

Monetary valuation of ecosystem services is not needed for policy integration

New Ruralities – changing agendas for research and practice.
Bertebos Conference, Falkenberg. 25 August 2014

Agr. Dr. Thomas Hahn

thomas.hahn@su.se www.stockholmresilience.su.se

Based on a survey of over 1,000 experts from industry, government, academia and civil society

Figure 2: Global Risks Landscape 2013

8 worst Global Risks

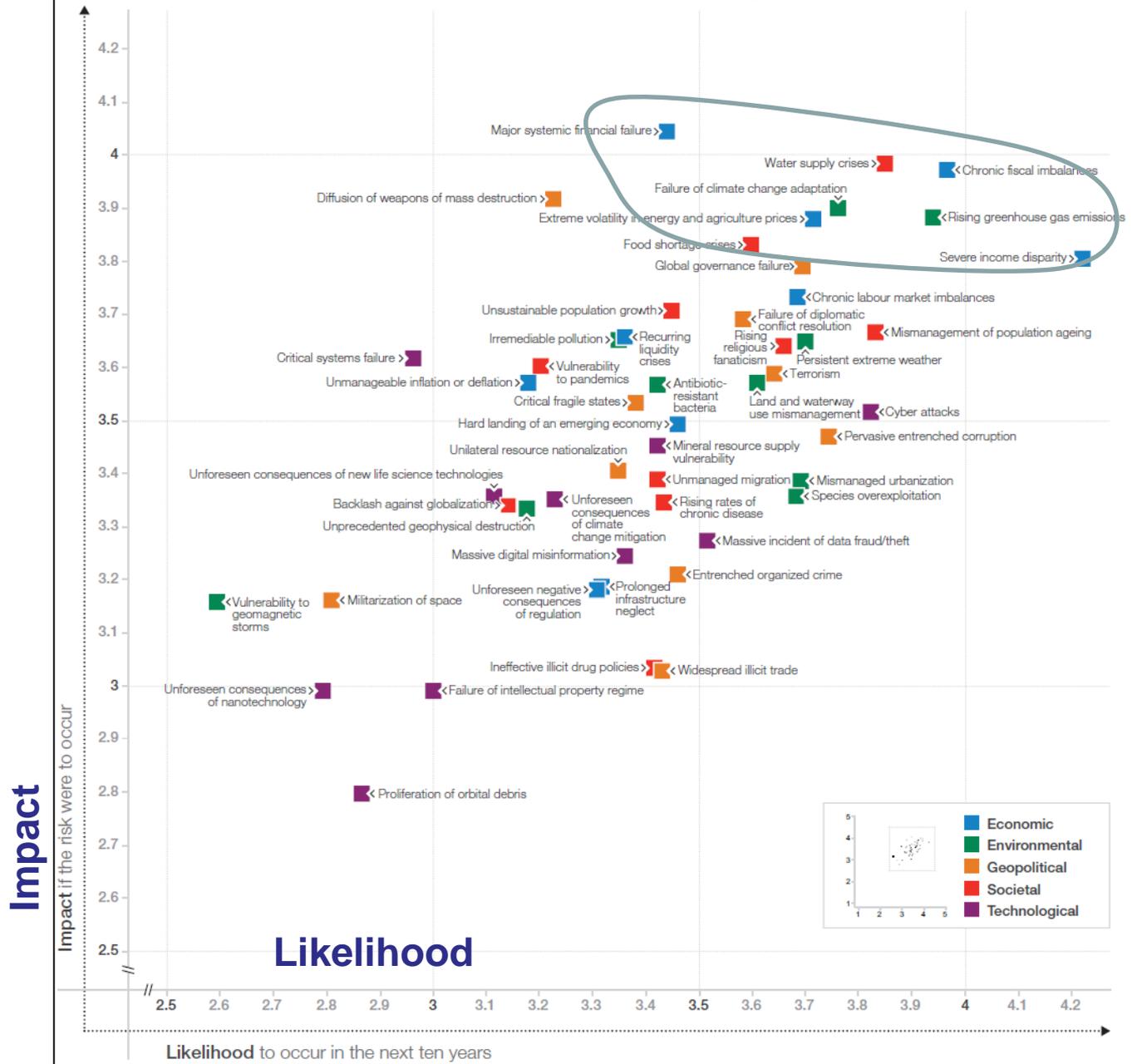
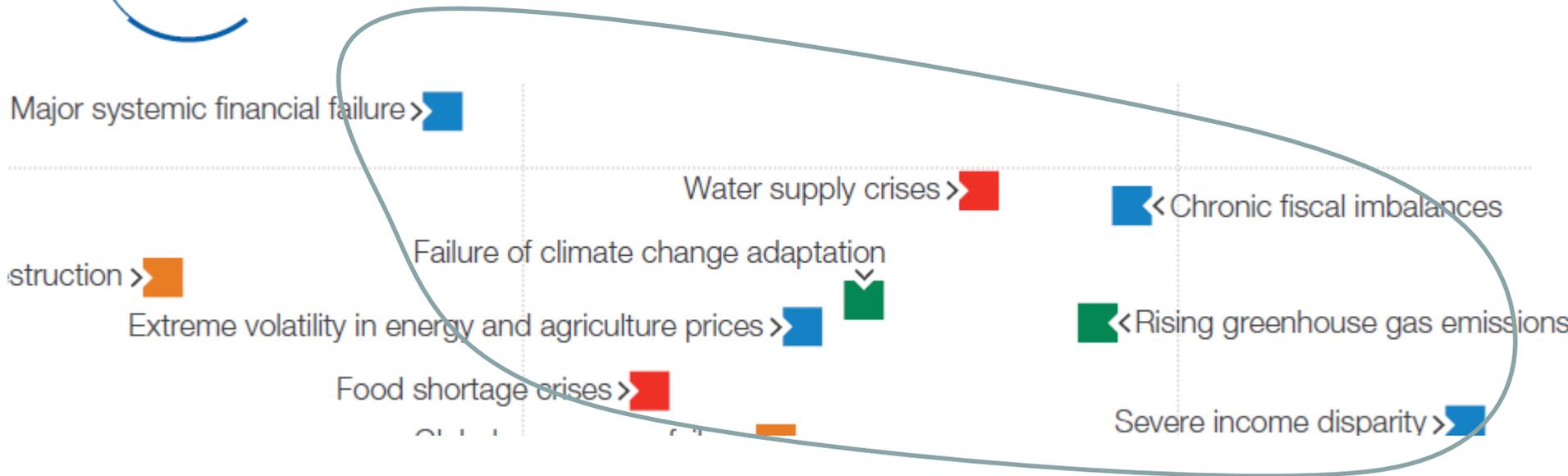


