

Risks and agriculture in the light of food systems globalization

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Risks and agriculture

How to define risk :

- A danger, an event with an assigned probability, to which a person is exposed and wishes to be protected against
- in a broader sense, the possibility of incurring losses or benefits due to an uncertain situation

A risk refers to an objective reality (volatility, epizooty) as well as a social construction (tolerable or not, “chosen” or “undergone”, catastrophic or usual)

Apparent paradoxes of the Risk society (Beck):

- 1) The safer the society is (and also our food), the more unacceptable residual risks are
- 2) Increasing our knowledge also enhances our concerns
- 3) Current risks are generated by the modernization process which attempts to control them

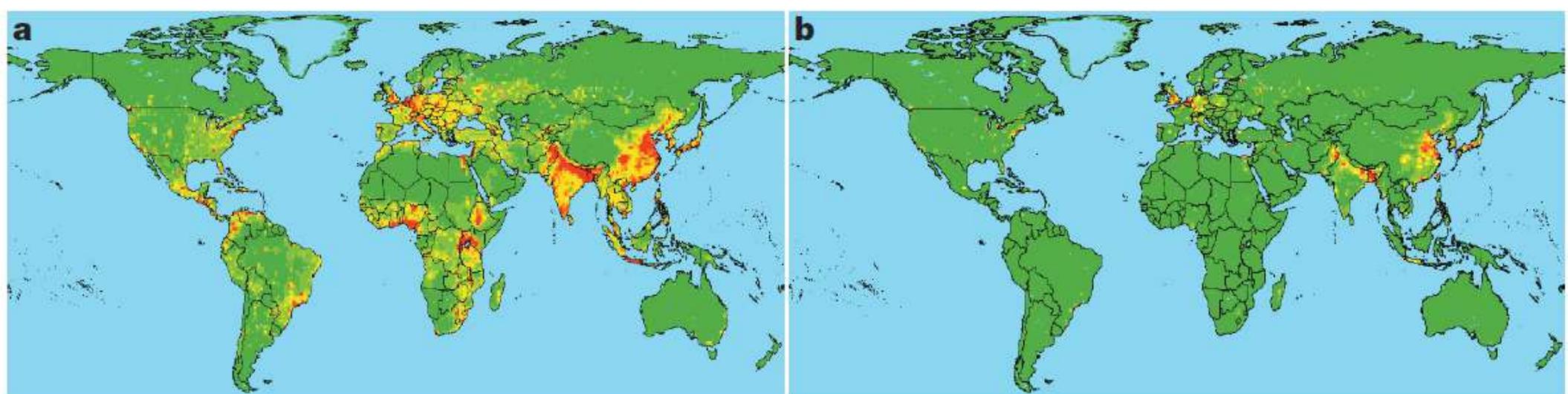
I. Multiple risks

- For the farmer (non comprehensive list) :
 - production risk and quantity : climate, parasitism, epizooty
 - production risk and quality : health (mycotoxins, fungi), environmental (pollution), climate (levels of sugar in grapes, proteins, etc.)
 - market risks : prices decrease, lack of market opportunities
 - other economic and financial risks : input costs, loan rates, default risk, etc.
 - Human risks : individual failure, disease or disability, etc.
 - Regulatory and political risks : agricultural policies, environmental policies, health policies, conflicts, instability or State failure (pillage, crops destruction, etc.)
 - Technological risks : quickly outdated investments, etc.
- For the food system(non comprehensive list) ; in addition to the previous risks :
 - fraud, counterfeit
 - logistics/supply chain
 - diplomacy, geopolitics

II. Inertia and mutations in the risks landscape

Health risks : an expected increase

- globalization fosters an increase of risks : flows (goods, people and animals), local/regional specialization, genetic homogenization at a global scale
- but globalization also fosters risks management : international research programs, databases, spread of surveillance tools and management standards (HACCP), global health governance (One Health) with some success (rinderpest eradication in 2011)

