



Experiences with the Economic Valuation of Ecosystem Services in the Context of **TEEB: The Economics of Ecosystems and Biodiversity**



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CBD CAPACITY-BUILDING WORKSHOP
FOR NORTHAFRICA AND THE MIDDLE EAST
ON TEEB

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The Economics of Ecosystems & Biodiversity

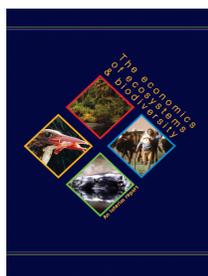


TEEB's genesis ...

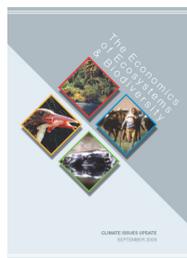


“Potsdam Initiative – Biological Diversity 2010”

.....the economic significance of the global loss of biological diversity....



**TEEB Interim Report
CBD COP-9, Bonn, May 2008**



**TEEB Climate Issues Update
Strömstad September 2009.**

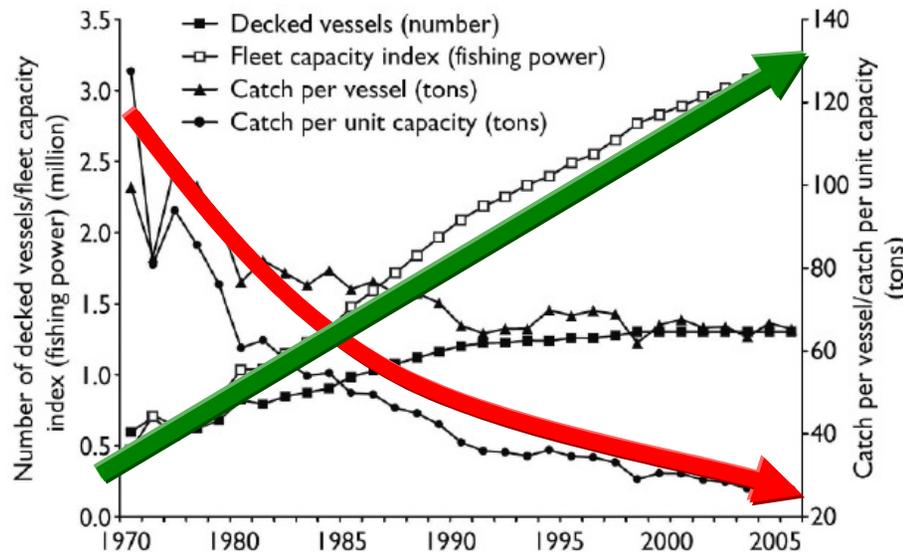


**TEEB Main Reports
Nov. 2009 – Oct. 2010**





The costs of loss: Global Fisheries



TEEB D1, Chap.10; World Bank & FAO 2008

Wider social impacts:

- **At risk: approx. 27 million jobs**
- **More than 1 billion people depend on fish for main source of protein**

- >> Half of all fishstocks fully exploited one fourth overexploited
- >> World Bank estimates that net benefit losses from fisheries are 50 billion US\$ per year –
- >> Subsidies main reason for damages



