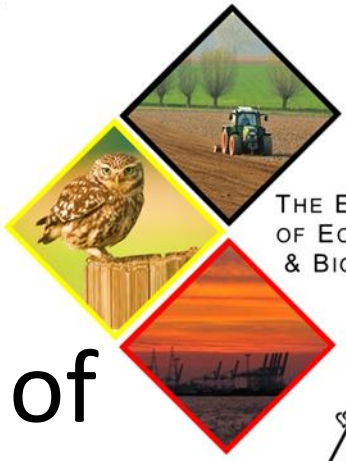

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Counting the benefits of Biodiversity: opportunities and challenges

Inge Liekens, Leo De Nocker, Steven Broekx, Joris Aertsens

TEEBelgium D0 conference, April 27th 2012

What are ecosystems worth?

- Virtually no anthropogenic activity is possible without them – in that sense they are worth an almost infinite amount. But that is not very interesting.
- More interesting values of ecosystems relate to the benefits associated with improving them or with preventing their degradation. This is much more difficult.

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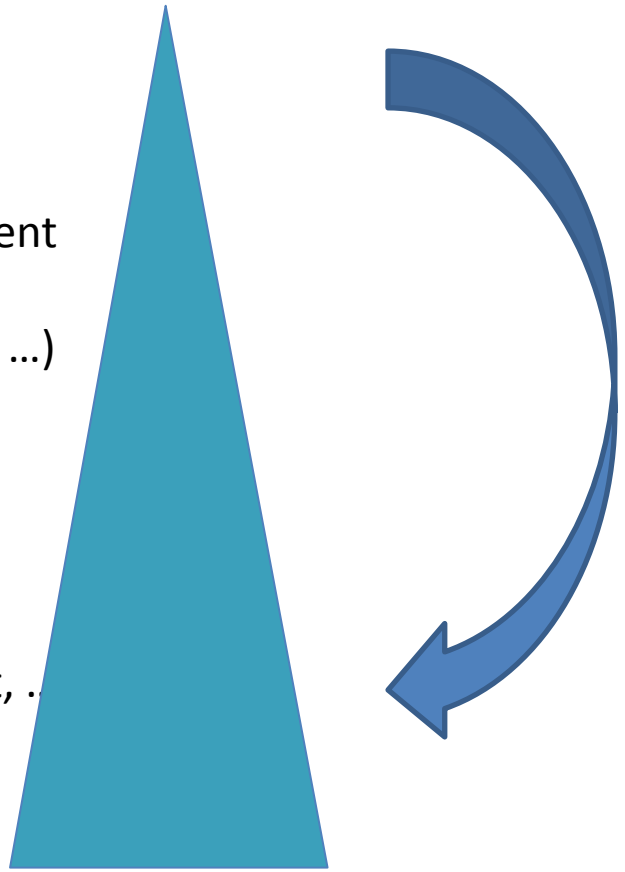
Why put a € on nature?

- Communication, awareness raising

- Cost-effectiveness nature restoration and management
- Cost-effectiveness of policy instruments
  (e.g. subsidies, agro-environmental measures, …)

- Impact assessment on ecosystems of infrastructure projects
  - Cost benefit analysis
  - Other tools (life cycle assessment)
  - Win-win nature restoration, water management, …
- Cost-benefit analysis land use decisions

- Payments for ecosystem services



How put a € on nature

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- Ecosystem as source of goods and services to humans

- Valuation = effect of these services on human welfare and wellbeing
  - Willingness to pay for it
  - Cost to produce services

- What are the relevant ecosystem services flows?
- How will they **change** in response to a given intervention, relative to a business-as-usual baseline? Over what time scale?
- What is this change worth, and to who?

  - We try to value changes!