Figure 2: Global Risks Landscape 2013



5 of the 8 worst Global Risks are ecosystem-based

1. Water supply crises
2. Rising greenhouse gas emissions
3. Failure of climate change adaptation
4. Extreme volatility in energy and agriculture prices
5. Food shortage crises

Non-ecosystem-based risks:

1. Chronic fiscal imbalances
2. Major systemic financial failure
3. Severe income disparity

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

2010 = end of the neoliberal era?

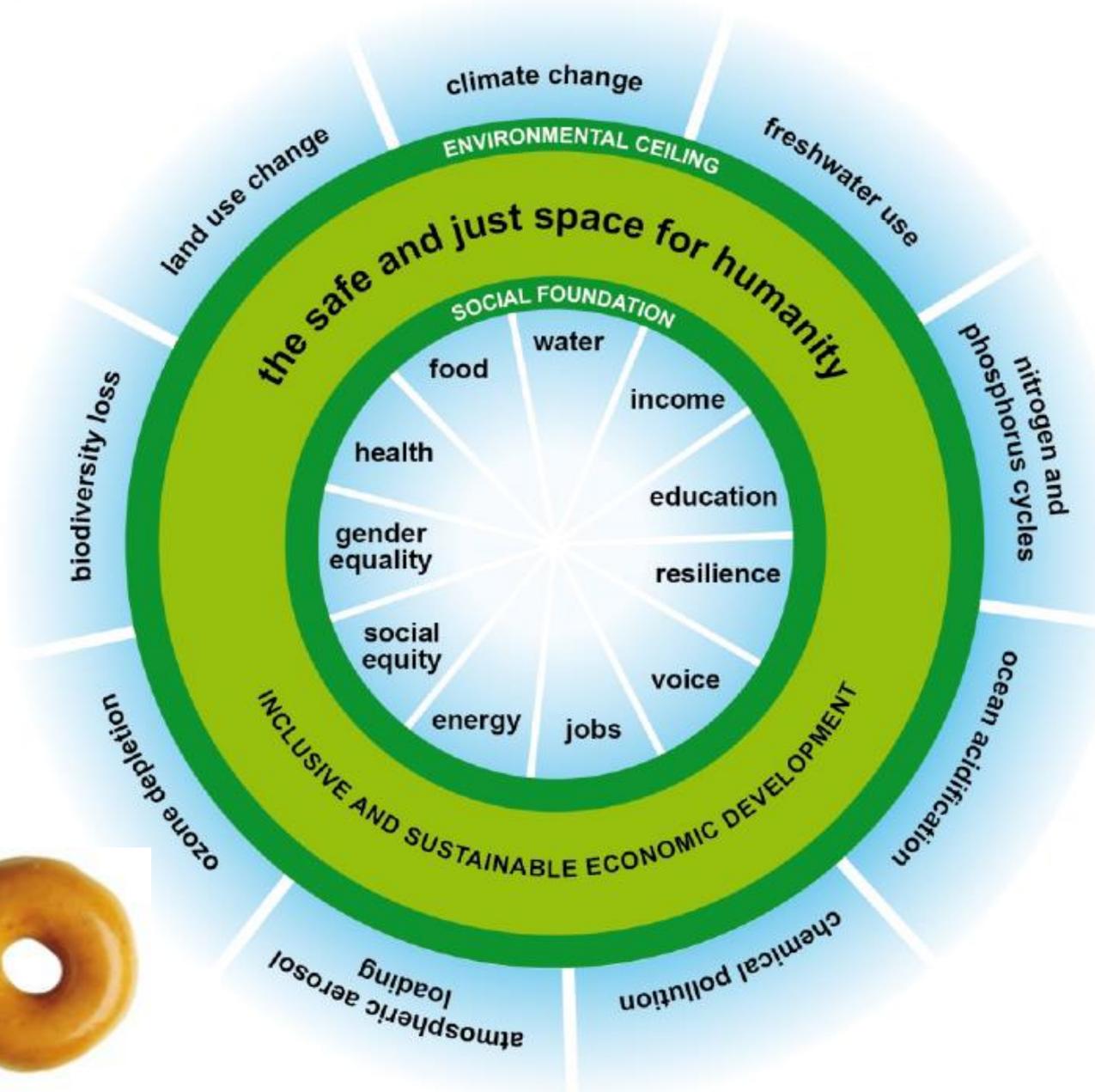
Top 5 Global Risks in Terms of Likelihood

	2007	2008	2009	2010	2011	2012*	2013*
1st	Breakdown of critical information infrastructure	Asset price collapse	Asset price collapse	Asset price collapse	Meteorological catastrophes	Severe income disparity	Severe income disparity
2nd	Chronic disease in developed countries	Middle East instability	Slowing Chinese economy (<6%)	Slowing Chinese economy (<6%)	Hydrological catastrophes	Chronic fiscal imbalances	Chronic fiscal imbalances
3rd	Oil price shock	Failed and failing states	Chronic disease	Chronic disease	Corruption	Rising greenhouse gas emissions	Rising greenhouse gas emissions
4th	China economic hard landing	Oil and gas price spike	Global governance gaps	Fiscal crises	Biodiversity loss	Cyber attacks	Water supply crises
5th	Asset price collapse	Chronic disease, developed world	Retrenchment from globalization (emerging)	Global governance gaps	Climatological catastrophes	Water supply crises	Mismanagement of population ageing

= beginning of the biosphere era?

Planetary and social boundaries

- Economics for the Anthropocene:
- A framework for sustainable economic development
- A safe and just space for humanity



CAN WE LIVE WITHIN THE DOUGHNUT?