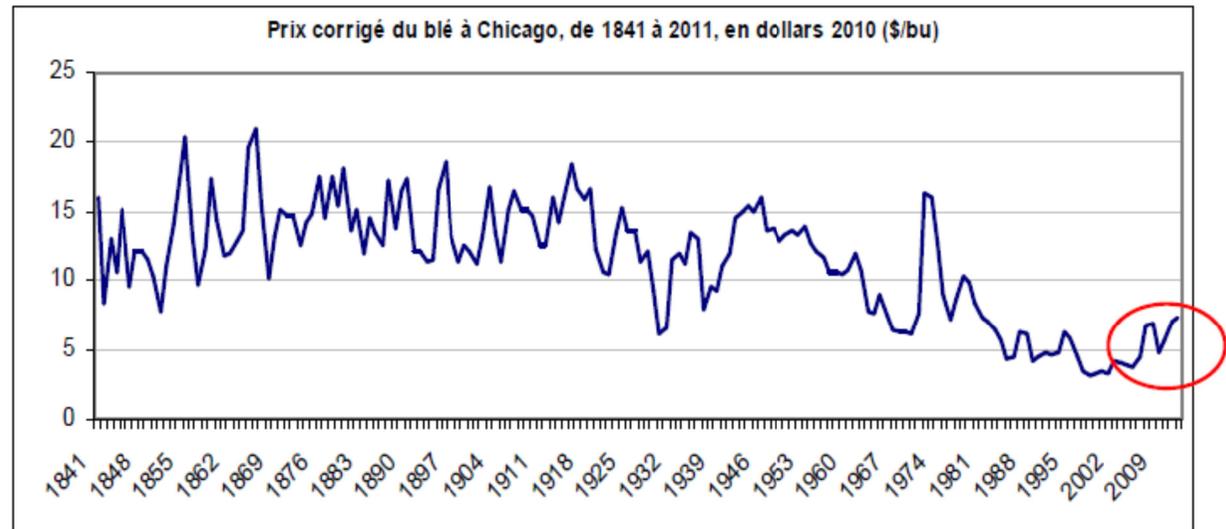
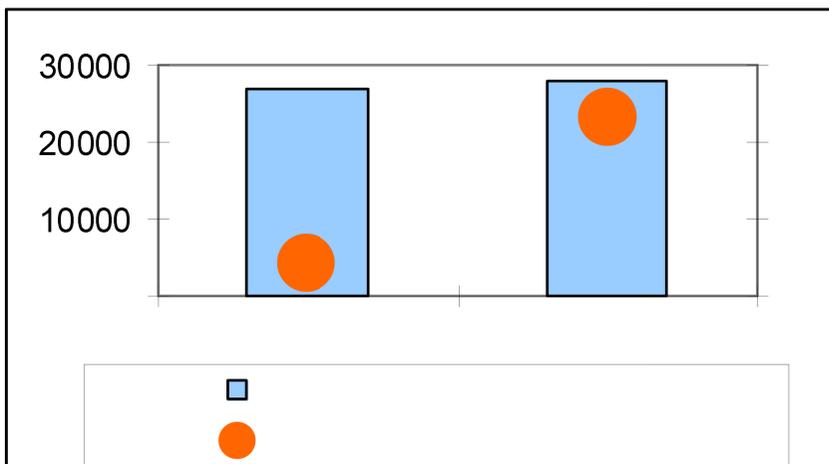


The maps show the estimated risk (zoonotic or not), based on past events. Risk intensity : from low in green to high in red (a= wildlife origin, b= livestock origin)

II. Inertia and mutations in the risks landscape

Volatility : a (re)discovery

- Since 2007 : an exacerbated volatility : a new price system or back to normal ?
- Volatility has mainly been rediscovered on global markets, and regions such as Europe where tools to stabilize prices were implemented
- various factors supporting a high volatility in the future (wealth effects, investments cycles... in a sector more and more capital intensive, climate change impacts, etc.)