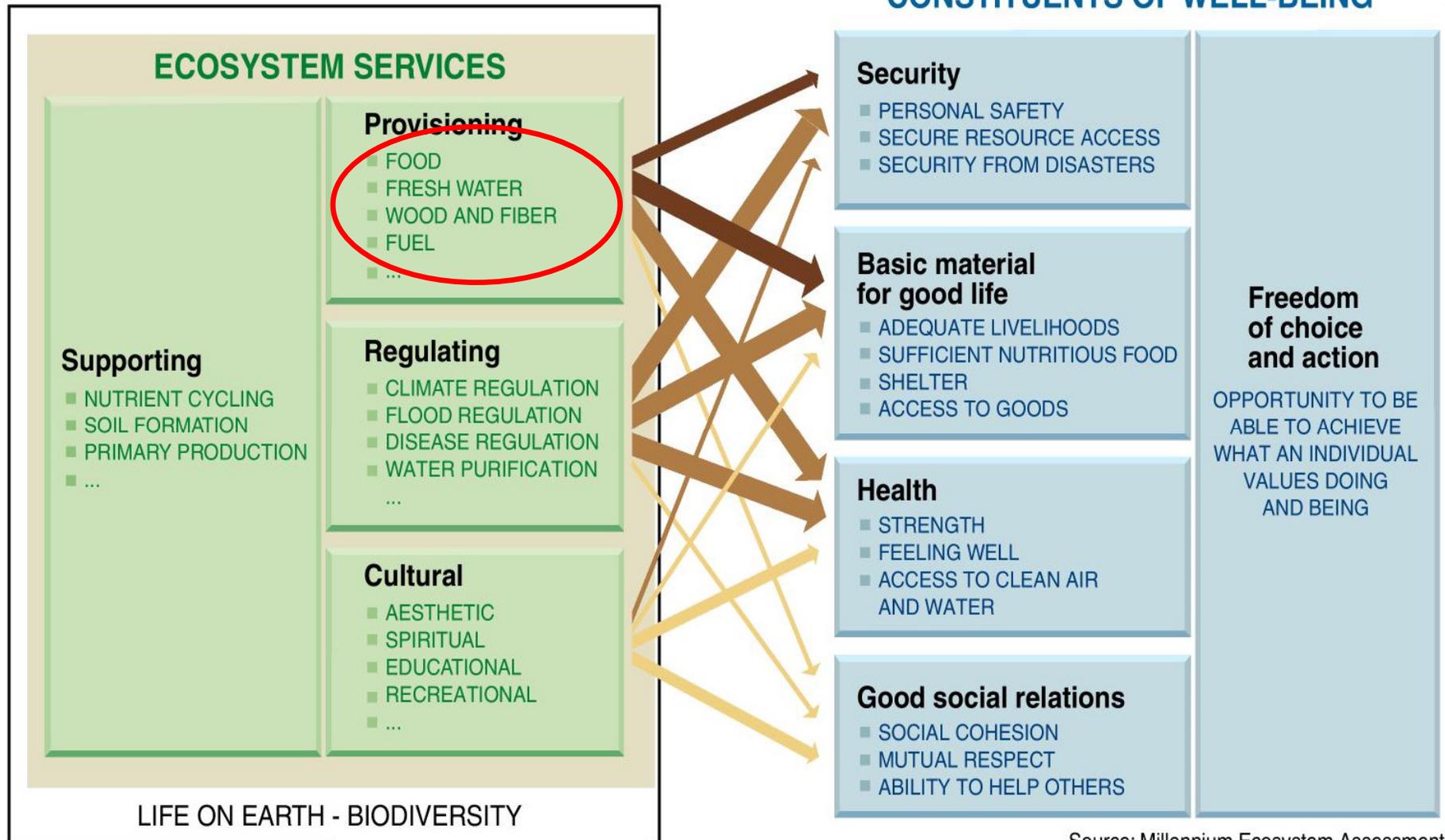
„Does TEEB = \$\$Nature\$\$??“

1. Quantify monetary values of ecosystems and biodiversity
2. Use economic instruments to identify and deal with scarce benefits from nature
3. Propose policy responses to use ecosystems and biodiversity in an economically efficient way
4. All of the above
5. All of the above + significance of ecosystems and biodiversity for the poorer parts of society

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What ecosystem services do we normally consider?



Source: Millennium Ecosystem Assessment



TEEB's approach to taking Nature's values into account



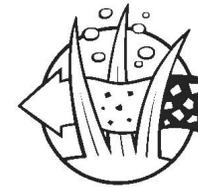
1. Recognizing value: a feature of all human societies and communities