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Millenium Ecosystem Assessment

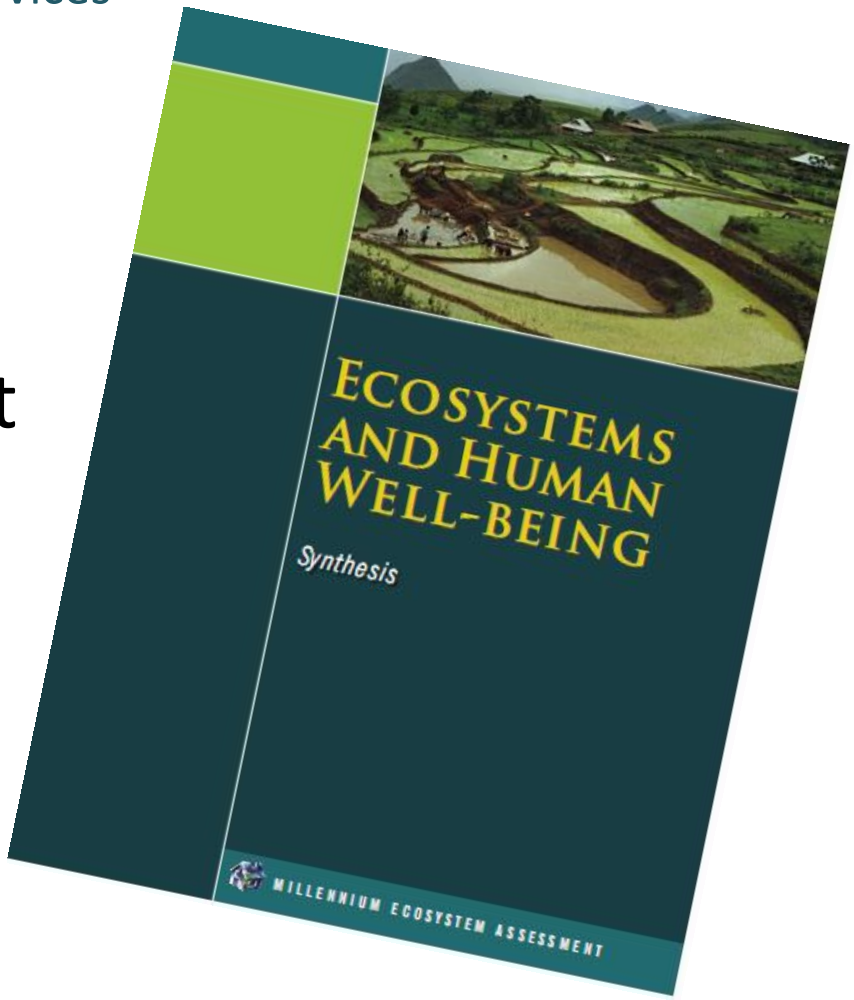
Concept of "Ecosystem goods and services"

