Valuing biodiversity and ecosystem services for practical public decision making:
Some preliminary lessons from the Centre d'Analyse Strategique group

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The objectives of the study

From March to November 2008 a group (chaired by B. Chevassus) was created within the Centre d'Analyse Stratégique (an organisation working under the direction of the French Prime Minister to assist the government in defining and implementing its policies) to prepare a report answering four main questions related to the valuation of biodiversity and ecosystem services:

- drawing a state of the art of scientific knowledge regarding biodiversity and ecosystem services valuation

- analysing the socio-economic stakes related to biological diversity in France, including overseas territories

- estimating first reference values to take biodiversity into account in cost-benefit analysis, namely related to infrastructure projects

- proposing development axes for future researches.

The committee was confronted with a number of issues and suggested almost practical answers to the following questions.

- What is biodiversity and how to get usable measurements for building equivalence classes?
- Why has biodiversity an economic value and what does it practically mean?
- Are standard valuation methods usable for practical measurements of biodiversity values?
- Does economic literature provide usable elements for practical biodiversity and ecosystem services valuation?
- How to build practical reference values for ecosystems?
- The group is still at work and only very preliminary conclusions will be presented.
- Since the report has not yet been formally approved in anyway, the following reflects my sole point of view… and weaknesses.

Valuing biodiversity?

- Is it morally acceptable to put prices on Life itself ?

- Is it technically achievable to find socially acceptable values?
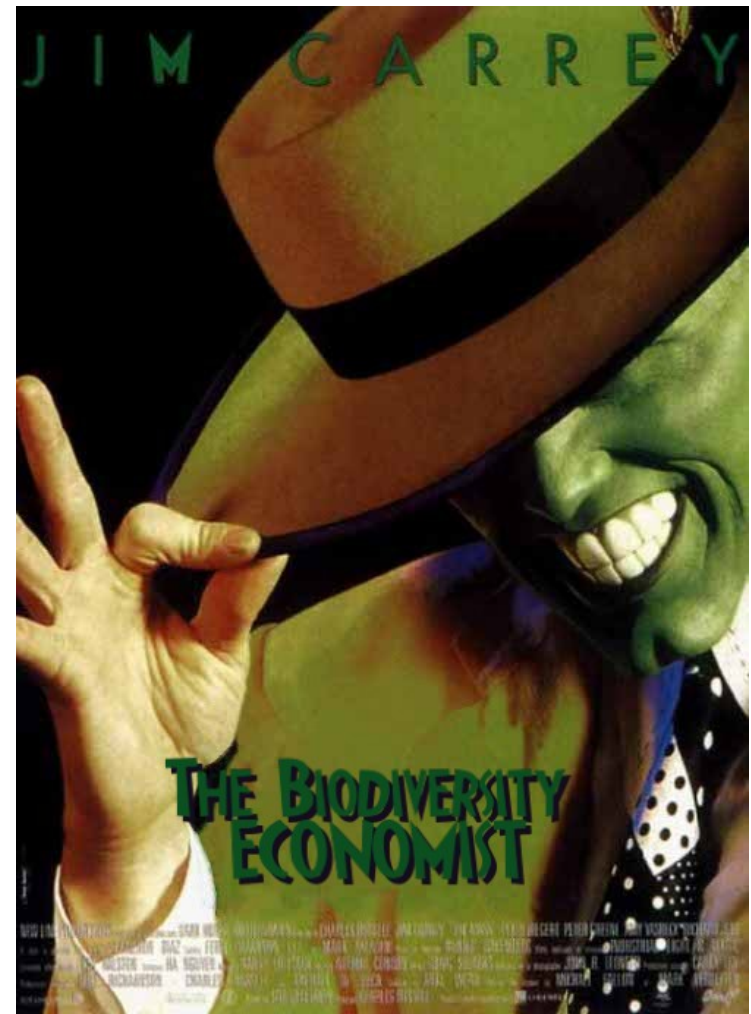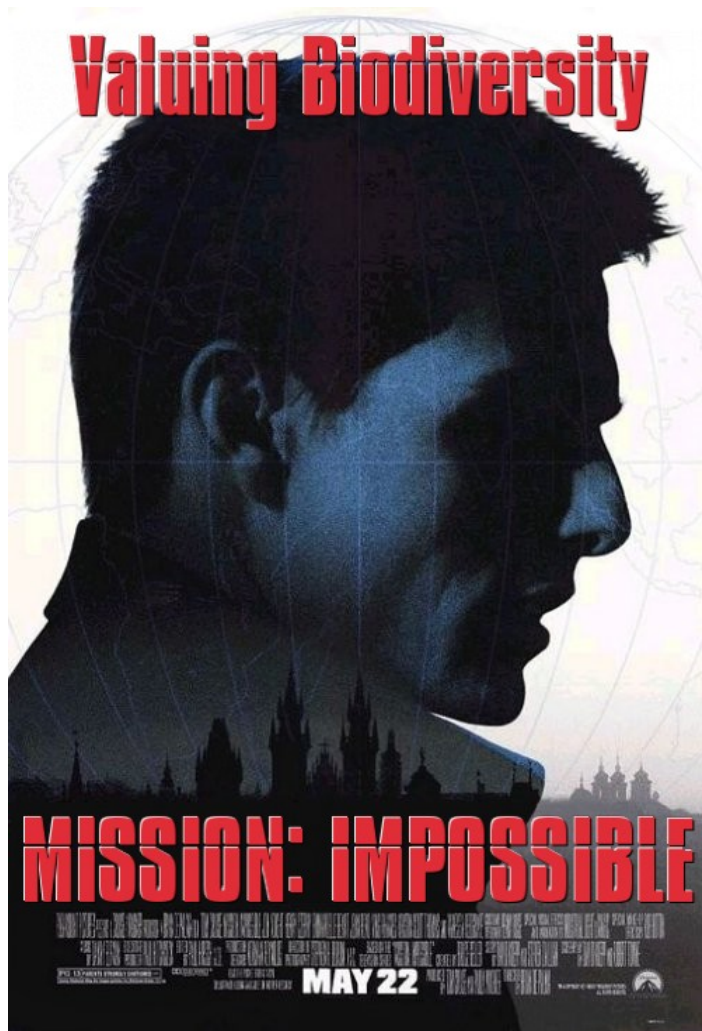
What is biodiversity and how to get usable measurements for building equivalence classes?