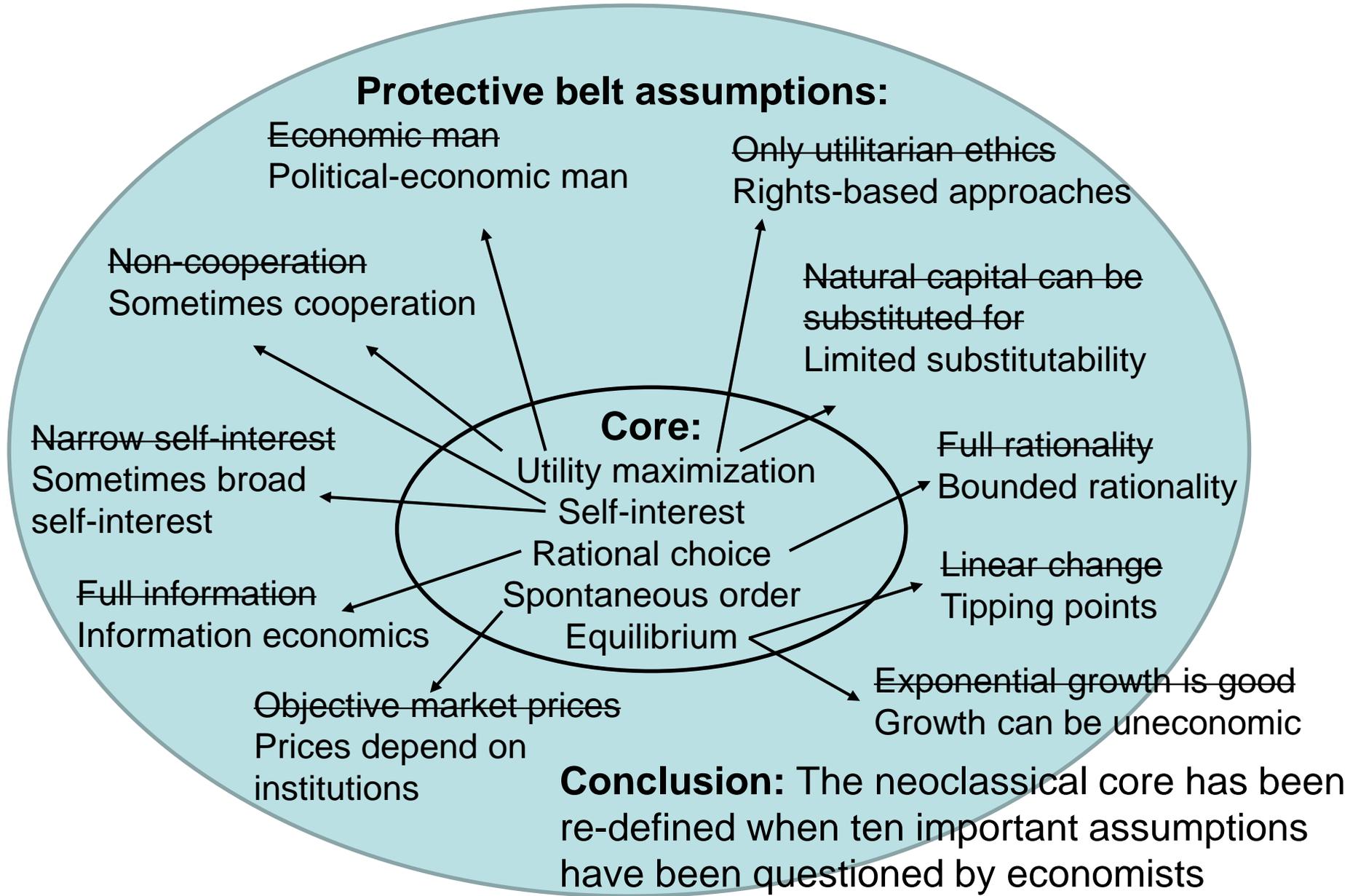
Oxfam Discussion Papers 2012



“Nobel” Prizes in Economics

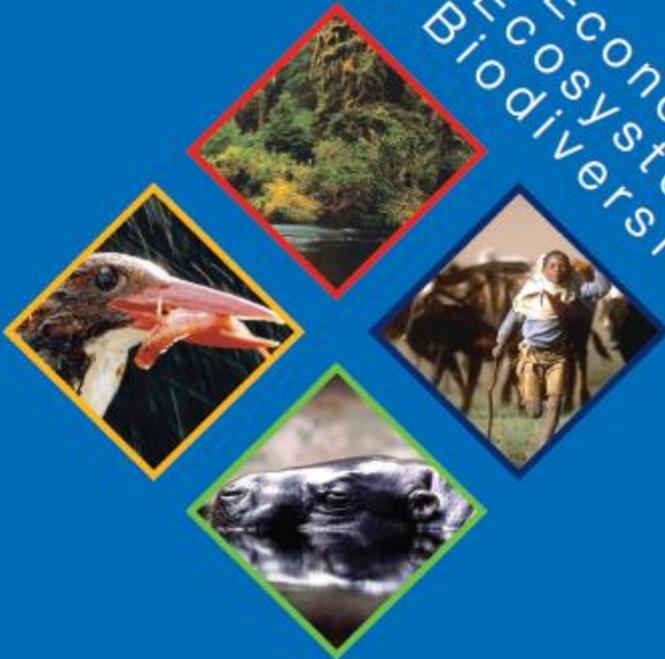
1. **Kenneth Arrow, 1972** (social choice, ecol-econ)
2. Gunnar Myrdal, 1974 (inst econ, questioned “value-free”)
3. Herbert Simon, 1978 (bounded rationality)
4. James Tobin, 1981 (“Tobin tax”)
5. Douglass North, 1993 (institutional economics)
6. **Amartya Sen, 1998** (re-define efficiency, ethics, fixed preferences, narrow self-interest)
7. **Joseph Stiglitz, 2001** (Development, IMF critic)
8. Daniel Kahneman, 2002 (testing theory in experiments)
9. **Elinor Ostrom, 2009** (Challenged “the tragedy of the commons” and its assumption of narrow self-interest)

Paradigm critique in economics



TEEB 2009 och GE 2011

The Economics & of Ecosystems & Biodiversity



TEEB FOR POLICY MAKERS
SUMMARY: RESPONDING TO THE VALUE OF NATURE



Towards a **GREEN** economy

Pathways to Sustainable Development
and Poverty Eradication

A Synthesis for Policy Makers



TEEB addresses ecosystem complexity ...

- ❑ **Ecosystem resilience** provides a kind of ‘natural insurance’ against potential shocks and losses of ecosystem services. Although difficult to measure, the insurance value of well-functioning ecosystems should be regarded as integral **part of their Total Economic Value**. (TEEB Synthesis Report p. 25)
- ❑ In daily practice, [resilience and] **insurance values** are difficult to measure, justifying a **precautionary approach** to ecosystem and biodiversity conservation. (TEEB Policy Report p. 8)