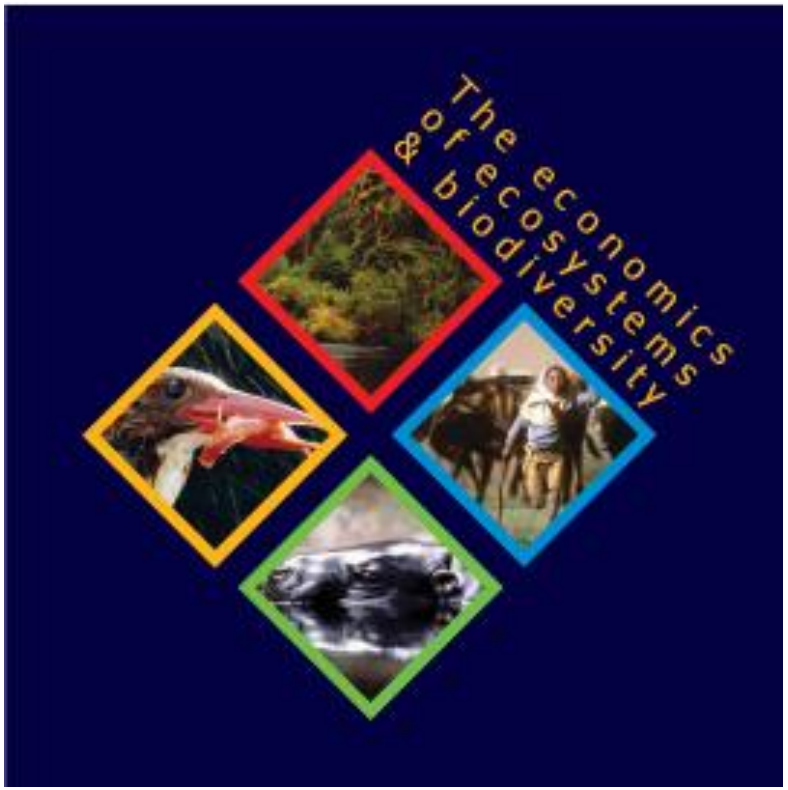
Growing use of this concept

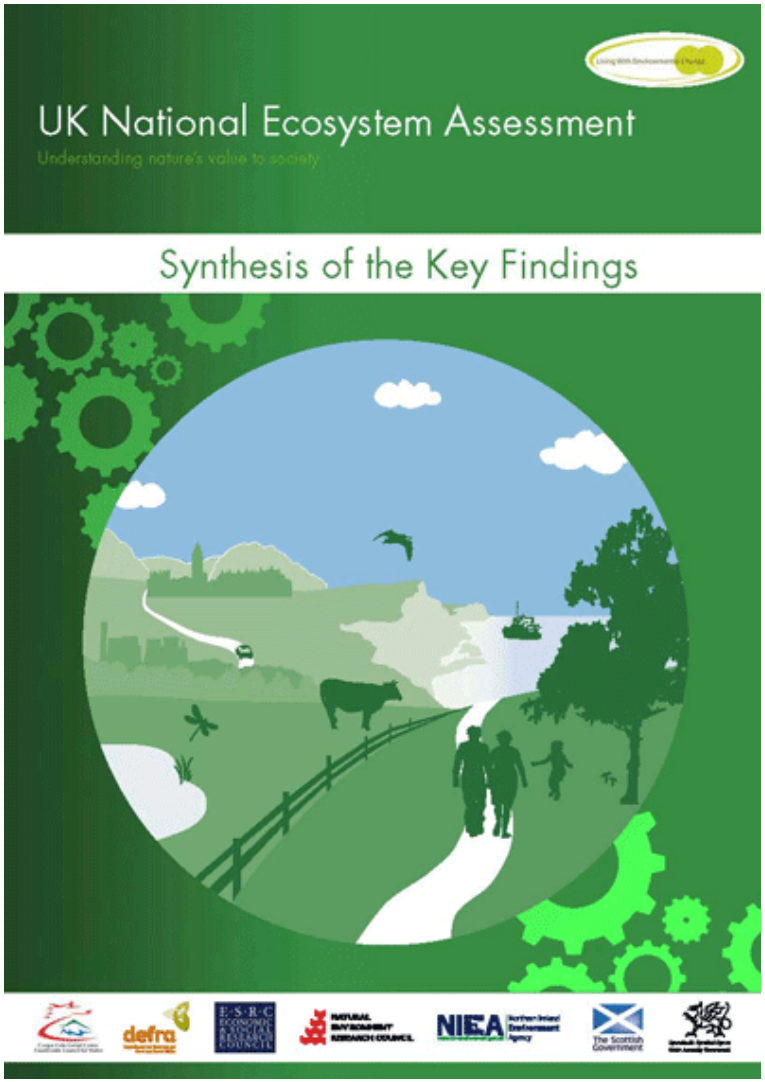
To combine ecological and

Economic science

But limited data availability




The economics
of ecosystems
& biodiversity


UK National Ecosystem Assessment
Understanding nature's value to society
Synthesis of the Key Findings
defra
NIEA
The Scottish Government

Measuring Values

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- Market prices can be used in some cases e.g. contribution of biodiversity to development of new drugs

- In most cases, we need to use a range of "non-market valuation methods":
  - replacement costs; avoided costs
  - travel costs and hedonic pricing
  - stated preference methods (contingent valuation and choice experiments)

