity to realize different political or even societal objectives – to realize the different benefits of user groups.



Definition of Trade-offs

Trade-off analysis

When I produce more wine

... the quality will be reduced.



Trade-off decision





Definition of Trade-offs

Understanding trade-offs (trade-off analysis) does not require the monetizing of benefits.

- Transfer of complex phenomena into operationalized units
- Analysis of the relation between these units

Trade-off Decisions call (but do not need!) for economic analysis (directly comparable valuation).

- Cost-benefit analysis is the typical economic approach to supporting trade-off decisions (monetary valuation of costs and benefits)
- Additionally, the institutional setting can be integrated by approaches of the New Institutional Economic (ideally, by transaction costs)



Definition of Trade-offs

**“Trade-off decisions are a matter of societal choice“
(MEA 2005).**

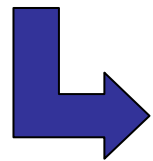
- A monetary valuation of all economic relevant benefits is technically not possible
- A monetary valuation of all social benefits is neither technically possible nor wise
- Efficiency alone is not the meta criteria of societal choices



How can the focus on trade-offs help us in the ES concept discussion?

Ecosystem services should be studied as marginal changes in landscapes (Fisher et al. 2008).

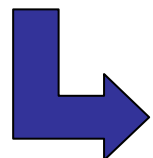
Does the conversion of one more hectare of forest to agriculture represent a beneficial trade-off?



ES research at the level of decision making – landscape level

Who benefits/loses?

Where is the benefit realized?



ES research has to have its focus on the beneficiaries

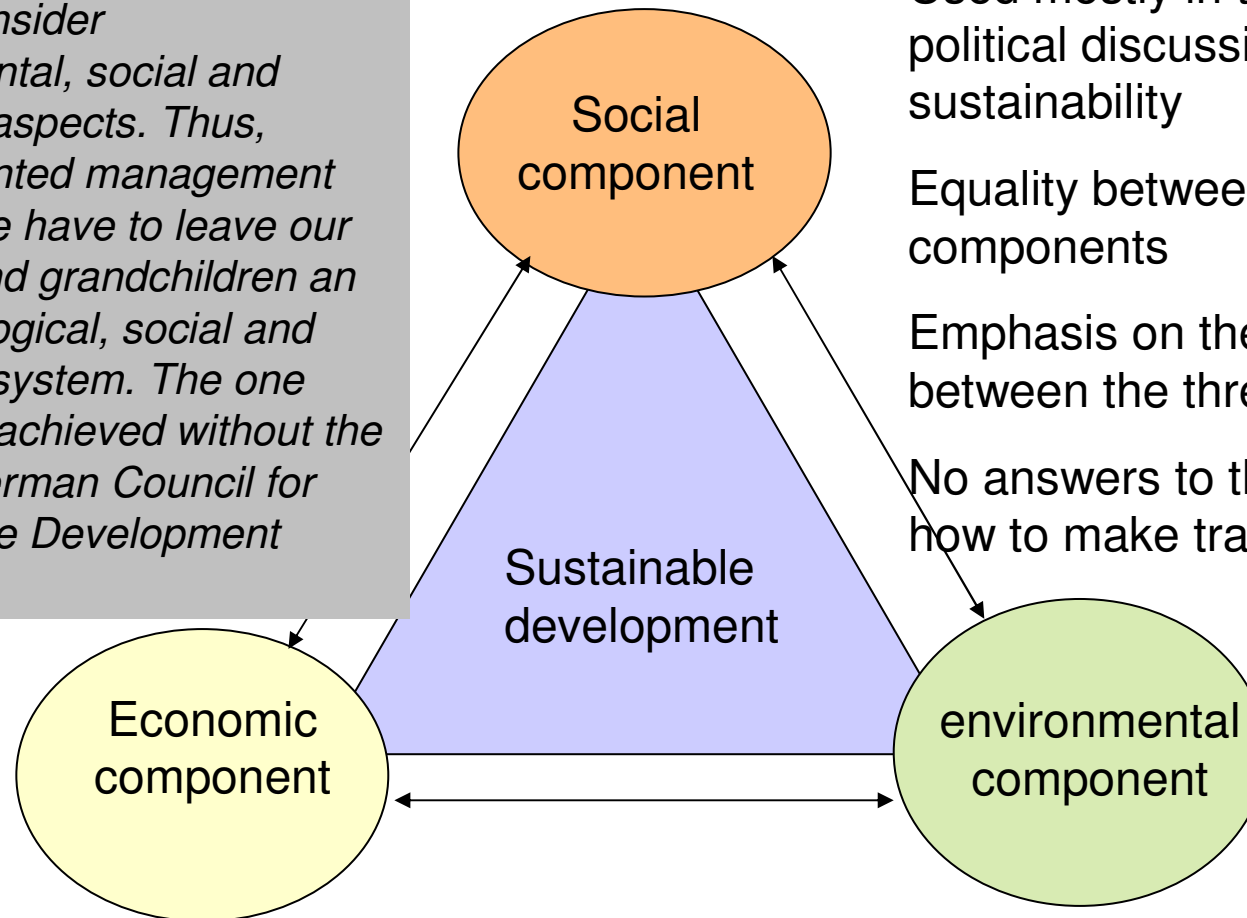
Ecosystem Services Concept





The Political Sustainability Concept

„Sustainability means to equally consider environmental, social and economic aspects. Thus, future-oriented management means: We have to leave our children and grandchildren an intact ecological, social and economic system. The one cannot be achieved without the other!“ (German Council for Sustainable Development 2010).