- ❑ Recommendations: Economic **[monetary]** valuation is less useful in situations characterized by non-marginal change, radical uncertainty or ignorance about potential tipping points. In such circumstances, prudent policy should invoke **complementary approaches** such as the ‘safe minimum standard’ or the ‘precautionary principle’. Under conditions of uncertainty it is generally advisable to err on the side of caution and conservation. (TEEB Synthesis Report p. 26)

... and, to some extent, rights + intrinsic values

- ❑ In situations where cultural consensus on the value of ecosystem services is strong and the science is clear, it may be relatively straightforward to **demonstrate values in monetary terms and capture them in markets [e.g. using PES]. ...**
- ❑ On the other hand, in more complex situations involving multiple ecosystems and services, and/or **plurality of ethical or cultural convictions, [monetary] valuations may be less reliable or unsuitable.** In such cases, simple recognition [e.g. in legislation] of value may be more appropriate. (TEEB Synthesis Report p. 12)
- ❑ **Intrinsic values** are culturally embedded moral truths. They can be taken into account by choosing the appropriate **institutions** which allow their articulation in addition to **utilitarian values**. (TEEB Chapter 4 Key message)
- ❑ **Conclusion: TEEB acknowledges that monetary valuation reduces “dignities” (intrinsic values) to “commodities” (utilitarian values).**

”A Swedish TEEB”