2. Demonstrating value: in economic terms, to support decision making

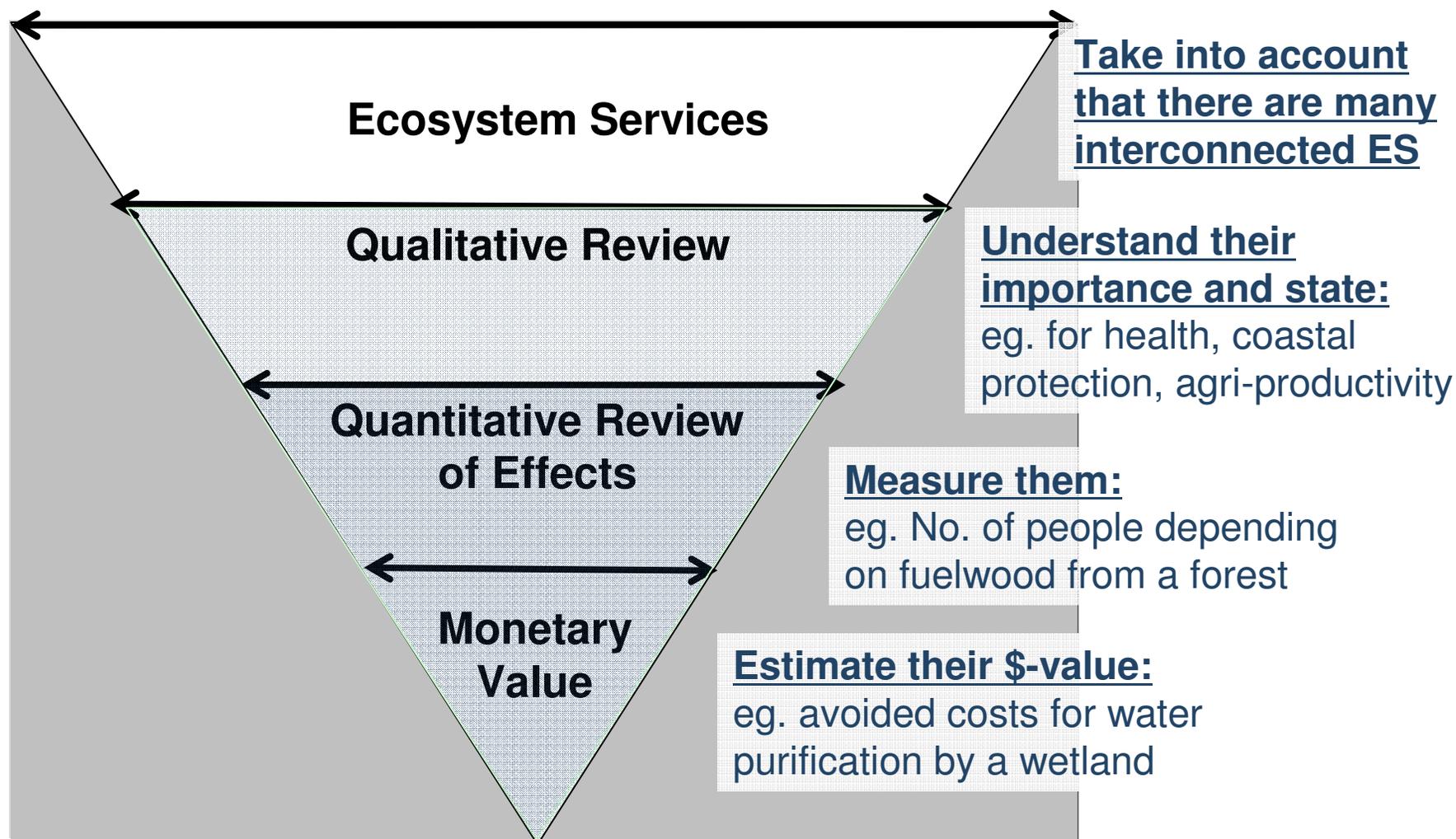


3. Capturing value: introduce mechanisms that incorporate the values of ecosystems into decision making



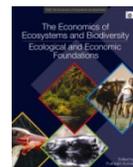
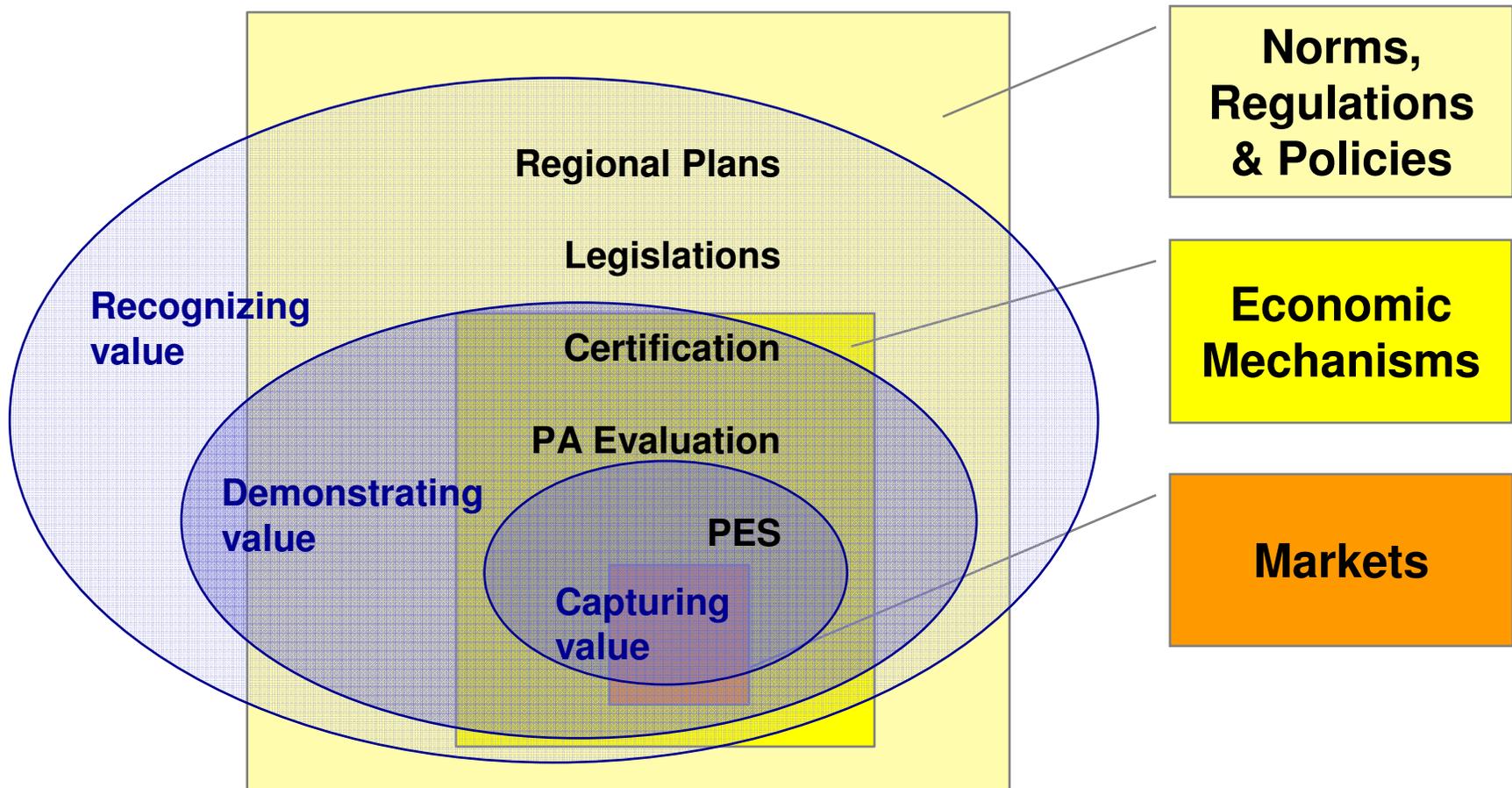


Different Levels of Analysis





Valuations, Operating Spaces, Responses...



Ch.5



Ch.4



Ch.3



Ch.3

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We invite you to use the TEEB Approach to appraising ecosystem services for:

Making the case: healthy rivers and forested slopes are assets we depend on

Delivering public services at lower costs: the public goods of clean and regular water, air, soil and climate are often best ensured by 'natural infrastructure'

Getting clarity on trade-offs in government decisions: what services do we want to enhance and which ones are we prepared to lose? (shrimp farms versus coastal protection?)

Understanding social impact and tackling poverty: who loses and who benefits is determined by the changed flow in nature's benefits - as well as by cash (hydro power in Brazil, flower farms in Ethiopia). – Poor people directly rely on intact ES.

Exploring new funding sources for maintaining your natural assets: certified production, payment schemes for water, biodiversity or carbon are becoming important strategies for regional economies.