Used mostly in the current political discussion on sustainability

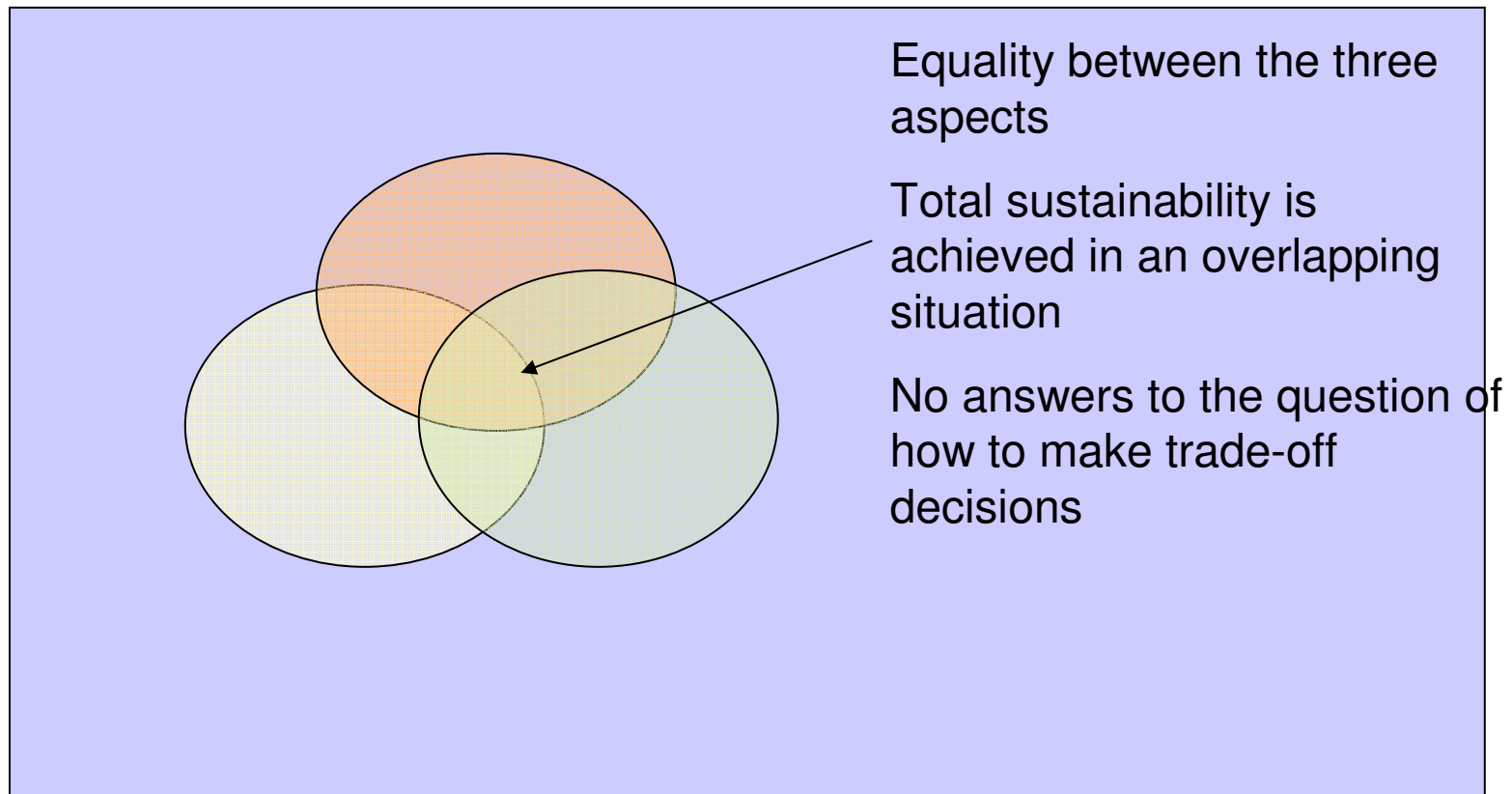
Equality between three components

Emphasis on the relation between the three components

No answers to the question of how to make trade-off decisions

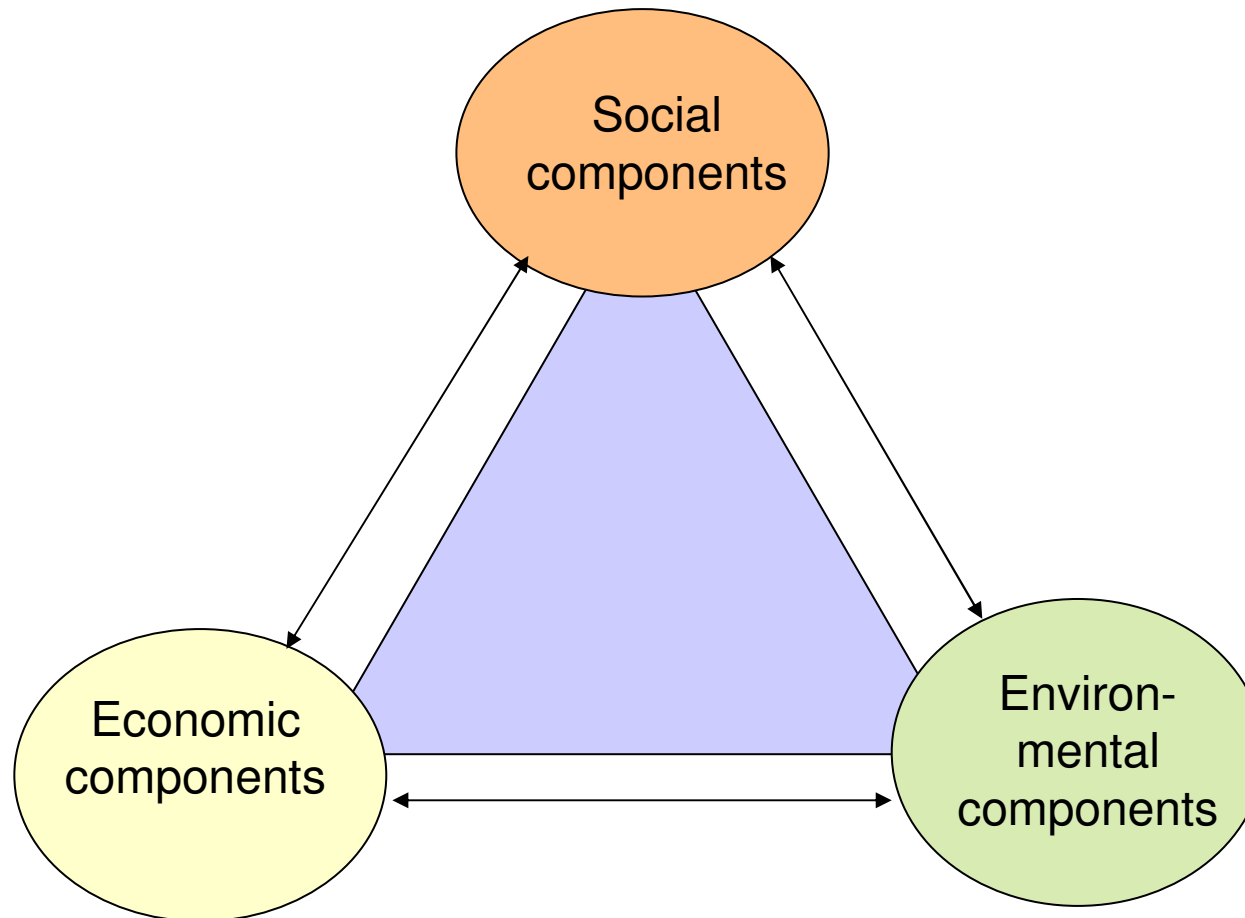


The Political Sustainability concept





Ecosystem Service Concept





Definition of Ecosystem Services

„biological underpinnings essential to economic prosperity and other aspects of our well-being“ (DAILY et al. 1997)

„the benefits human populations derive, directly or indirectly, from ecosystem functions“ (COSTANZA et al. 1997)

„the benefits people obtain from ecosystems.“ (MEA 2005)

„components of nature, directly enjoyed, consumed, or used to yield human wellbeing“ (BOYD & BANZHAF 2007)