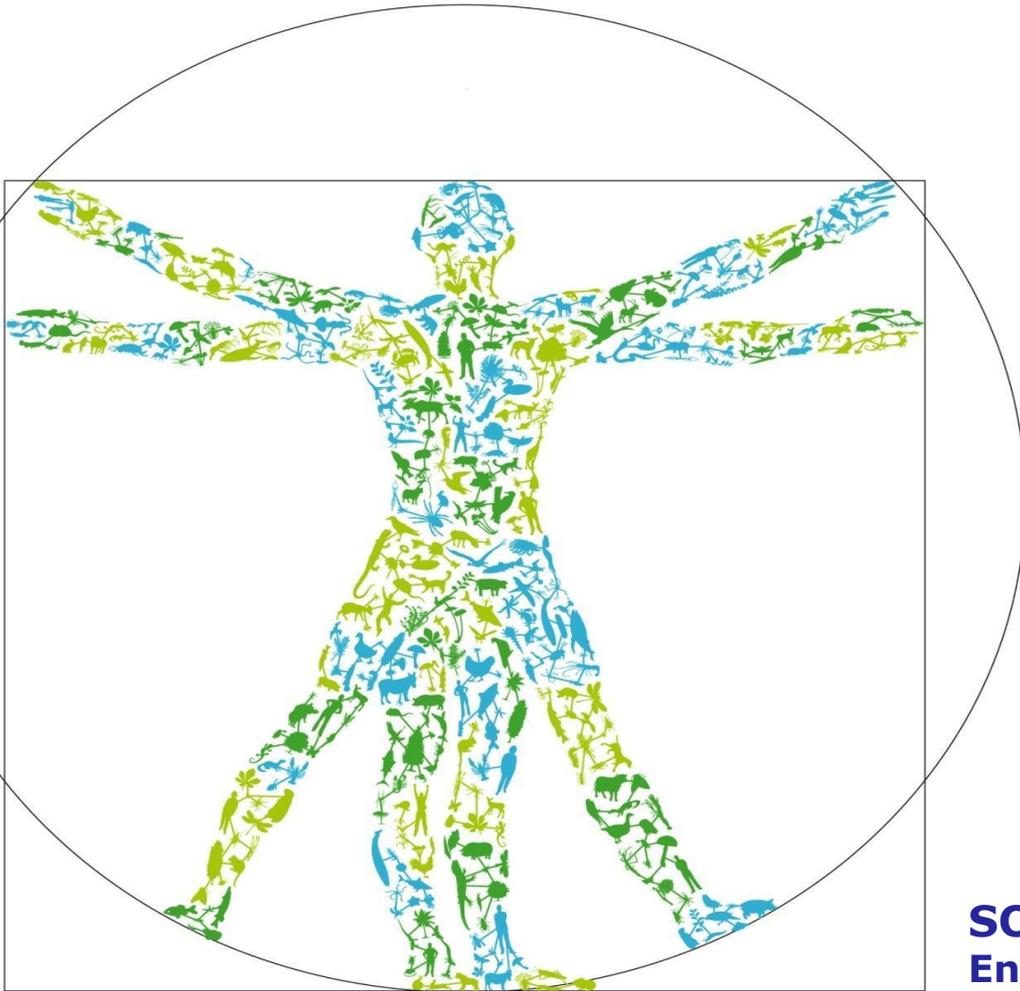


Illustration: J Lokrantz/Azote

Making the value of ecosystem services visible - *Proposals to enhance well-being through biodiversity and ecosystem services*

Maria Schultz – Head of committee

Lars Berg – Principal Secretary
Louise Hård af Segerstad &
Thomas Hahn – Secretaries

SOU 2013:68

English Summary at

<http://www.regeringen.se/sb/d/16982/a/226192>

Table 2. Framework for ecosystem services valuation and policy integration

Information in:	Qualitative terms	Quantitative terms	Monetary terms
Rationality (concerns, motives)	Concern for non-measurable objectives like equity, precautionary principle and safeguarding the insurance value of biodiversity.	Concern for reaching quantitative targets in cost-effective ways without expressing targets in monetary terms.	Concern for economic efficiency by internalising externalities.
Methods for describing values. Decision-supp. (Commodification degree 1+2)	SWOT analysis, Identification, Historical assessment, Narratives, Stakeholder consultation, Delphi methods, Multicriteria Analysis.	Technical/scientific mapping and assessment of trends e.g. water flows and species abundance. Multicriteria Analysis.	Estimating values of e.g. water flows in monetary terms. Travel-cost method, Contingent valuation. Cost-benefit analysis.
Policy integration by regulation. (Commodification degree 3)	Land use planning, protected areas, defining property rights and liability for ecological compensation.	Land use planning etc.	Land use planning etc.
Policy integration by economic incentives. (Commodification degree 4+5)	PES directed to certain communities and MES or tax reforms to change drivers and improve conditions in multiple dimensions. Level of tax or PES is not a valuation of the ecosystem service but reflects the opportunity cost of conservation.	PES, MES and tax reforms to change incentives of market actors and reach quantitative goals in a cost-effective way.	PES, MES and tax reforms to account for externalities with the aim to increase economic efficiency. Level of tax or PES is informed by the calculated value of the targeted ecosystem service.

