

Ecosystem services & Agriculture

ALL présentation

22.09.2014

Examples

Food production



Examples

Recycling of organic matter



Examples

- Recreation

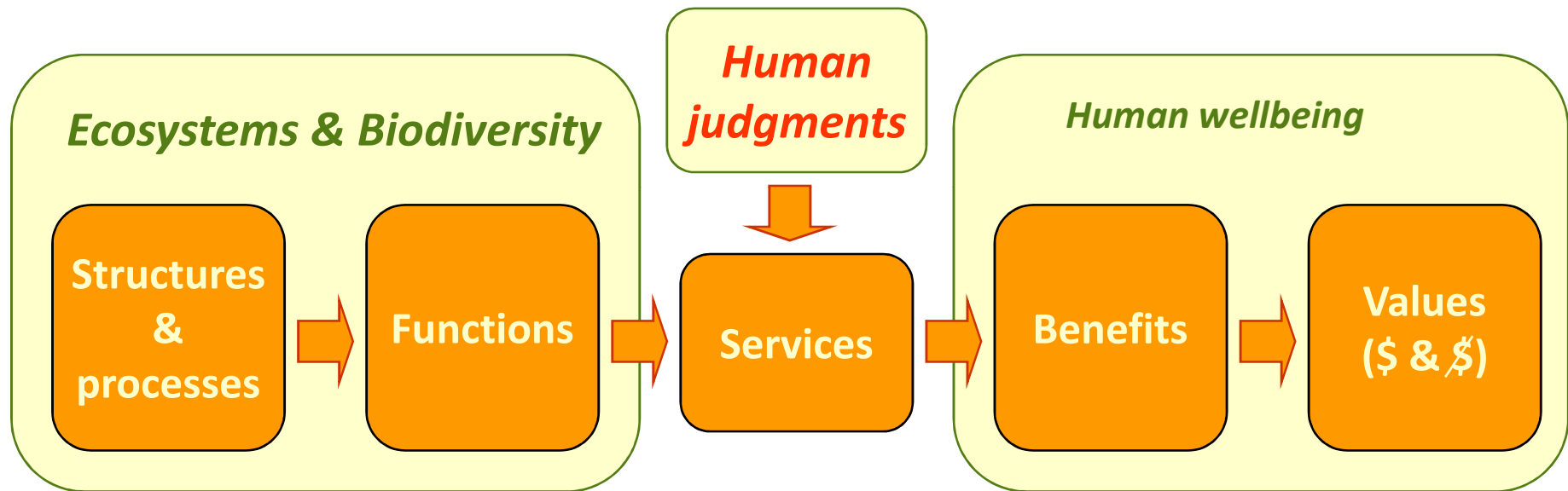


ES definition

ES are the benefits human obtain from nature

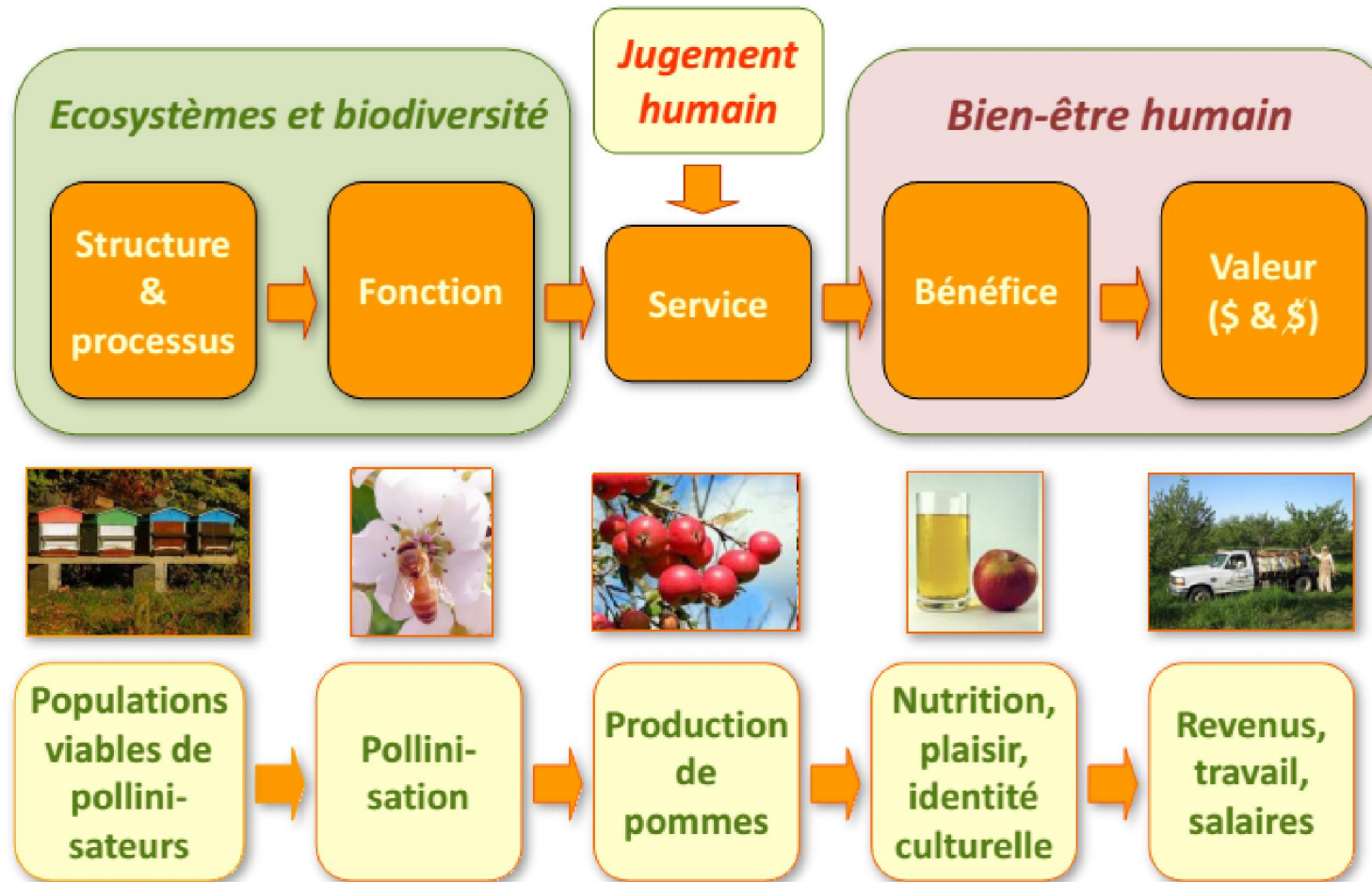


ES Cascade

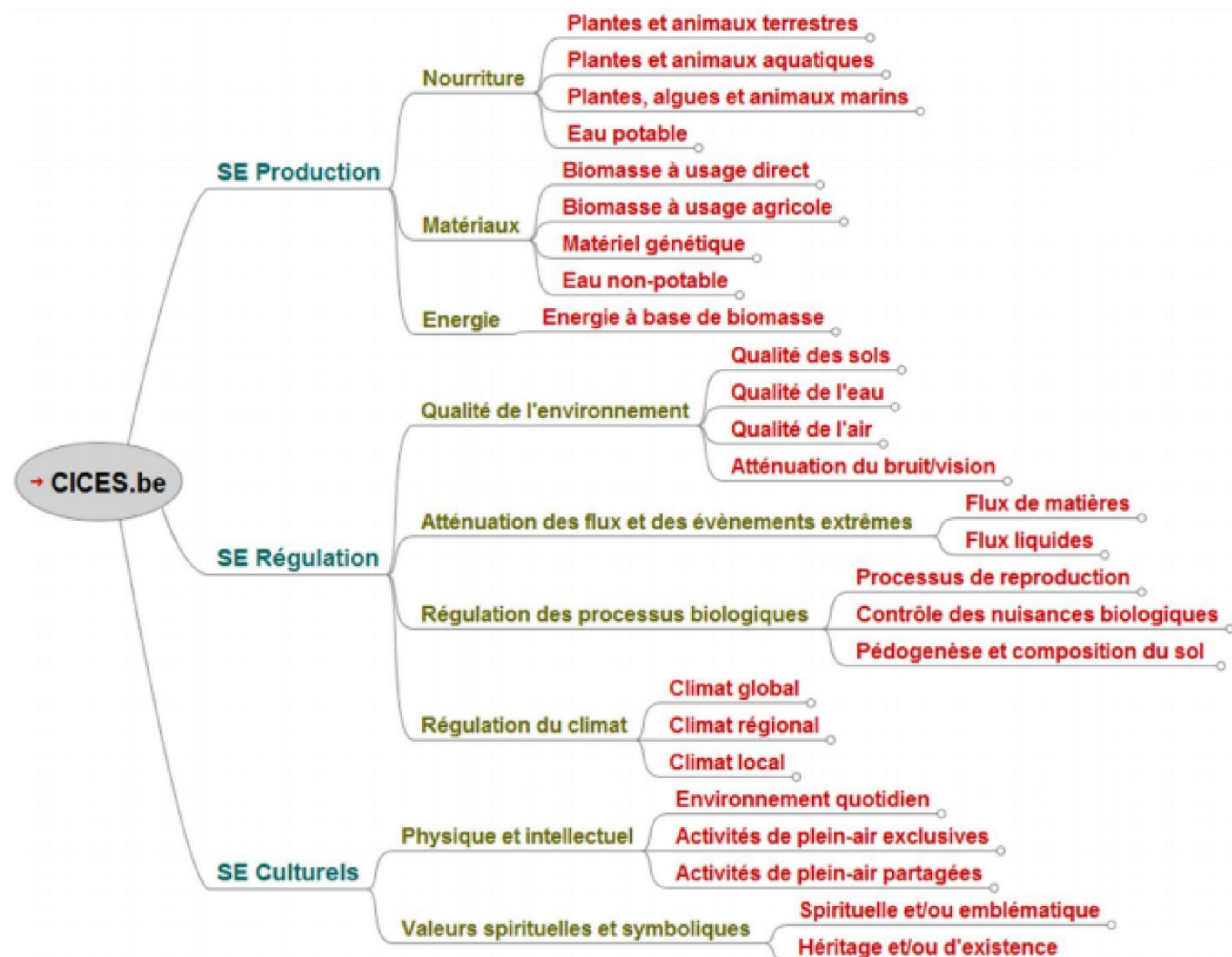