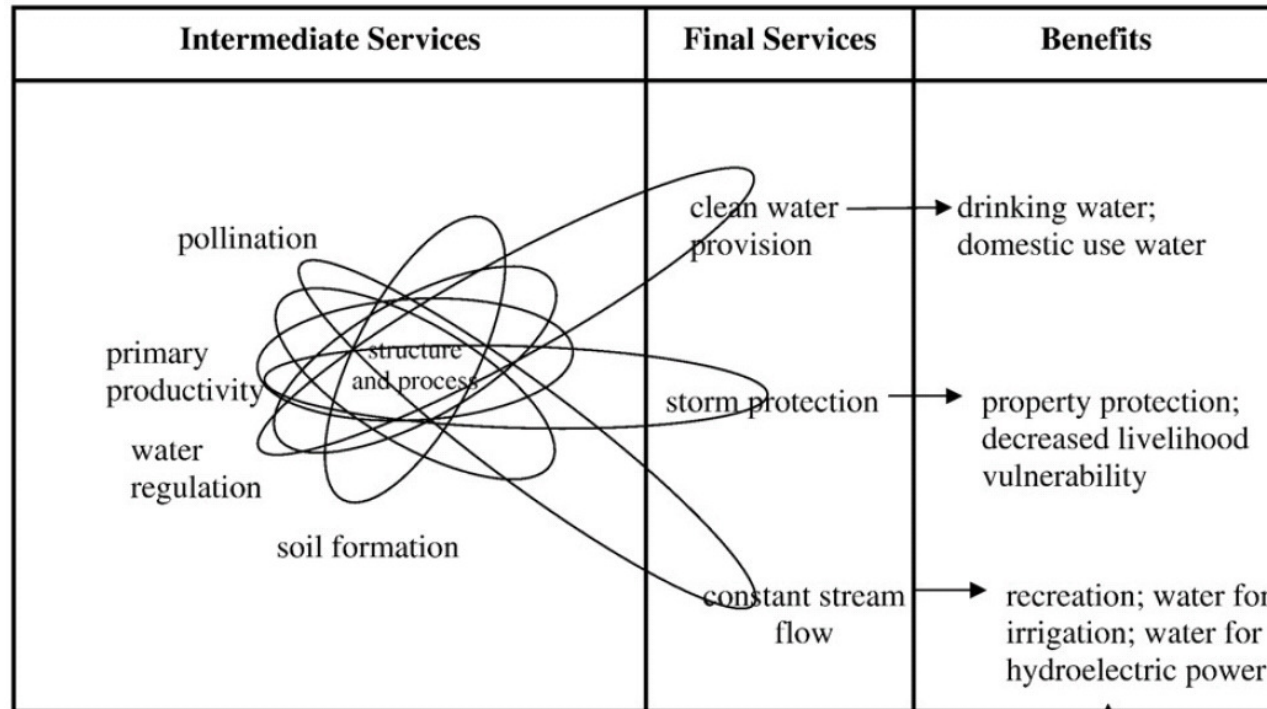
Definition of Ecosystem Services

Ecosystem services include ecosystem organization or structure as well as process and/or functions if they are consumed or utilized by humanity either directly or indirectly. The functions or processes become services if there are humans that benefit from them. Without human beneficiaries they are not services.

(Fisher et al. 2009).



Ecosystem Service Concept

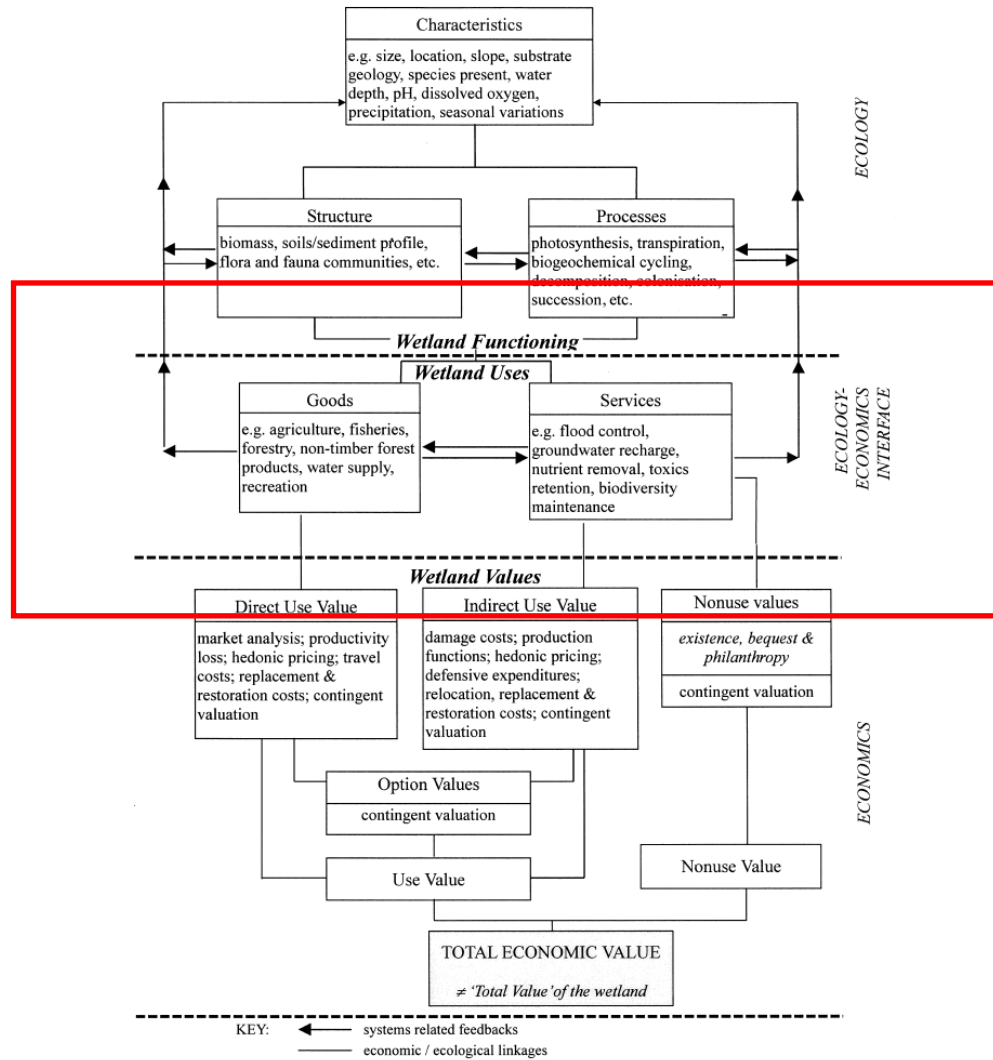


(Fisher et al. 2009)

Typically require other forms of capital to realize these benefits, e.g. hydro-power will require some built capital to harness the energy.