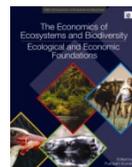
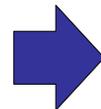
Valuation methods for ecosystem services

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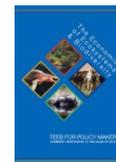


Methods for valuation

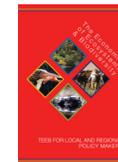
- Overview of state of the art -> Chapter 5 TEEB Foundations
- How to apply in policy assessments -> Chapter 4 TEEB national
- Comparison of different methods -> Chapter 3 TEEB local
- Answers to practical questions -> Chapter 10 TEEB local
- Use for business reporting -> Chapter 3 TEEB for business



Ch.5



Ch.4



Ch.3,10



Ch.3



MANY Approaches to Valuing Ecosystem Services

Preference-Based Approaches

- 1) **Direct market valuation approaches:** use data from actual markets
 - market-price based approach:
 - e.g. annual return from timber of 1ha forest
 - cost-based approach:
 - replacement cost: e.g. costs of an alternative technical fix,
 - avoided damage cost: e.g. saved costs of natural pest control
 - restoration costs: e.g. costs of re-establishing an intact mangrove belt
 - production function approach:
 - e.g. share of natural pollinators in agricultural output

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Example: Draining a wetland in Kampala, Uganda

- Plans to drain the Nakivubo Swamp (>40sqkm) to enlarge premium area for horticulture nearby the city – is this a good decision?
- How important is the waste water treatment capacity of the swamp?

Valuation:

- Cost for protecting and maintaining the wetlands : ~235.000\$ p.a.
- Costs of a sewage treatment facility with equal treatment capacity:
~2.000.000\$ p.a.
- Comparison convinced authorities: draining plans were abandoned and Nakivubo Swamps gazetted as protected area





How did they do this estimate?

- Replacement cost method: what would be the price for a treatment plant with the same capacity?

Alternatives:

- Avoided cost method: What would be the cost of adapting drinking water abstraction to increased pollution in the adjacent lake?
- Avoided costs method: What would be the costs of increased disease risk? (treatment costs, or costs of health loss)
- Restoration cost method: how much would restoring the wetland's water purification capacity cost?

Agricultural gains from wetland transformation:

- Production function method: what is the expected income from fruits/vegetables?



MANY Approaches to Valuing Ecosystem Services (cont)

2) Revealed preference approaches: economic agents “reveal” their preferences

- travel cost: e.g. how much do tourists spend to get to see the Grand Canyon?
- hedonic pricing approach: how much does real estate value depend on proximity to urban parks?

3) Stated preferences approaches: simulate a market and demand for ecosystem services by means of surveys on hypothetical (policy-induced) changes in the provision of ecosystem services

- Contingent valuation method: „how much would you pay for x?“
- Choice modelling: „which scenario do you prefer?“



In a nutshell: Choice modelling

- People choose from a 'menu' of options with differing levels of ecosystem services and differing costs,
- e.g., policy decisions where a set of possible actions might result in different impacts on ecosystems.
- Respondents decide which is preferred? Value is inferred from trade-offs people are willing to make.
- Some studies show, people, especially in developing countries are not willing to trade-off certain ecosystem services.
- Can be designed as deliberative process



„Benefit transfer“ – value transfer a an easy shortcut to valuation?

- Primary valuation studies are time consuming, expensive and require expertise.
- Value transfer applies a value from one (or more) study site(s) to a different policy site.
- Value transfer is difficult and not as accurate as primary valuation

The range of the value of coral reefs for tourism





MANY Approaches to Valuing Ecosystem Services (cont)

4) Deliberative approaches

- Focus groups or citizen juries on desired ES bundles or on priorities: attributing value to ES based on discussion

B) Biophysical approaches

5) ,Insurance Value‘ to keep systems resilient

- e.g. identifying thresholds (critical natural capital), flipping points (system analysis)

6) Physical consumption metrics

- energy flows, biomass (,ecological footprint‘), ...