Adapté à partir d'Haines-Young et al. 2010

ES Cascade



ES typology



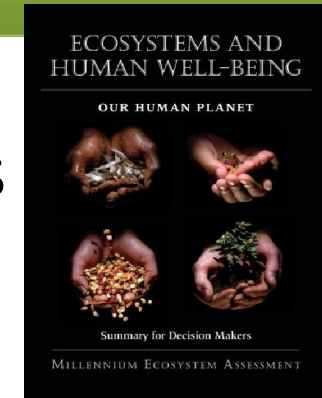
The three main ES initiatives

- Millenium Ecosystem Assessment (MEA, 2005)

Assessment of current states & trends of biodiversity & ES

1st world wide assessment

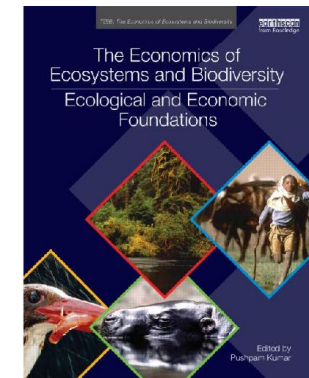
Raised awareness



- The Economics of Ecosystems & Biodiversity (TEEB, 2010)

Revealed the economic benefits of biodiversity

Provides standards for economic valuation



- International Platform Biodiversity & ES (IPBES, since 2012)

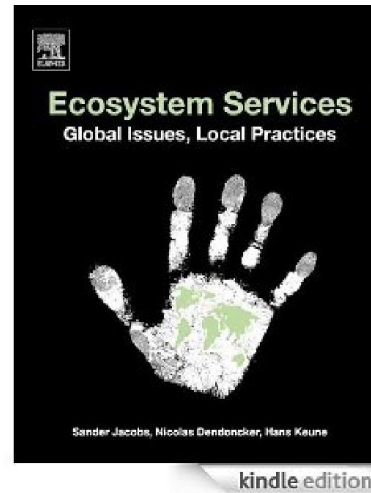
Same as IPCC, but about ES instead of climate change

Intergovernmental group of experts



Belgian initiatives

- Book



- BEES Community (<http://www.beescommunity.be/>)