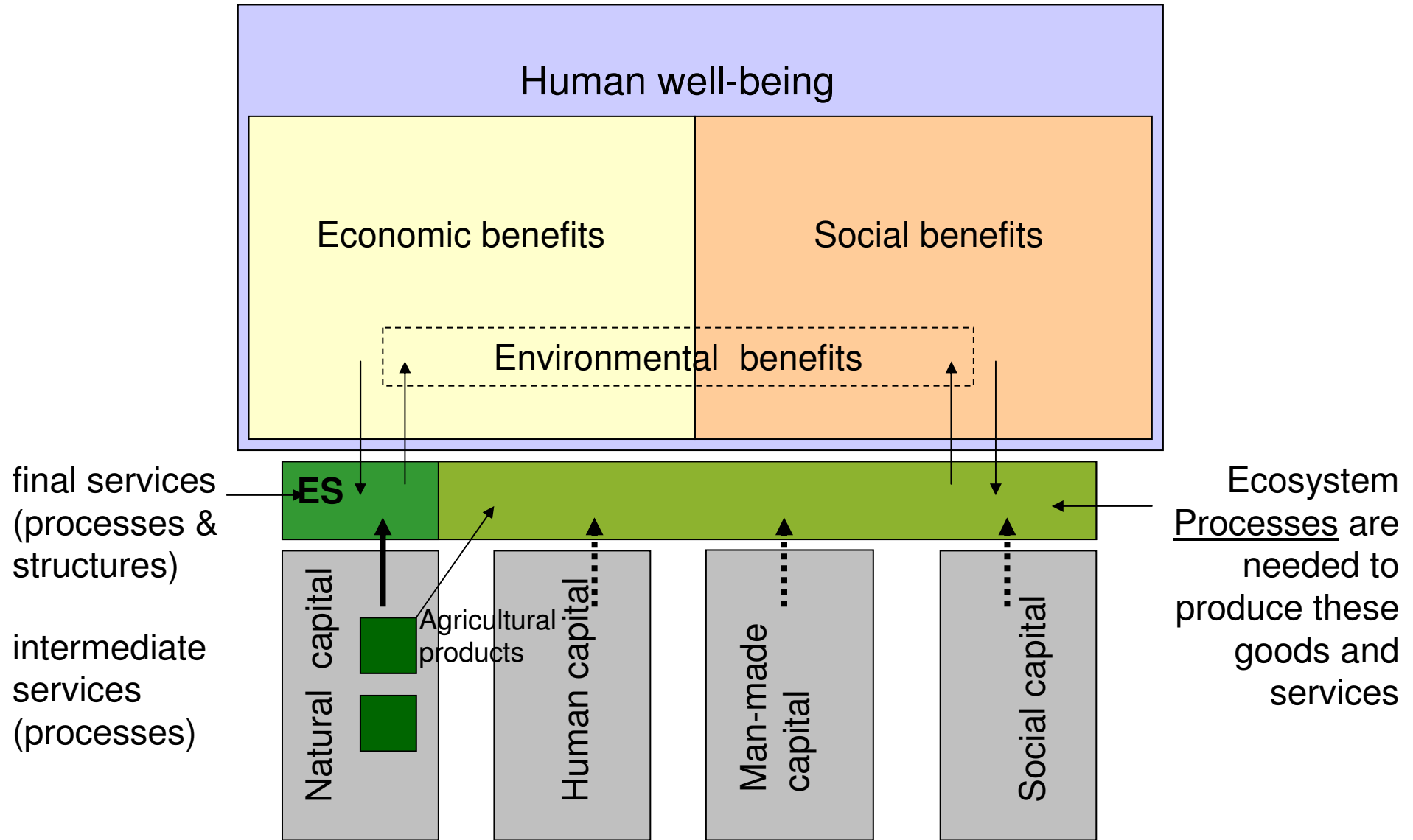
Ecosystem Service - a Unit of Interface



Turner et al. 2000

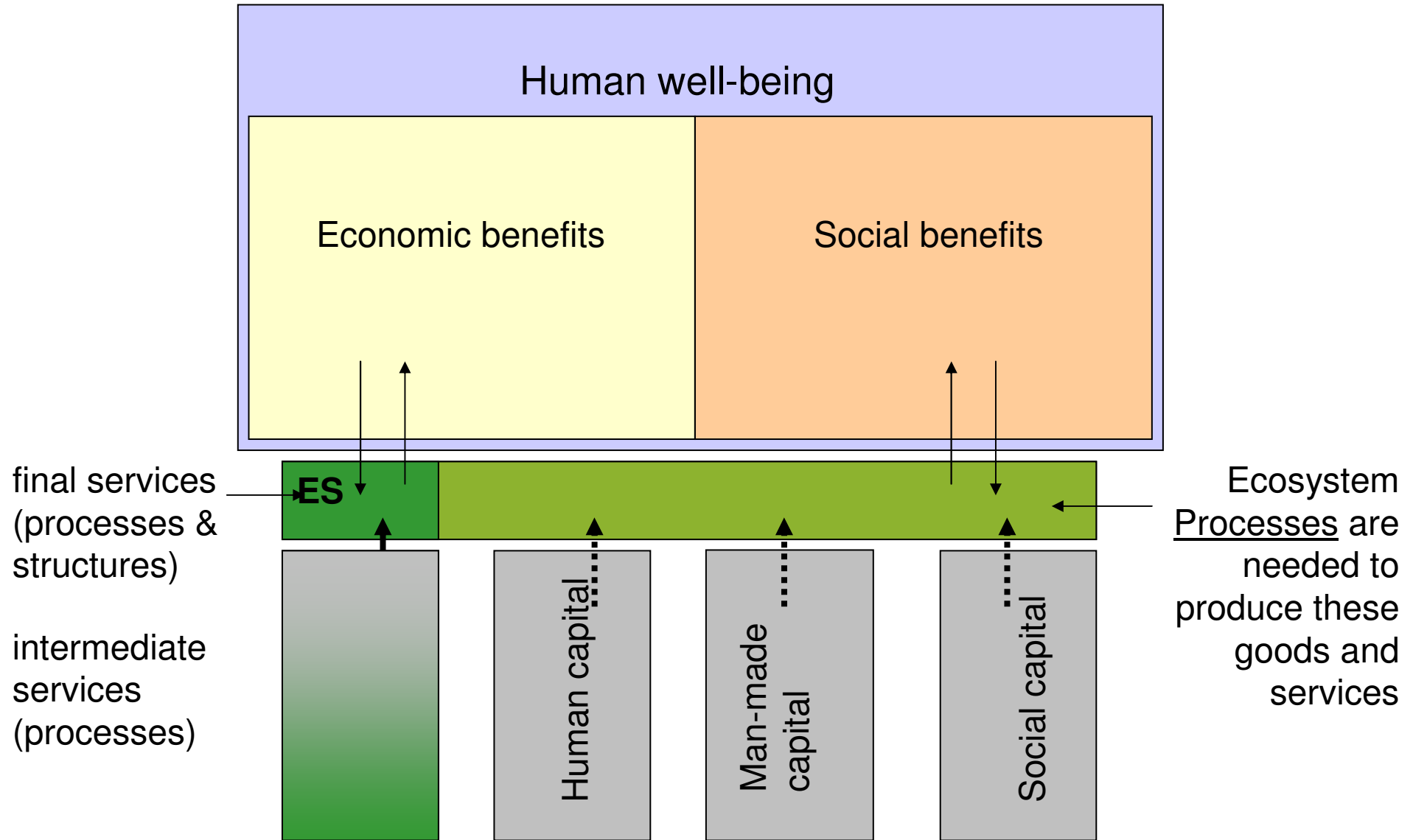


Ecosystem Service Concept





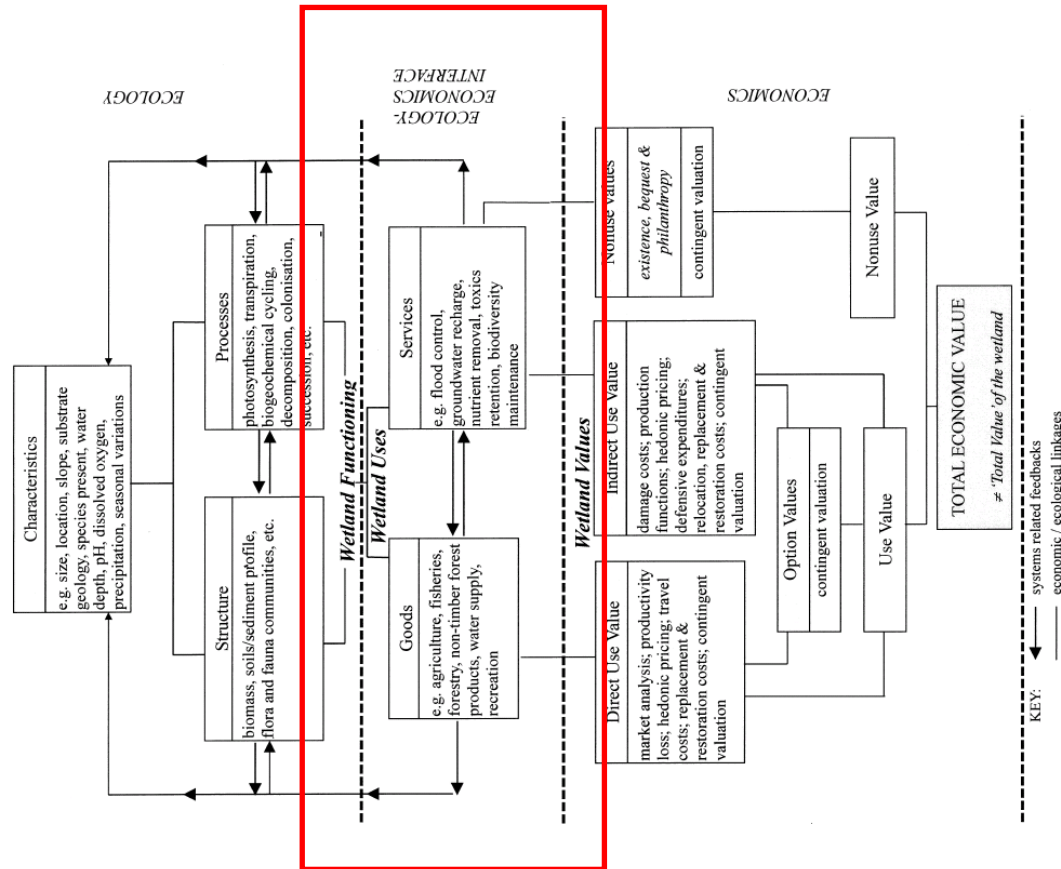
Ecosystem Service Concept



Only partially substitutable



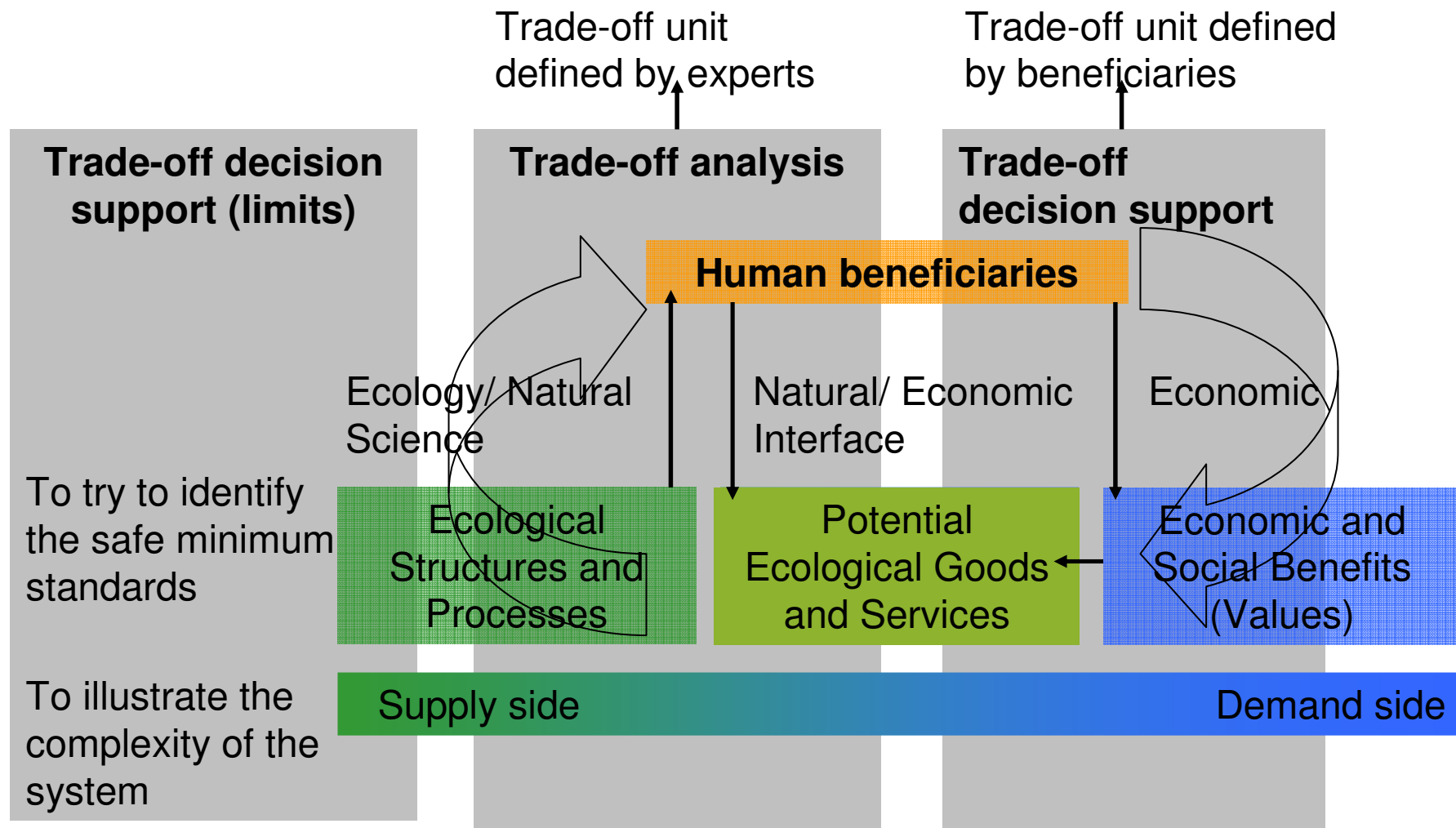
Ecosystem Service – a Unit of Interface



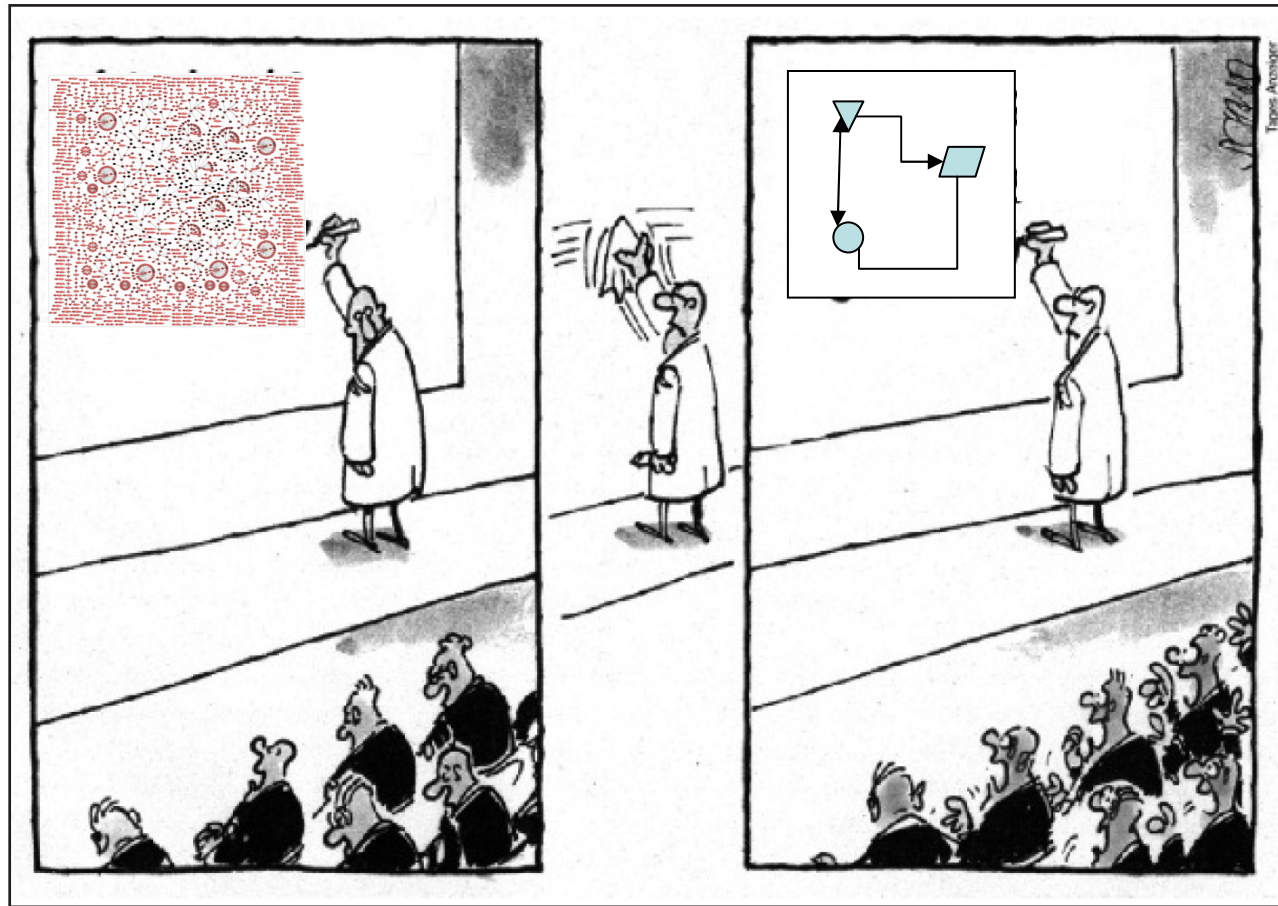
Turner et al. 2000



Ecosystem Service – a Unit of Interface



ES Concept as Complexity Blinder



Own illustration based on Felix Schaad and Claude Jaermann (Switzerland).