- Biodiversity has not yet received **neither an operational definition, nor usable measurement** for building equivalence on a wide scope
- Practically, biodiversity means: species (!), intraspecific genetic diversity, populations, ecosystems, landscapes…
- Biologist provides numerous analysis and index that help for decades to inform decisions and can be used to build biodiversity and habitat indexes at least within limited ranges
- **Nature and financial resource scarcities make choices mandatory** and option ranking unavoidable: the larger the equivalence classes, the more efficient the arbitrages and compensations
- Biodiversity is not an economic good but an emergent property of eco-systems that may improve their capacity as a base for human services
- Ecosystem services can to some extend be considered as economic goods (important for decentralized regulation but unnecessary for economic valuation)

Why have biodiversity and ecosystem services an economic value and what does it practically mean?

Ecosystem services and biodiversity are useful and economically scarce

- – Direct and indirect use values
- – Option or insurance values
- – Vicarious use, bequest and existence values
- – Non-anthropogenic instrumental intrinsic and values (non economic?)

These values, for the most part, are not observable on markets since most biodiversity assets are part of the commons with both private and public good dimensions

Practically, it means that:

✓ in private decisions they are not appropriately taken into account ("externalities"): need of public policies

✓ In public decisions, **reference values** would be helpful for decision makers and to improve the efficiency of conservation policies at national or European level

Biodiversity and ecosystem services as mixed public goods
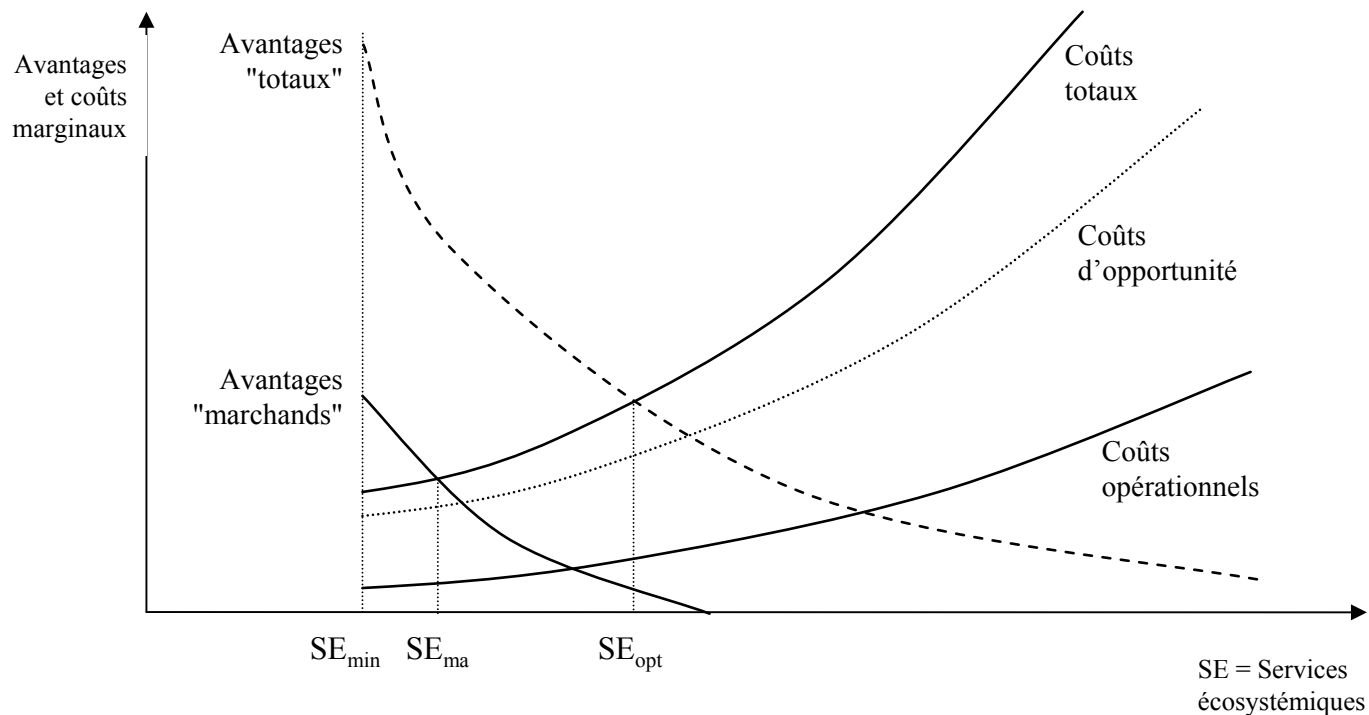
- Reference values may be helpful to switch efficiently from the lower equilibrium to the other
- It is unfortunately very difficult to know where we currently stand in this scheme since we have little information on costs and value, and on biodiversity stock too