BEIgium Ecosystem Services

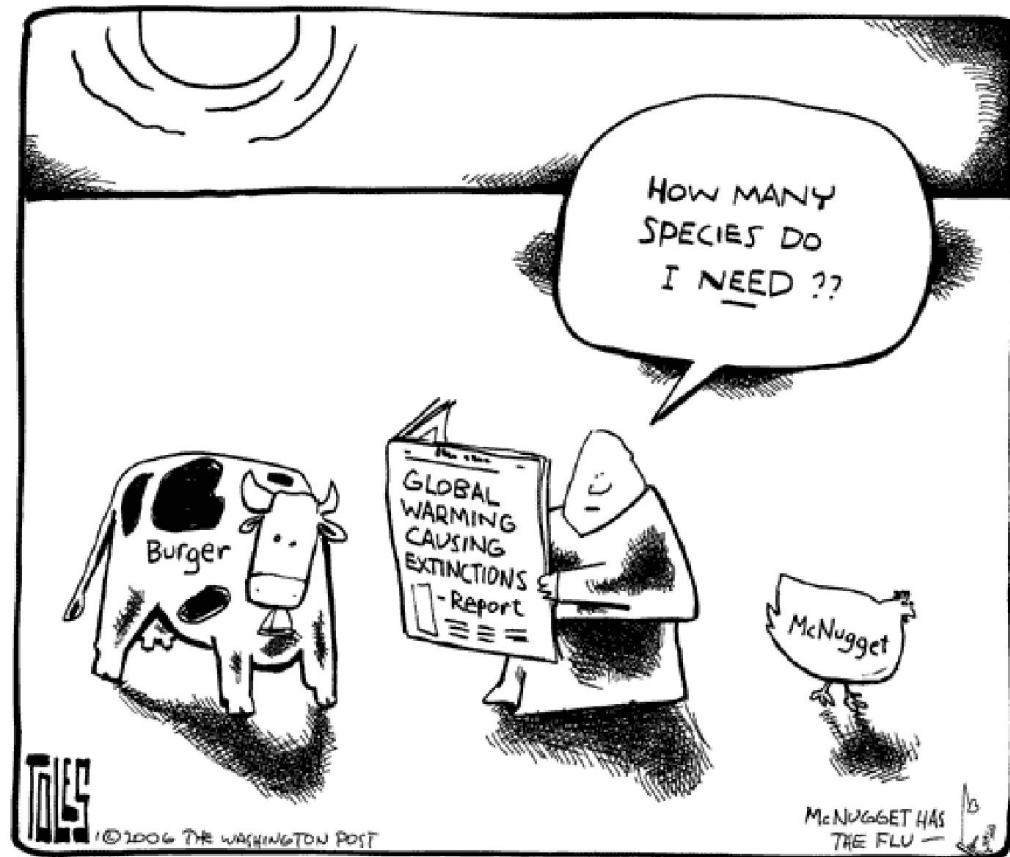


Anthropocentric vision

Antropocentrisme
Utilitarisme
Economie - €

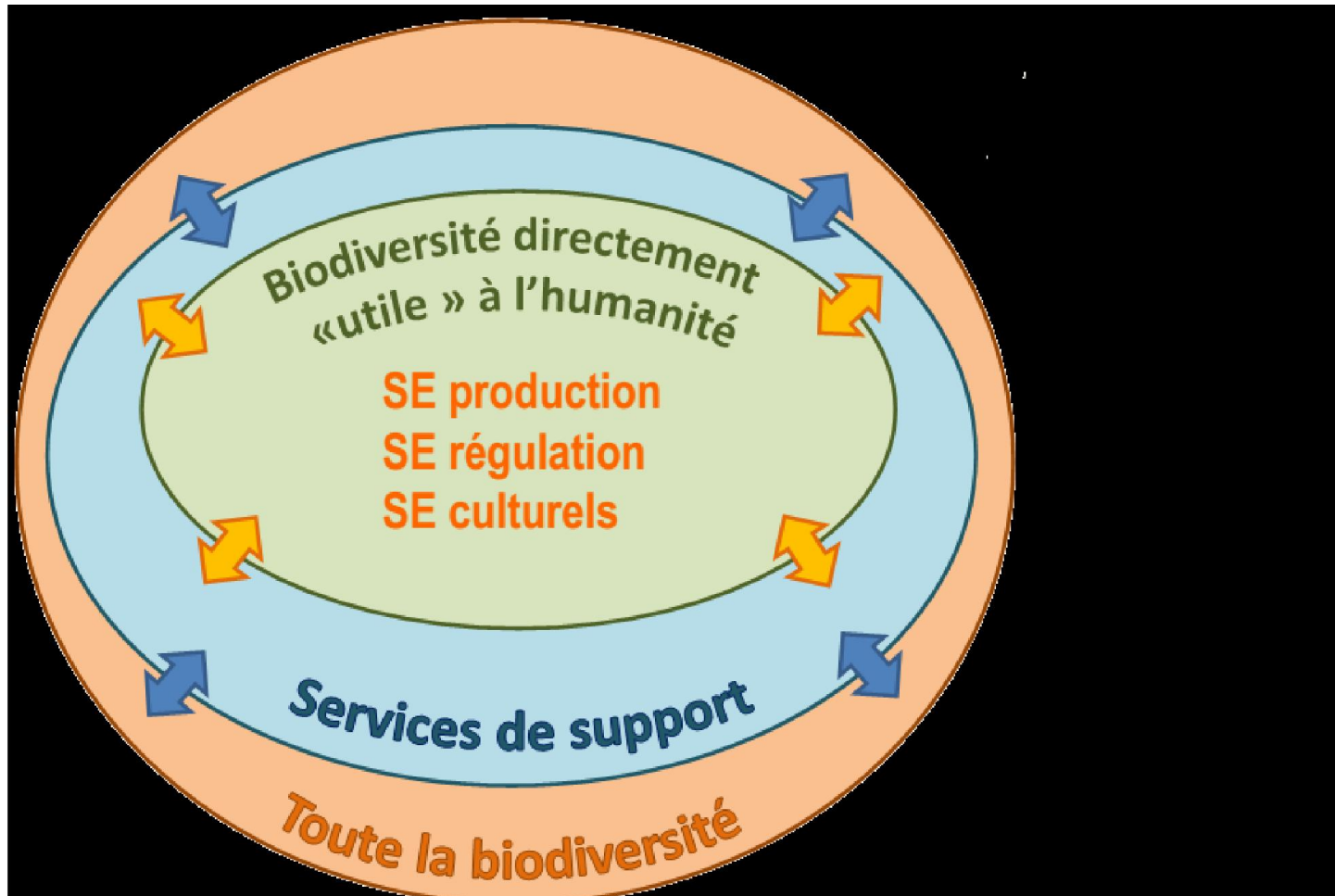
En fonction
du regard
et des
usages de
l'homme

Dignité
Biocentrisme
Ecocentrisme



FRB 2012 , Jax et 2013 Ecosystem services and ethics. Ecological Economics