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Usefulness of economic valuation: Valuation method shapes how we relate to nature

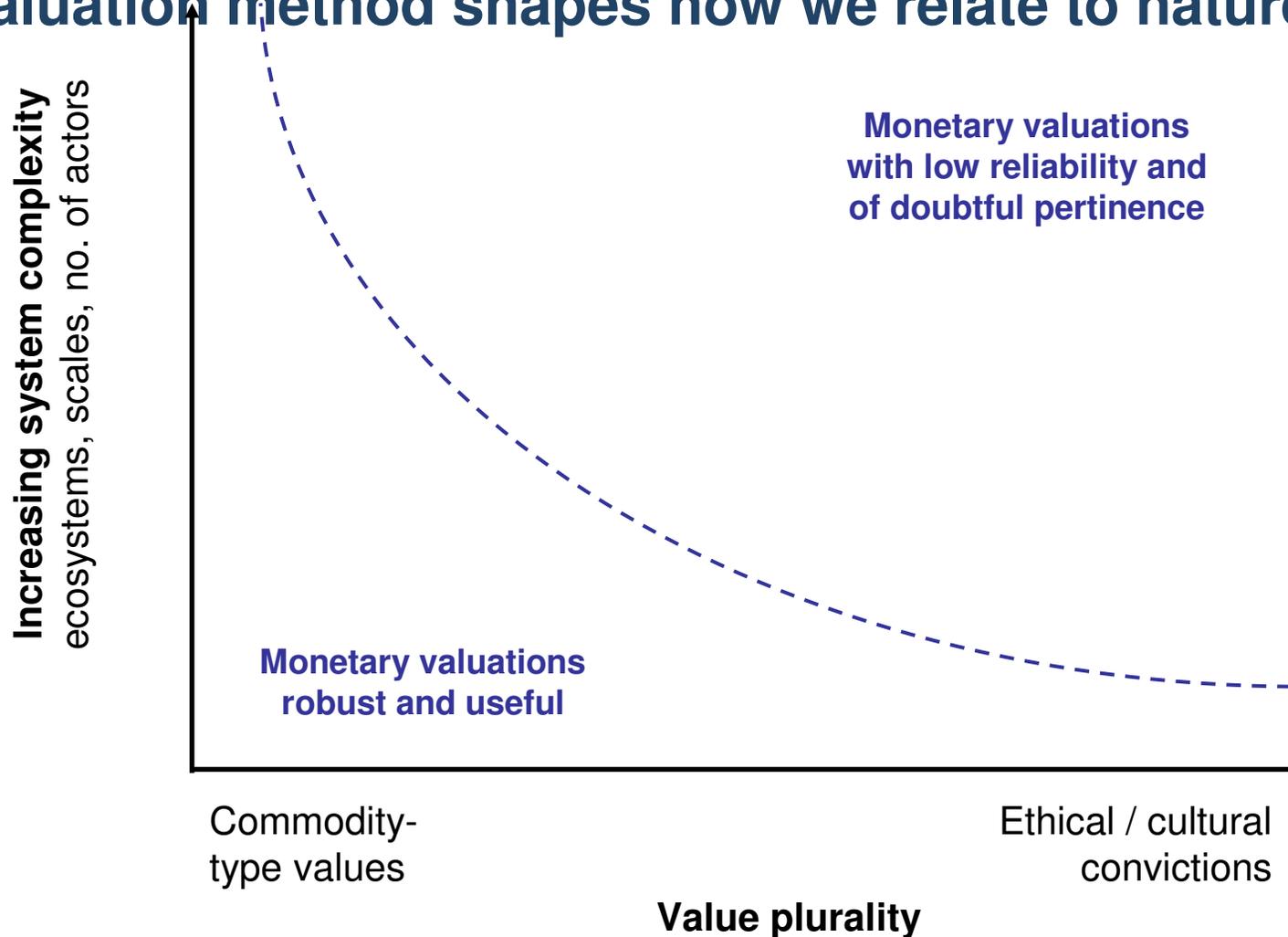
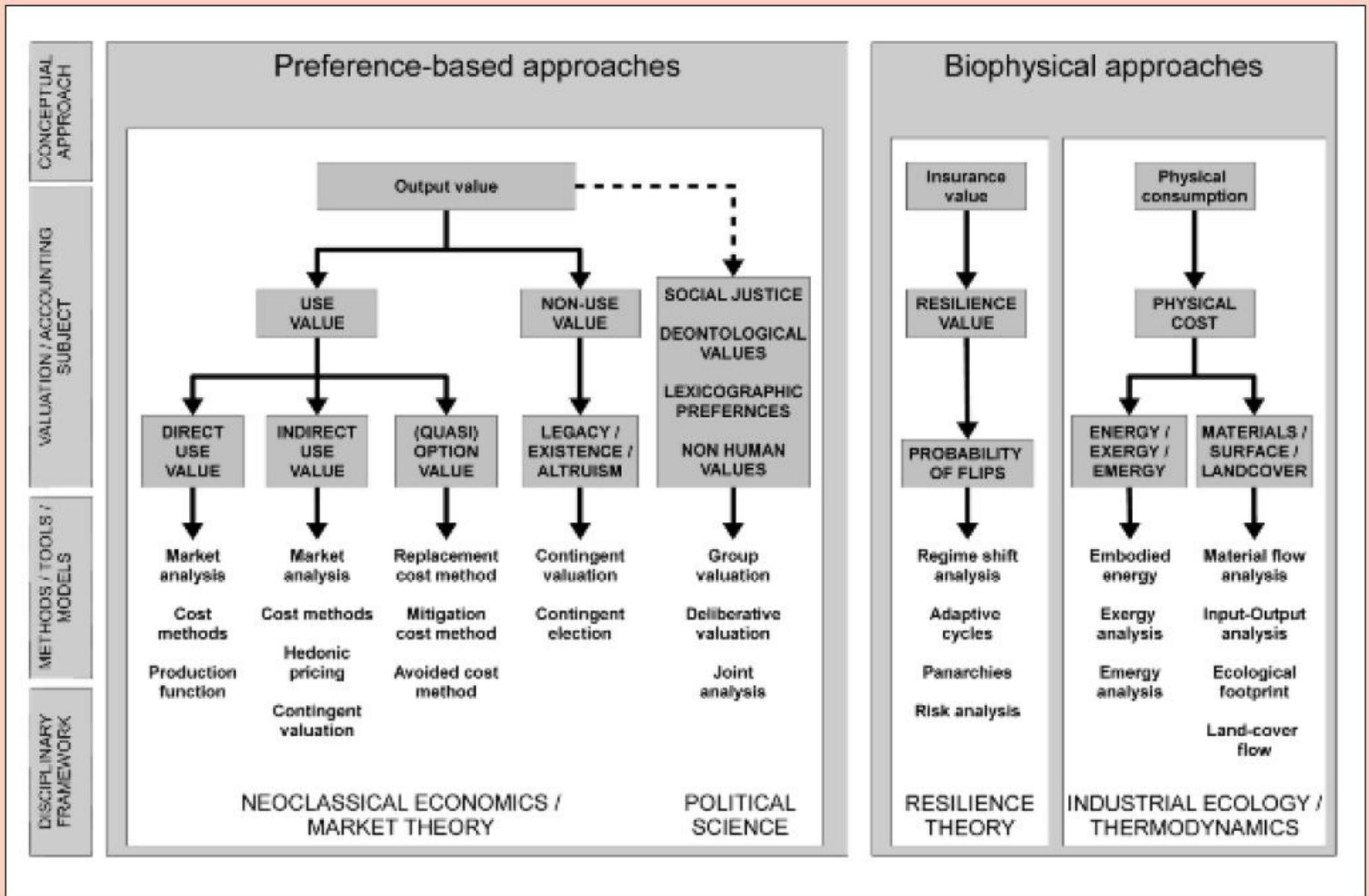
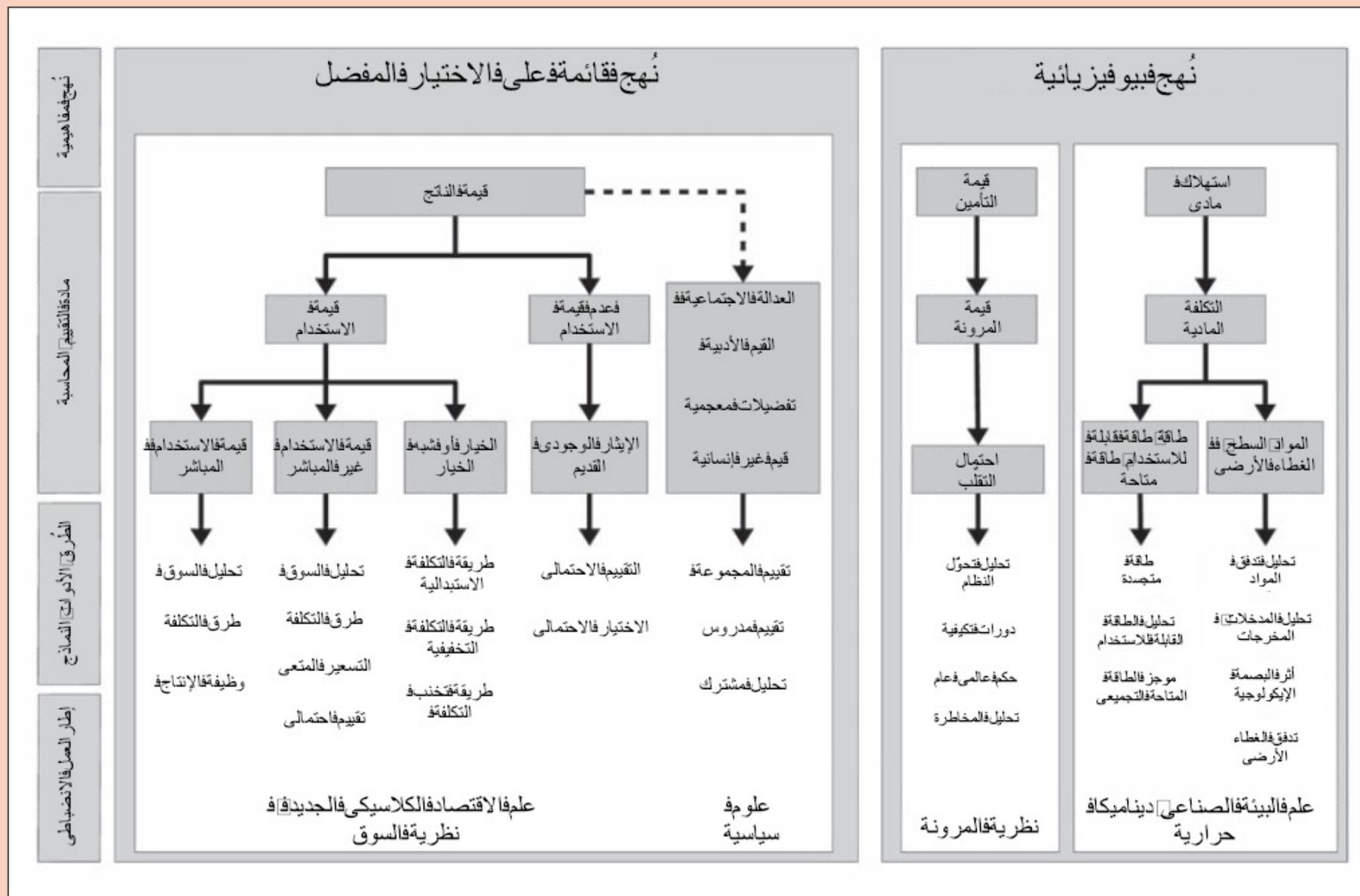


Figure 1: Approaches for the estimation of nature's values



الشكل ١: نهج تقييم قيم الطبيعة





Lessons about Considering Nature's Values

There is room to manoeuvre – recognising the importance of ecosystem services is the big first step to transcend the deadlock between development and conservation. Quantifying and capturing values make sense in specific situations.

Build on the full range of values – cashing in on single services provides incentives for degrading the entire system we depend on.

It is better to err on the side of caution – ecology is complex and our understanding limited – but future damage costs are too high to risk doubting

There are no absolute economic values of nature – they are place and time specific estimates of our dependence or appreciation. Focus on marginal values and keep ES disaggregate.

Value estimates can be constructed in various ways: adapt assessment design to your needs. In order to get useful results you need to understand (and decide) what is being measured or valued - and how.

Connect assessments to decision making - and pay attention to rights and to social impacts of ES changes.

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Thank you!

- For further information: www.teebweb.org,
www.teeb4me.com
- Scientific coordination: teeb@ufz.de



European Environment Agency



Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety



Rijksoverheid