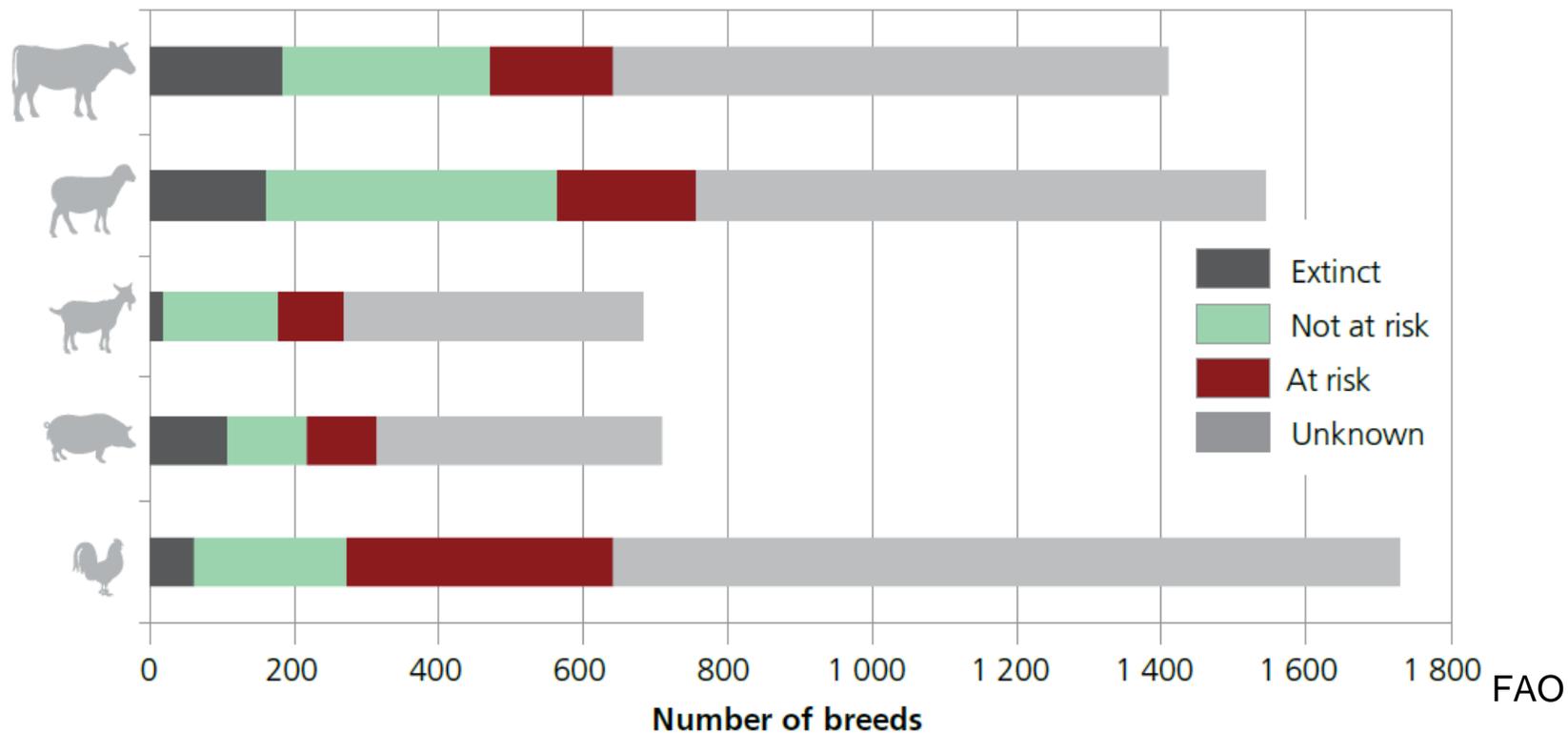


II. Inertia and mutations in the risks landscape

Global risks for agriculture, so for farmers

- Resources access (ex : phosphorus, water)
- Global issues of sustainability (biodiversity, soils, etc.)