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Data availability

- Number of studies still increasing
- Lacking knowledge on ecosystem functioning for certain ecosystems, certain ecosystem services
  - Prioritising : better info for well documented services or first and simple info for undocumented services?
- Valuation studies often focusing on methodological issues
- In Belgium very few original studies

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Benefit transfer

- use of data of a study site/context for a policy site/context
- Single value
- Single function
- Function based on meta-analysis

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Benefit transfer

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use of data of a study site/context for a policy site/context

project A

environmental context

socio-economic context

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Benefit transfer

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use of data of a study site/context for a policy site/context

project A

environmental context

socio-economic context

project B

env. context

socio-econ. context

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Benefit transfer

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use of data of a study site/context for a policy site/context

project A

environmental context

socio-economic context

project B

env. context

socio-econ. context

Minimise transfer errors

quantication and valuation functions instead of single values

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Benefit transfer

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use of data of a study site/context for a policy site/context

project A

environmental context

socio-economic context

project B

env. context

socio-econ. context

Minimise transfer errors

quantication and valuation functions instead of single values

simple to estimate and easy to use

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To go one step further

- Data collection and surveys are still needed
- Such an approach that facilitate benefit transfer
- Optimization of ES=>bundle
- Spatial explicitness is very important!

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Spatial issues

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Supply of ecosystem services:

- characteristics of the ecosystem (size, …)
- environmental context (e.g. upstream-downstream)

Demand for ecosystem services

- size of the market or range of beneficiaries
- varies for different services from same ecosystem
- availability substitutes

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Why different in BE

- High population Density en industrialisation.
- High pressure on ecosystems
- High value of protection

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Denitrification

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- Valuation = abatement costs

=> Environmental cost model

  - €74/kg N
  - International: replacement costs: €10-30/kg N

spatial differentiation still lacking: For the moment national number, not spatial explicit e.g. per basin

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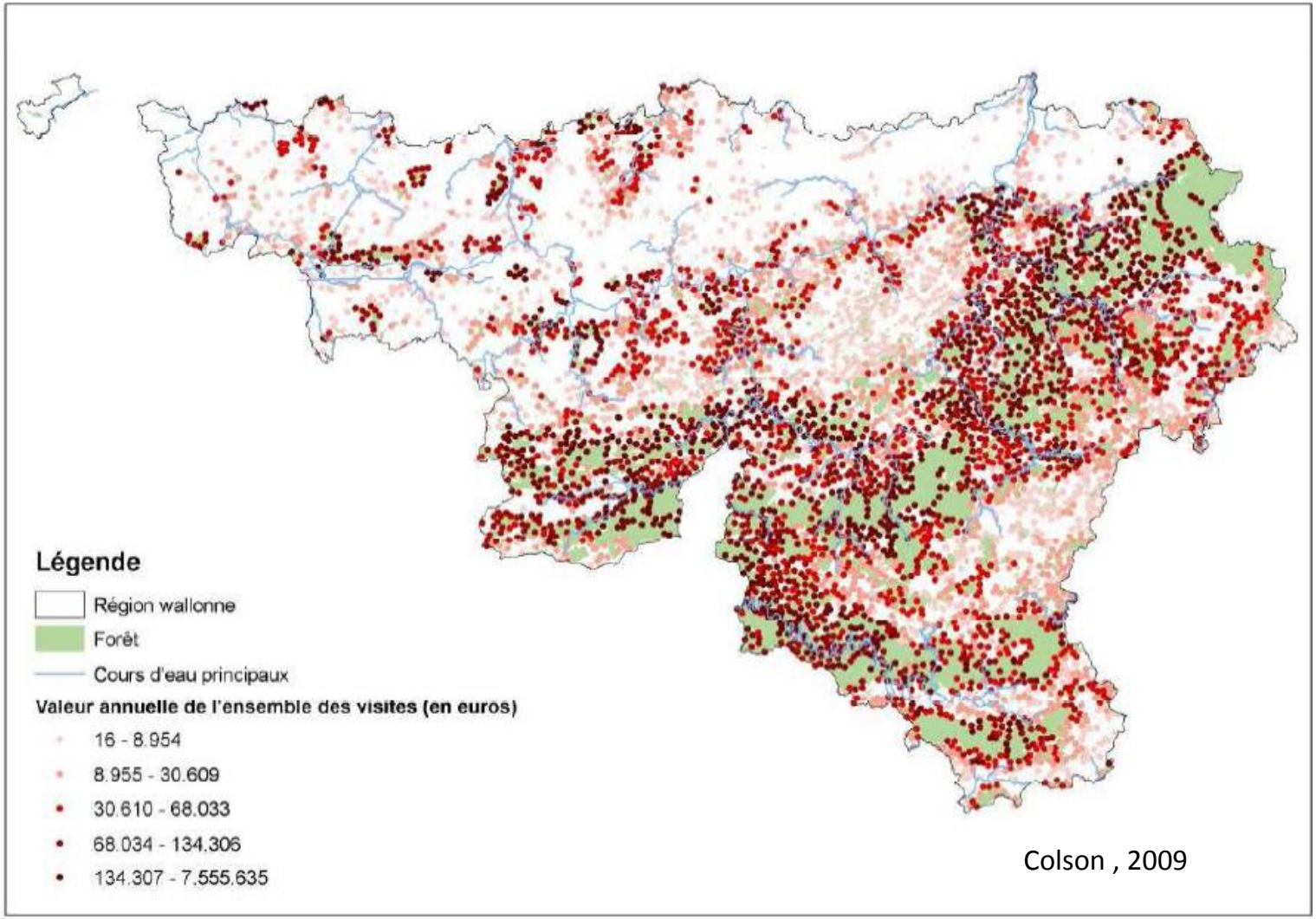
Recreation in Walloon forests