... thus limited



How much would you pay to preserve this species ?



What about this one ?

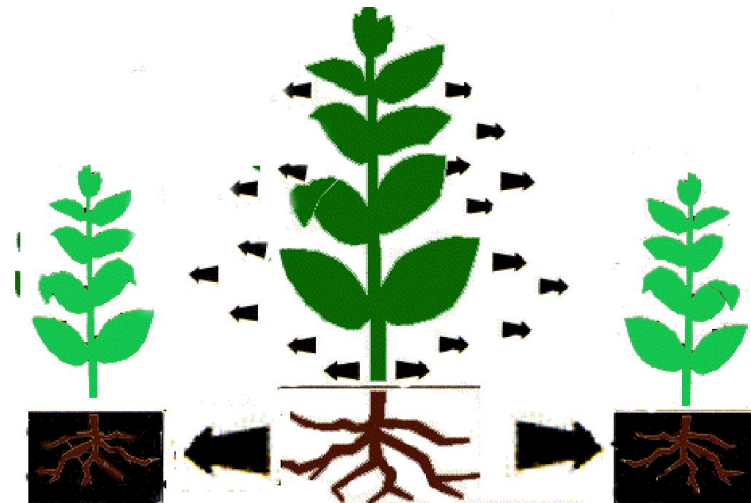


Ecosystem dis-services



Ecosystem dis-services

- EDS to agriculture



Zhang et al. Ecosystem services and dis-services to agriculture. *Ecological economics* **64**, 253–260 (2007).