Status of the world's livestock breeds



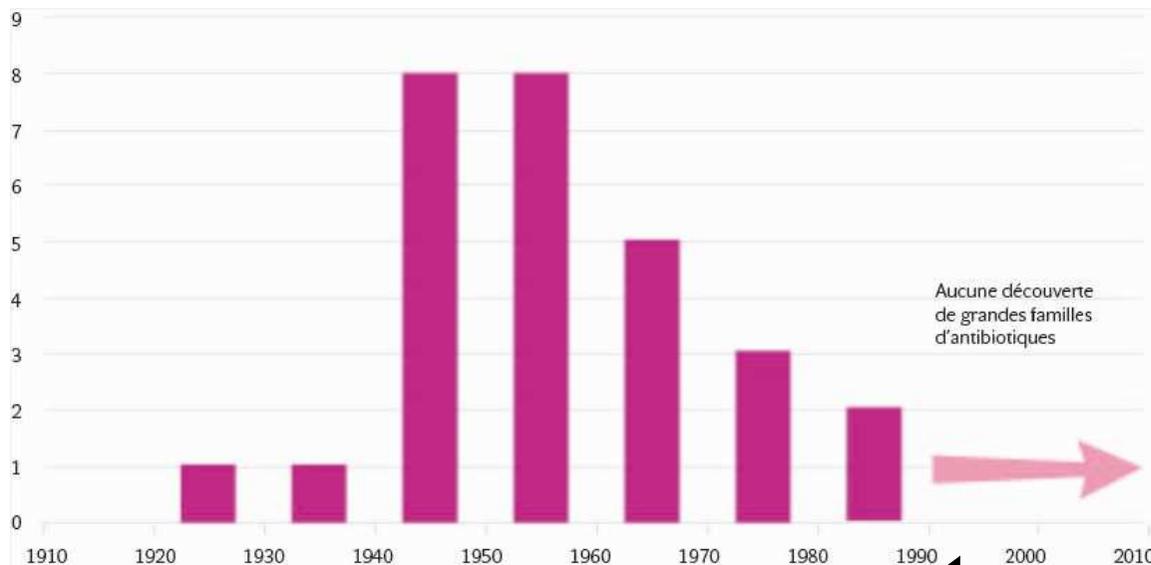
« Just twelve crops and fourteen animal species now provide most of the world's food. »

II. Inertia and mutations in the risks landscape

Global risks for agriculture, so for farmers

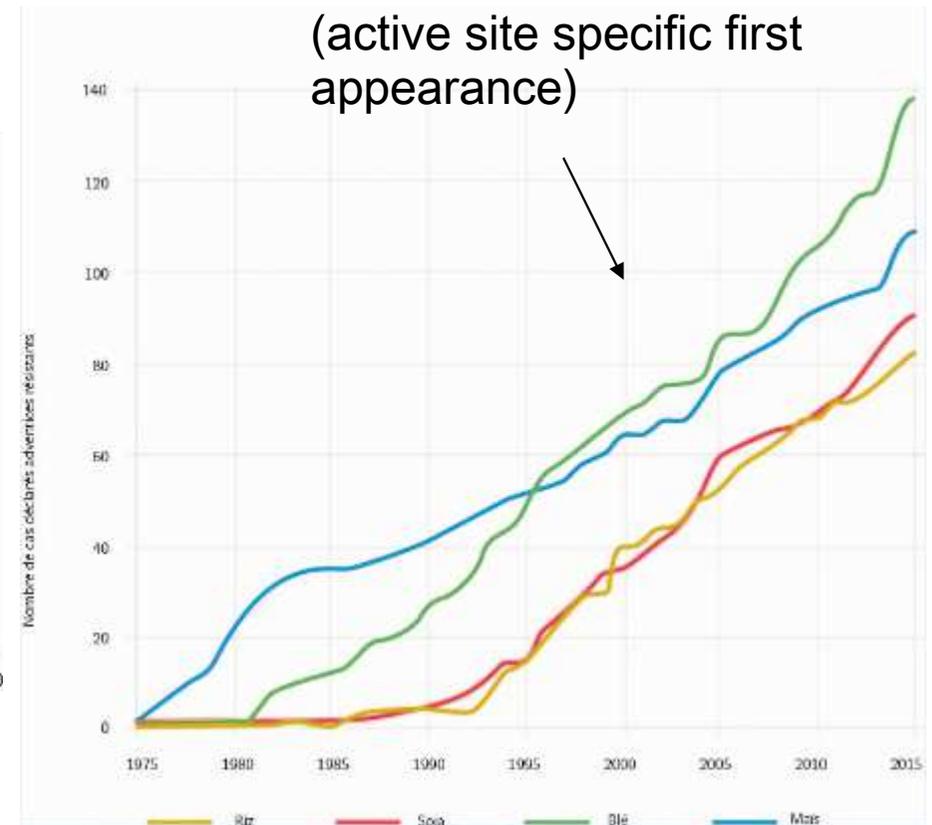
- Resources access (ex : phosphorus, water)
- Global issues of sustainability (biodiversity, soils, etc.)
- Resistance issues (antibiotics, phytosanitary)
- etc.

