



L'Union Européenne et l'Outre-Mer
Stratégies face au changement climatique et à la perte de la biodiversité

Événement officiel de la Présidence française de l'Union Européenne

Île de la Réunion 07-11 juillet 2008



***Interactions between human activities and
biodiversity in the heart of overseas
sustainable development:
Stakes for research in managed ecosystems
(ex: agriculture, forests,...)***



Research Round-table / Thursday 10 July 2008

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- ***What is relatively globally well identified (but much more poorly, if existent in the Overseas)***
 - **Changes in Distributions and Phenologies in Terrestrial Ecosystems**
 - (fruit and crop time production; desynchronisation with rain period; new combination of species means also new windows for invasive exotic species and new pests for agriculture)
 - Increase of NPP (*Net Primary Production*) in temperate areas but decrease in tropical and subalpine areas
 - In islands and mountains, movements of species are limited
 - High diversity of life strategies implies high variability in responses to global changes
 - **Changes in Coastal and Near-Shore Ecosystems; Seas**
 - tightly coupled to both the adjacent land and open ocean ecosystems and are thus affected by climate in multiple ways (including fisheries, coral reef,...)
 - **Changes in Pests and Pathogens**
 - Direct (expansion of ranges) and indirect (disruptions of trophic relationships, loss of a mutualistic relationship, land conversion,...)

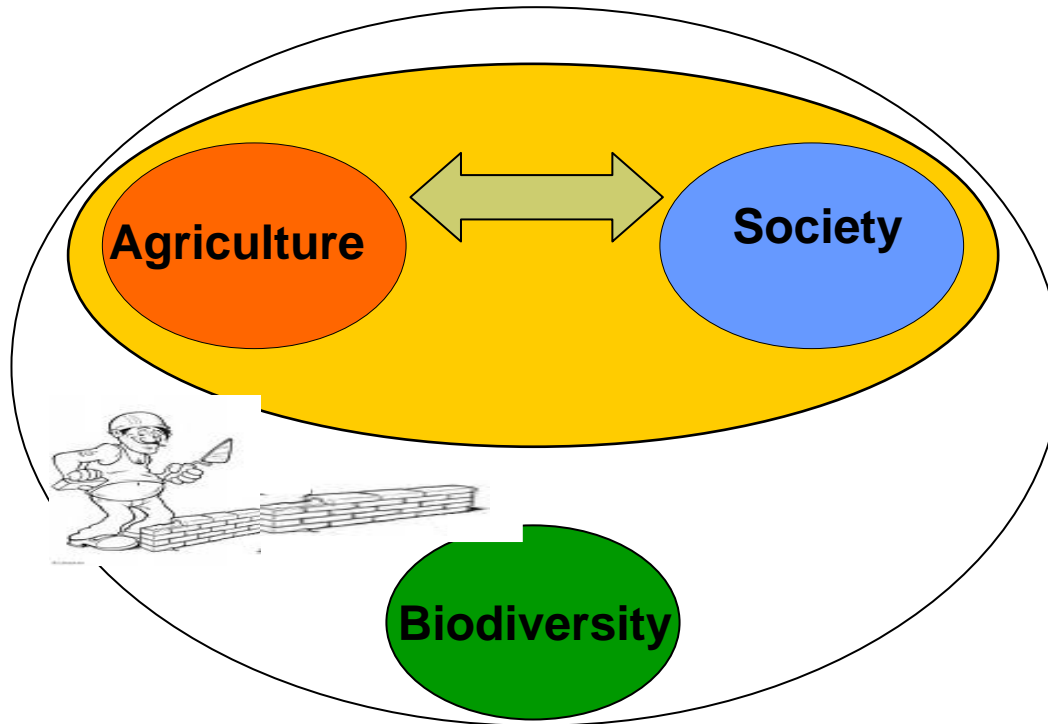
- ***What is relatively globally well identified (but much more poorly, if existent in the Overseas)***
 - Changes in Particularly Sensitive Ecosystems
 - mountains, arctic and antarctic, islands : all present and dominant in the Overseas
 - Ecosystem Services and Expectations for Future Change
 - MEA: supporting (*i.e. primary production, pollinators,...*), provisioning (*i.e. food, fuel, water,.*) , regulating (*i.e. climate, flood, biological control, human and animal diseases*), and cultural (*i.e. educational, recreational*)
 - Adequacy of Monitoring Systems
 - operational monitoring systems (but very specific: agriculture mapping, STOC, Coral Reef Watch)
 - Particular research problems (LTER, ORE): NEON (National Observatory Ecological Network is a good example because studying at the same time climatic variability and ecological variability in a systematic way
 - Remotely sensed data are essential (satellites)

And research: a few ideas...