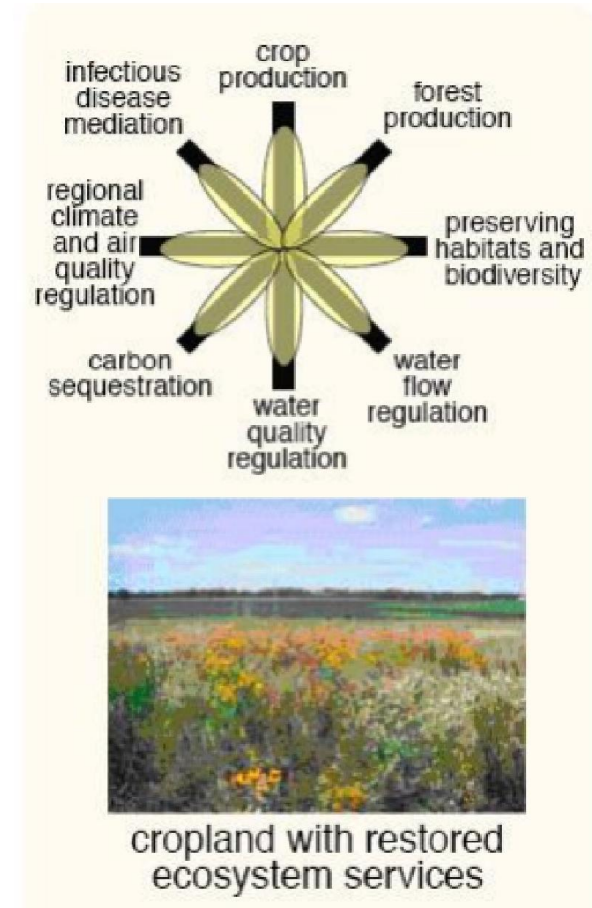
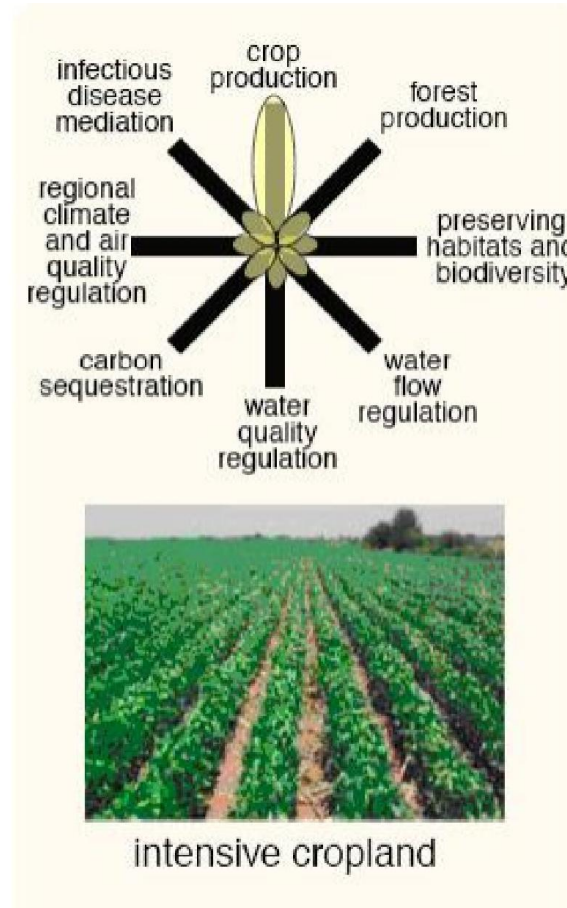
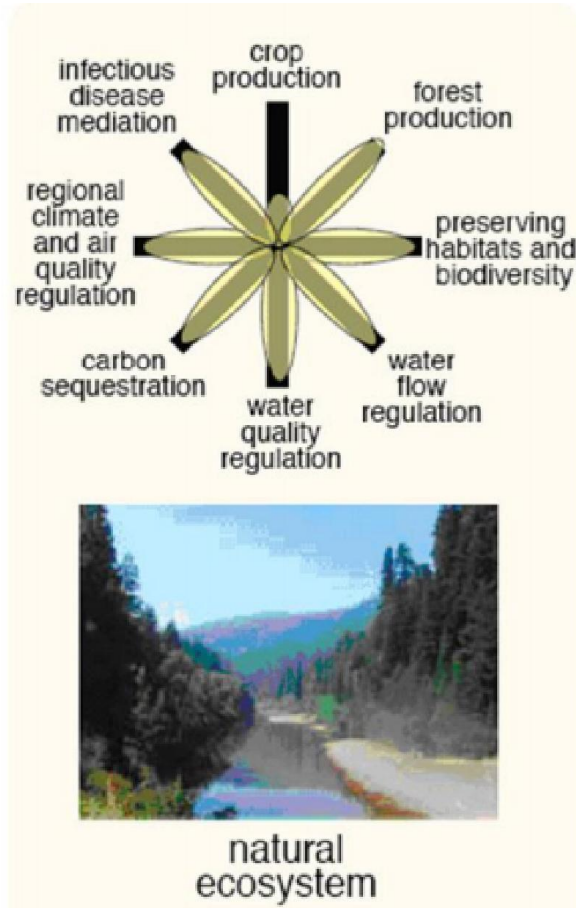
Ecosystem monetary valuation