weeds resistance to herbicides in the world (active site specific first appearance)



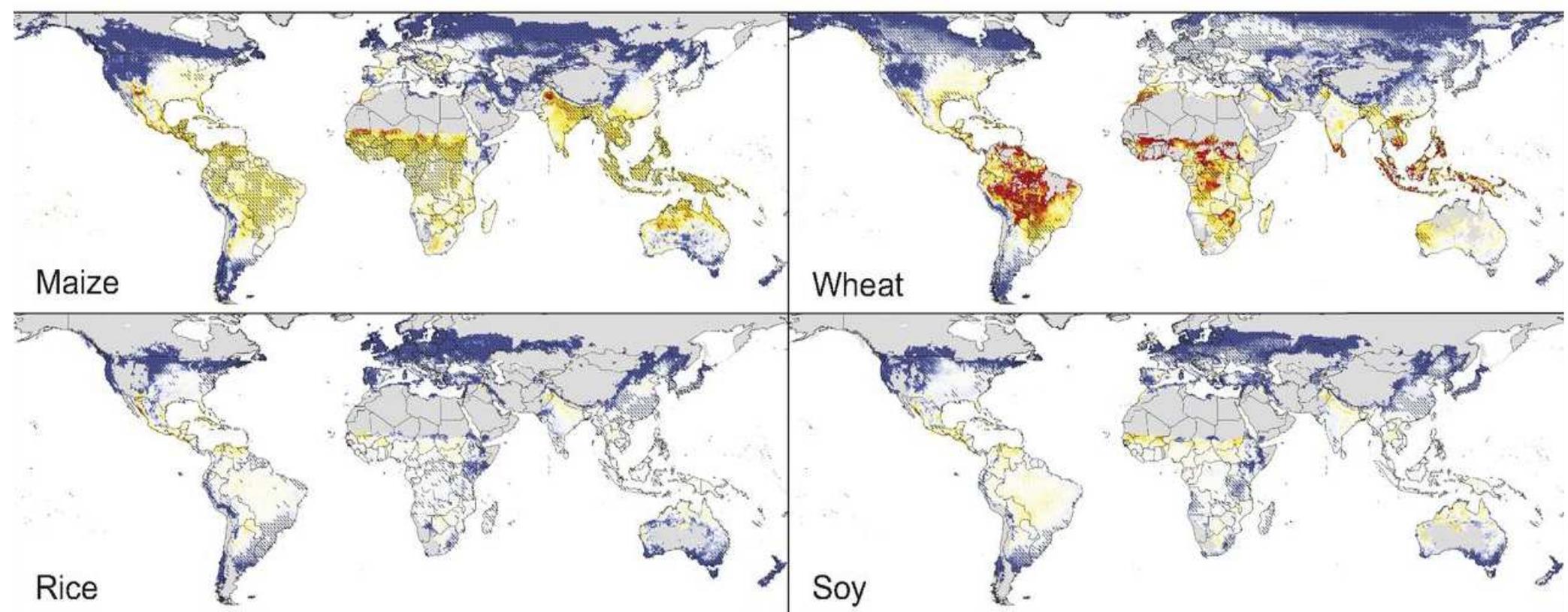
Aucune découverte de grandes familles d'antibiotiques

“Discovery void”: no major classes of antibiotics



II. Inertia and mutations in the risks landscape

- And climate change (of course) : according to IPCC, 0 to 2 % of yield decrease per decade from 2030
- In interactions with other risks (biodiversity, water, parasitism)