PES in Costa Rica

- ❑ Costa Rica is one of the most well-known examples of national PES, often framed as a *neoliberal market-based* conservation mechanism
- ❑ Neoliberal = “nothing more than a vehicle for academics who like to criticise things that they do not like” (Igoe and Brockington, 2007:445).
- ❑ Costa Rica PES is successful because it's NOT neoliberal:
 - enabled by Forest Law (1996) that banned land-use change
 - largely financed through a carbon tax (+ water tariffs)
 - government is the only buyer (hence it's not a market)
 - government priorities high poverty areas and “biological corridors” (in accordance with the CBD)
- ❑ PES: payments or compensation? You are free to choose!

Biodiversity offsets + No Net Loss

- Adheres to the Polluter Pays Principle: a land exploiter should seek to avoid and minimise harm to biodiversity and ES and pay for restoring remaining harm.
- Rural landowners get paid for restoring biodiversity.
- Exploitation will be steered to land with small biodiversity and ES values.
- “No-go areas” important because, in reality, compensating high biodiversity values is impossible.
- George Monbiot has shown how offset policies become a joke unless there are strong institutions (safeguards)

<http://www.monbiot.com/2014/04/22/reframing-the-planet/>

- <http://www.theguardian.com/commentisfree/2014/jun/15/biodiversity-offsetting-habitat-lost-development>

A sketch for EU No Net Loss

1. In the EU 86,200 ha of “undeveloped” land are “developed” (exploited) every year, of which 10% concern Natura 2000 sites. The vast majority is agricultural land, followed by forests and woodland shrub, sclerophyllous vegetation and natural grasslands.
2. All projects exploiting land or water requiring permits should be legally mandated to compensate loss of biodiversity and ES.
3. The German “Compensation pools” system is a good model. Landowners can sign up land and document restoration activities since 2010, to meet additionality.
4. Once an exploitation is approved, a multi-stakeholder agency weigh the degradation with the restoration.
5. Safeguards: biodiversity and social (local people), substantive (rights and duties) and procedural (participation, transparency)

Cost-effectiveness

1. Very important in policy evaluation
2. Reductionist: only evaluates effects on one target.
Investments in ecosystems often have multiple benefits
3. Multi-Criteria Decision Analysis (MCDA) needed
4. The largest offset program, US Wetland mitigation, has focused too much on low transaction costs, assuming one acre = one conservation credit.
5. However, a program that meets the 3 CBD objectives four times better at double cost is by definition more cost-effective.
6. Safeguards need to be country-specific, based on international guidelines

Conclusions

- ❑ Valuation is overestimated. More important to create incentives to produce ecosystem services
- ❑ Be careful about the framing. PES are better described as government subsidies than “market-based” conservation or a neoliberal ghost. Land-use, not ES, are paid for.
- ❑ When degradation of habitats is unavoidable it's good governance to force “developers” to pay for biodiversity offsets (ecological compensation). Such commodification may benefit biodiversity conservation only if there are strong safeguards (presently lacking in the UK). Whether government or the market handles offsets there is a need for monitoring, sanctioning and legal protection.
- ❑ Policy tools need to be evaluated but requires rigorous methods, not one-dimensional cost-effectiveness analysis



Thanks!