„... The simplicity of the stock-flow framework blinds us to the complexity of the human predicament.“ (Norgaard, 2009)



Ecosystem Service Trade-offs?

- Ecosystem service trade-offs arise from management choices made by humans, who intentionally or otherwise change the type, magnitude, and relative mix of services provided by ecosystems. (MEA, 2005)
- Ecosystem services trade-offs occur when the provision of one ES is reduced as a consequence of increased use of another ES (Rodriguez et al. 2006: 28).



Trade-off relations within the ES concept

Following our arguments (based on current ES definitions)

- Ecosystem service trade-off relations do not exist.
- Trade-off relations can exist between environmental goods and services if at least one good or service depends on human activity/ input.
- Ecosystems donate (supply) either social or economic benefits within the ES concept.
- Trade-off decisions are made for economic and social benefits. Trade-off analysis helps to provide relevant information for decisions.

Trade-off decisions within the Ecosystem Service concept





Trade-off decisions within the ES concept

1. Economic (based) trade-off decision

Allocative arguments are relevant (“efficient allocation”*)

2. Social (based) trade-off decision

Distributional arguments are relevant (“fair distribution”*)

3. Ecosystem (based) trade-off decision

Scale arguments are relevant - Natural capital is only partly substitutable (“sustainable scale”*)

(*Daly (1992) characterized the approach of the Ecological Economics with the help of three principles)



Are there new answers within the ES concept to the question of how to make trade-off decisions?

All kinds of benefit trade-off decisions are at least a matter of societal choice.

We have to break down our reservations concerning non-market allocation methods.

One of the most relevant questions is how to arrange the societal choice?