- **Aim: better knowledge of local real situation and helping identifying and implementating the necessary decisions and measures in the face of global changes:**
 - **Long term monitoring**
 - Overseas are already the largest existing potential network in the world (in all oceans). Why not using them ?
 - **Understanding the drivers**
 - The diversity of the situations is not a weakness but a strength to identify the drivers of evolution, here for specific agricultures
 - Existing models to be adapted such Dynamic Global Vegetation Models but allow only to evaluate a potential of change when what is requested is to serve as quantitative predictions of changes
 - **Proposing methods and measures and how to implement them**
 - Example: How to use the capacity of adaptation of local biological resources for agriculture ? (Yam, Pineapple, Vanilla,...)
 - How to implement the results in the public policies ?
 - This will be helpful for whole Europe research, innovation and development and also globally
 - Managed and exploited ecosystems being at the *heart of economic development*, they are fully part of the strategy
- **What message of our conference to the next *PFUE* event that will be specifically focused on Biodiversity and agricultures: today's challenges, tomorrow's research for more sustainable farming ?**

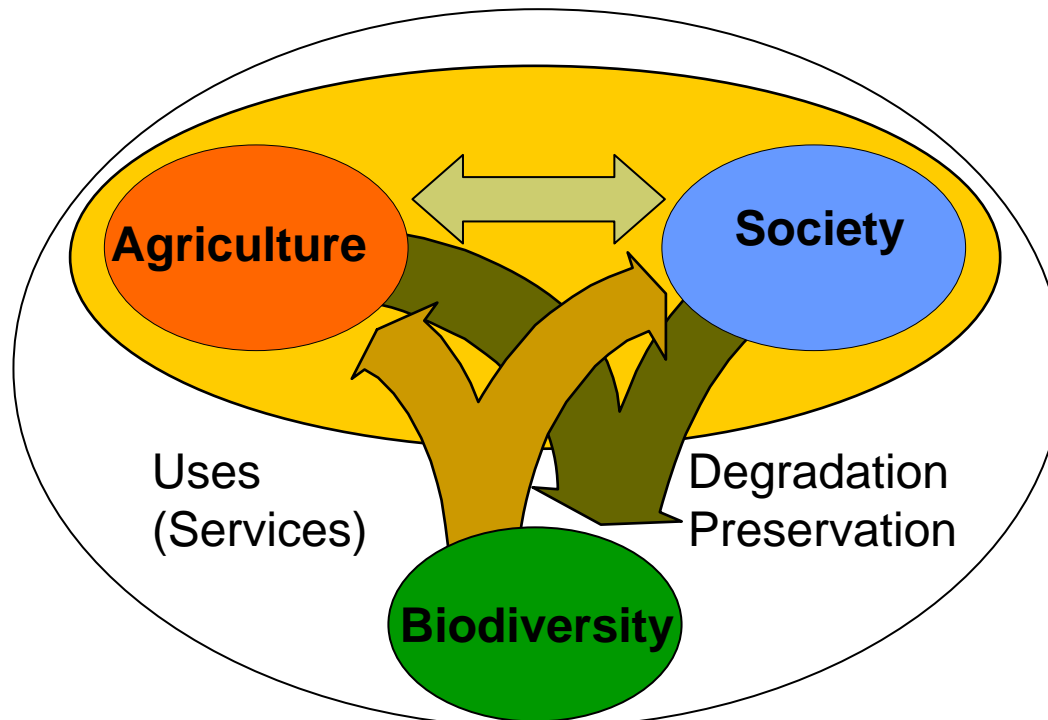
And to finish, a picture

Why not go from here ?



And to finish, a picture

□ to there



- More than a succession of technical measures aimed to improve practices, the nature of the relationships between agriculture, society and biodiversity implies to analyse the whole production systems and the spatial organisation of uses at the territory scale.

Thank you for your attention

Some topics, pictures extracted from the following documents:

A.C. Janetos *et al.*, 2008. The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity. *U.S. Climate Change Science Program Synthesis and Assessment Product 4.3*. 151-181.

X. Leroux *et al.* Biodiversité et agriculture. Expertise scientifique collective. Inra, Paris, Juillet 2008 (sous presse).

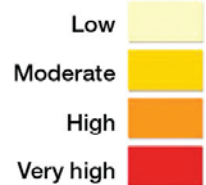
MEA (Millenium Ecosystems Assessment reports)



		Habitat change	Climate change	Invasive species	Over-exploitation	Pollution (nitrogen, phosphorus)
Forest	Boreal	↗	↑	↗	→	↑
	Temperate	↘	↑	↑	→	↑
	Tropical	↑	↑	↑	↗	↑
Dryland	Temperate grassland	↗	↑	→	→	↑
	Mediterranean	↗	↑	↑	→	↑
	Tropical grassland and savanna	↗	↑	↑	→	↑
	Desert	→	↑	→	→	↑
Inland water		↑	↑	↑	→	↑
Coastal		↗	↑	↗	↗	↑
Marine		↑	↑	→	↗	↑
Island		→	↑	→	→	↑
Mountain		→	↑	→	→	↑
Polar		↗	↑	→	↗	↑

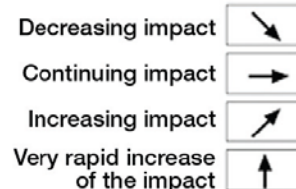
RESULT OF PAST EVOLUTION

Driver's impact on biodiversity over the last century



WHAT HAPPENS TODAY

Driver's actual trends



Source: Millennium Ecosystem Assessment