- = a licence to trash ? McCauley, D. J. Selling out on nature. *Nature* **443**, 27–28 (2006).



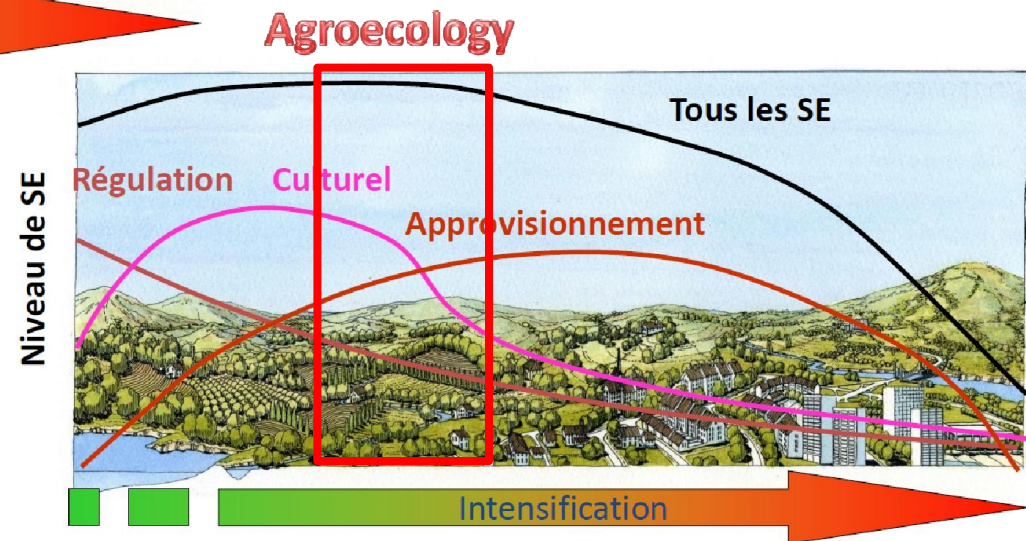
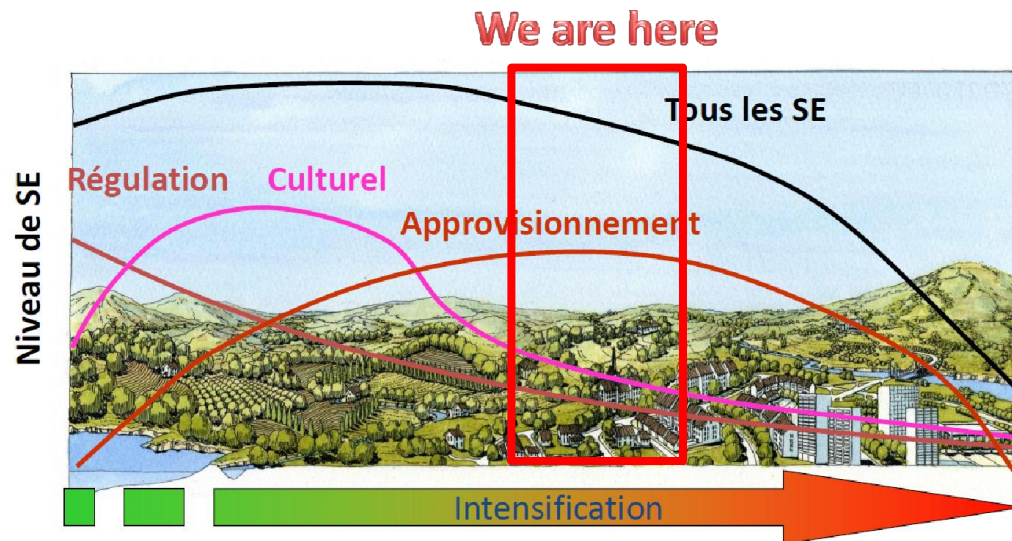
- WWF estimated Virunga Park and its Gorillas to potentially be worth >1 billion\$/year
- What if petrol company comes with a greater amount to offer ?