Are standard valuation methods usable for practical measurements of biodiversity values?

- No
- Valuation method are based upon individual preferences and individuals often have little familiarity and understanding of stakes related to biodiversity
- Only stated preferences methods provide significant results for values other than direct uses… but they imply heavy field surveys for poorly reliable results
- The valuation of any asset has to be made with reference to some socioeconomic trajectory, and there is currently little usable information on that point

- Yes (we could)
- Valuation method are the only tested know-how we have to inform decision makers (but it must be taken into account that biodiversity is to some extend a "merit good")

- Meta-analysis allow to get usable results from existing valuation data with little time and expenses (but with weaker reliability)

- Ecosystem valuations can be done within a cost-benefit analysis or in a cost-efficiency perspective, with reference to the commitment to stop biodiversity loss from 2010

Does economic literature provide usable elements for practical biodiversity and ecosystem services valuation?

- Market based techniques :
  - usable if enough reliable data are available
  - but limited in scope to some direct use values
- Revealed preference methods
  - Diversity : preventive and mitigatory expenditure, replacement cost, production function, hedonic pricing, travel costs method
  - Tend to result in underestimated values : capture only a part of surplus losses
  - Revealed preference methods can only estimate direct use values
- Stated preference methods
  - Contingent valuation, used to require that a sample of people be asked the amount they would be willing to pay to secure an improvement, but recently evolved toward dichotomous choices and ranking
  - Choice experiment and modelling estimates biodiversity values from the answers of a sample of people to a sequence of choices linking biodiversity effect and personal costs
  - Only stated preference methods allow to estimate option and non-use values

How to build practical reference values for ecosystems?

- Cost-benefit or cost-efficiency perspective ?
  - In CBA, Marg.Costs = Marg.Benefits = Marg.Value of Biodiversity
  - For CEA, reference values must be choosen according to Marg.Costs ≠ MB
  - Reference values aim at pursuing normative objectives
  - If the objective is European biodiversity stabilized in 2010, then…
- Reference values have to be **associated with surface units** (ha?)
  - Are ecosystem services proportional to surfaces ?
  - Valuing directly modified surface and indirectly impacted surface
- **Ordinary and extraordinary** biodiversity ?
- Biodiversity has both **functional values and heritage values**
  - Valuing heritage is contingent of substituability and social context and, then, not always technically valuable (event with stated preference methods)
  - Functional values are directly related to ecosystem services and can be approximated with the assumption of linear improvement of the services
- First estimates lead to possible reference values of **a few hundred euros per ha*year** for several temperate ecosystems
- These amounts, summed on long run (case of ecosystem destruction), would be **comparable to restauration or replacement costs**
- Many things are still to be discussed and improved…

Practical values for public decision makers confronted to choices involving biodiversity and ecosystem services

The CAS group report will:

- Make a point on the current socioeconomic stakes related to biodiversity decline
- Provide methodological and conceptual clarifications in a practical perspective…
- … including the **potential of alternative ways**, such as multi-criteria analysis or multi-dimensional compensation mechanisms
- Give some reference values (forests, wetland, meadows) according to the current state of the (published) art
- Ask for **regular updating of these results** in the future according to knowledge improvement and clarification of long term objectives
- Make proposals to improve information in the future and especially emphasize the **need for prospective scenarios** for France & Europe
- Confirm that there is still a long road ahead in terms of information, research and collective expertise

Thank you for your attention and questions

"They say they are a pair of bureaucrats who are just as important to the planet as any other life form."