Characteristics for "good" PES

- ❑ **Normative objectives** defined by CBD: i) conservation, ii) sustainable use, and iii) equitable benefit sharing
- ❑ **Contracts** with landowners must **safeguard** these three goals, to ensure biodiversity conservation and poverty alleviation
- ❑ **Legal framework** clarifying property rights and addressing drivers of unsustainable land-use and harmful subsidies
<http://www.cbd.int/doc/meetings/cop/cop-11/information/cop-11-inf-07-en.pdf>
- ❑ Within such institutional framing, private investors can assist financing (e.g. trust banks in Amazonas has protected 33 million ha) but this is CSR-related: the benefits are all *public goods*, there are no cash flows to tap, hence no monetary incentives for a market to emerge.

www.cbd.int/doc/meetings/fin/ds-fb-01/official/ds-fb-01-02-en.pdf

Biodiversity offsets = markets?

- Legally mandated biodiversity offsets (or ecological compensation) are based in liabilities for land exploiters. Case-by-case compensation do not even use price signals
- The other extreme is habitat banking with simple metrics (1 acre = 1 credit). The price for credits is negotiated in a market.
- The goal "No Net Loss" may require metrics but not markets. Who does the metrics?
- Do you prefer offsets or compensation???

Metrics suggested by Defra (UK) to enable Biodiversity Offsets

Biodiversity Offsetting Pilots Technical Paper:

The metric for the biodiversity offsetting pilot in England

March 2012

www.defra.gov.uk

27. Each band of habitat distinctiveness has a number associated with it as in **Figure 2** below. This is the starting point for calculating the number of “units” of biodiversity per hectare a particular habitat is worth.

Figure 2: Habitat distinctiveness⁶

Habitat distinctiveness	
High	6
Medium	4
Low	2

Figure 4: Matrix showing how condition and distinctiveness are combined to give the number of biodiversity units per hectare⁸

		Habitat distinctiveness		
		Low (2)	Medium (4)	High (6)
Condition	Good (3)	6	12	18
	Moderate (2)	4	8	12
	Poor (1)	2	4	6

Degrees of commodification

0	No commodification (intrinsic value)
1	Utilitarian framing (“benefits from nature”)
2	Monetary valuation (exchange value)
3	Regulations (non-price)
4	Tax, Subsidy (price signal)
5	Markets (price mechanism)
6	Financialisation

German Compensation Pools

- Governed by public or private “Compensation Agencies,” appointed by respective state nature conservation agency
- Integrated to municipal planning
- No role for the market, neither for determining price nor quality (Conway et al. 2013:113-114)
- The German compensation pools are legal liability, i.e. the 3rd degree of commodification.
- Conway calls them “habitat banks”

Financialisation

- Financialisation is not in itself a policy instrument but builds on the financial flows of PES or market schemes
- This traded commodity is re-packaged and re-sold as a financial product.
- Based on Sullivan (2012) we define financialisation as a process in which financial actors invest in units of conserved nature and turn these investments into financial instruments (bonds or derivatives) which are sold to create additional value.

Financialisation: Forest bonds

- ❑ Forest owners can "raise large-scale finance now that will be repaid by existing and anticipated future income... from carbon markets" (Goldman Sachs, WWF et al.)
- ❑ In this case there is a financial benefit stream (REDD). The financial sector is keen to enter this market and tap this money. How does this enables the CBD goals?



Governments and the Global Environment Facility (GEF) are insufficient, hence we need some help from Goldman Sachs to create and sell bonds, using forests as collateral

No thanks!

Appendix 2: Concepts and Methods

- ❑ Insurance value (called option value + quasi-option value in economics). Example: the value of a landscape element which is a habitat for pollinating insects is low if wheat is grown but has a considerable insurance value. The recreation value of a small forest is low as long as the orienteering club uses another forest (pp. 197, 207, 219, 228)
- ❑ While resilience concerns the **supply-side** (the combined capacity of ecosystems and human society to sustain the production of ES), the insurance value concerns the **demand-side**

Biodiversity Offsets

- ❑ “We believe that by making accessible information on policy, finance, regulation, science, business, and other market-relevant factors, markets for ecosystem services will one day become a fundamental part of our economic system, helping give value to environmental services that, for too long, have been taken for granted.” www.ecosystemmarketplace.com
- ❑ What is the aim – create market prices or fulfilling the three objectives of CBD?
- ❑ Trading biodiversity is extremely complex, hence requiring rigorous regulations. Probably more efficient (lower transaction costs) if offsets are handled by the same agency that gives permissions for habitat degradation. Market prices are complexity blinders.