ES as sustainability assessment tool



Foley, J. A. *et al.* Global consequences of land use. *Science* (2005)

ES as sustainability assessment tool



ES assessment & agriculture

Une méta-analyse sur 12 SE :

✓ biodiversity	⊕ control of weeds	✓ carbon sequestration
✓ soil quality	⊕ control of diseases	✓ energy efficiency
✓ nutrient management	⊕ control of pests	✓ resistance to climate change
✓ water-holding capacity	⊕ pollination services	? crop productivity

? Weak evidence ⊕ Positive effect but not sufficient ✓ Strong evidence

Conclusions :

- *more research and field experience need to be conducted*
- *as one practice influences multiple ES, research must be holistic*
- *detailed agroecological research is needed to develop crop productivity and region-specific approaches to control of weeds, diseases and pests*

Example: my research project

- Contribution of diversified farms to the delivery of ES in its landscape
- Comparison with adjacent conventional farms



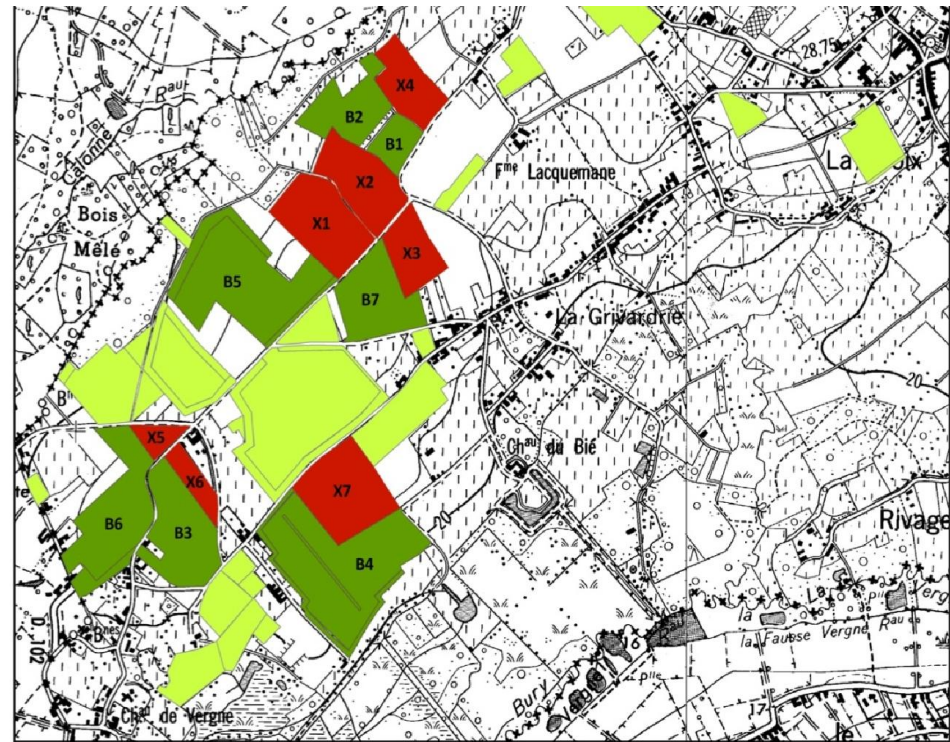
Example: my research project



Three farm-sets = three studied landscapes

Example: my research project

- Example: farm-set 1



Légende

- Parcelles expérimentales avec TCS
- Parcelles expérimentales avec labour
- Parcelleire Demasy

0 250 500 1.000
1:14.000
Mètres

Auteur: Ana Lerchs Salazar
Projection: WGC84 Lambert belge 72
Source: Gembloux Agro-Bio Tech, Ulg
Date: 16 juillet 2014

Environmental valuation

- Soil formation: Earthworms
- N regulation: bait-lamina probes
- Biological control: prey surrogate



Environmental valuation

- Physical experiences: presence of landscape elements known to support this ES



- Education: farm visits, training sessions organized, etc.



Social valuation

- To which extent do the stakeholders value these ES ?



Conclusions

- ES = sustainability assessment tool
- ES assessments used to guide agricultural management
- Must keep limitations in mind !

Thank
You