Colson , 2009

Controlled flooding

- In comparison with international figures: high costs but also higher benefits

- Scheldt: 5000ha controlled flooding area
  - C: (€100,000/ha on average).
  - B: 22000€/ha a year
- Danube: 160000 ha
  - C: 3000€/ha
  - B: €500/ha a year

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Nature Value Explorer v 1.0

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Purpose:

- Help to quantify and value changes in EGS
- Linked to land use
- For natural scientists and economists

Method:

- Input scenarios and area characteristics
- Quantification of change in EGS
- Physical effects translated into welfare effects
- Benefit transfer functions

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Natuurwaardeverkenner 1.0

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- The tool can be consulted on http://rma.vito.be/natuurwaardeverkenner/. (dutch)

Status :

- version 1.0 : free on-line tool
- Based on specific studies for Flemish government
- 100 registrated users: large interest from different policy fields
- Extension planned end 2012
  - Extra ES, spatial isssues, …
  - Ongoing process

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Ecosystem valuation: sense and no(n)sense

The Economics of Ecosystems & Biodiversity Belgium

- Good link between biophysical and economic information
- Comparing scenarios
- Bundle of ecosystems
  - Adding up problem
- Marginal value
  - *Critique: Values for individual sites cannot be added together to assess large scale changes in the extent of ecosystems.*
  - True: Large losses in the stock of an ecosystem within a region will impact the value of the remaining stock

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Conclusions & Recommendations

- We need to simplify and standardize application of tools for valuing ecosystem services.
  - At a rough top down level for broad aggregate figures.
  - At a detailed bottom up level.
  - With attention to spatial and temporal issues
- More multidisciplinary studies to cover link between ecosystem functioning and ecosystem services
- Further work on valuation, based on impact pathways is needed (e.g. applied to toxicological pathways).
- Studies on trade-offs between ecosystem services AND between different ecosystems.
- Use the numbers intelligently.

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End conclusion

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The proof of the pudding is in the eating,

The objective of economic valuation is not to put a ‘true’ value on what is priceless, but to provide sound scientific info to improve decision making, i.e.

to translate the value of losses from the destruction of some ecosystems /benefits of protection policies

in terms that allow a comparison with other societal issues adapted to Belgian conditions.

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More information

Natuurwaardeverkenner:

http://rma.vito.be/natuurwaardeverkenner/index.php

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