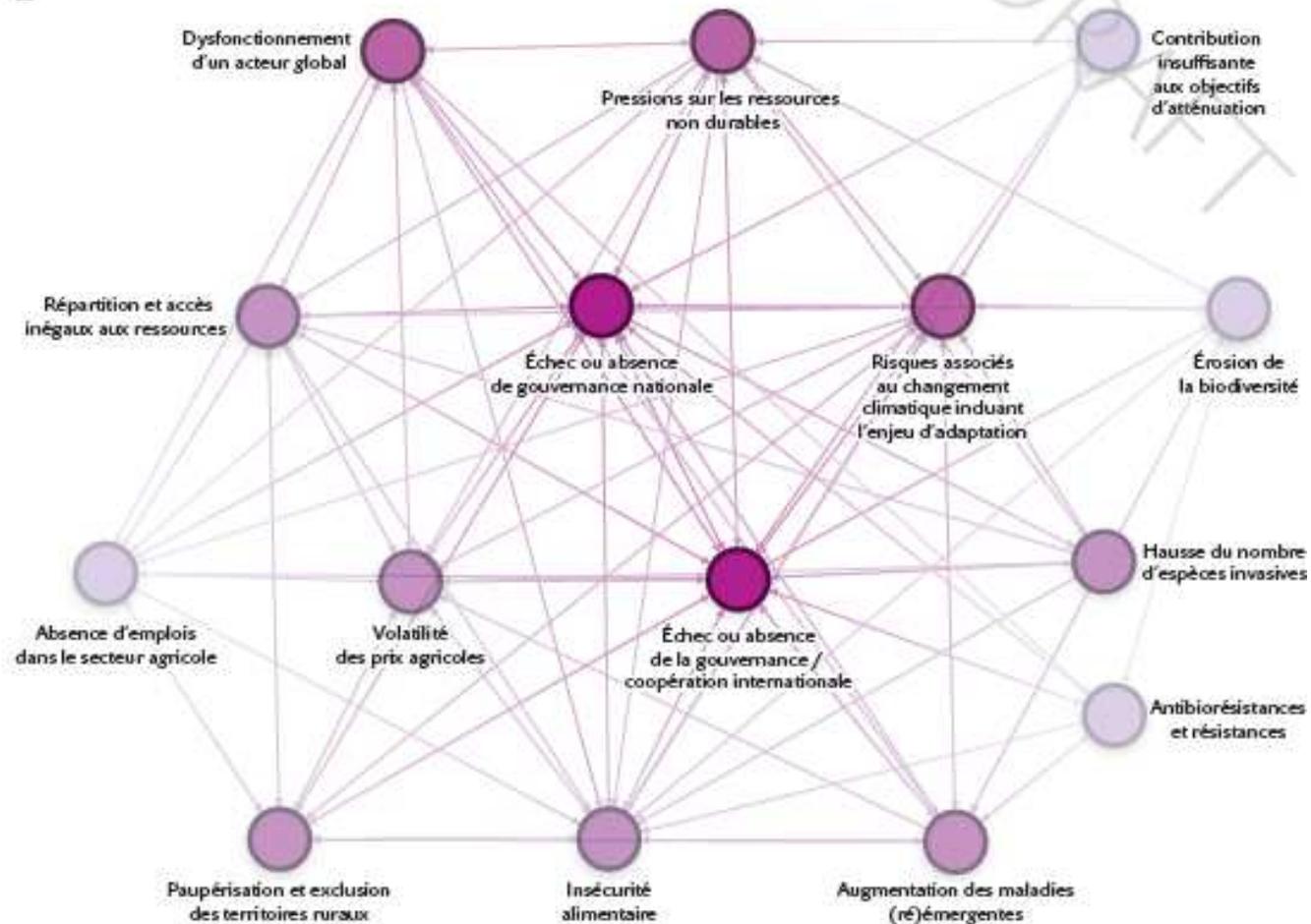


Projection of median yields variation under climate change around 2070-2099 (RCP 8.5)

III. Thinking and managing risks in a systemic way

- Risks are interdependent

Interactions entre risques et problèmes publics



Sources : auteurs

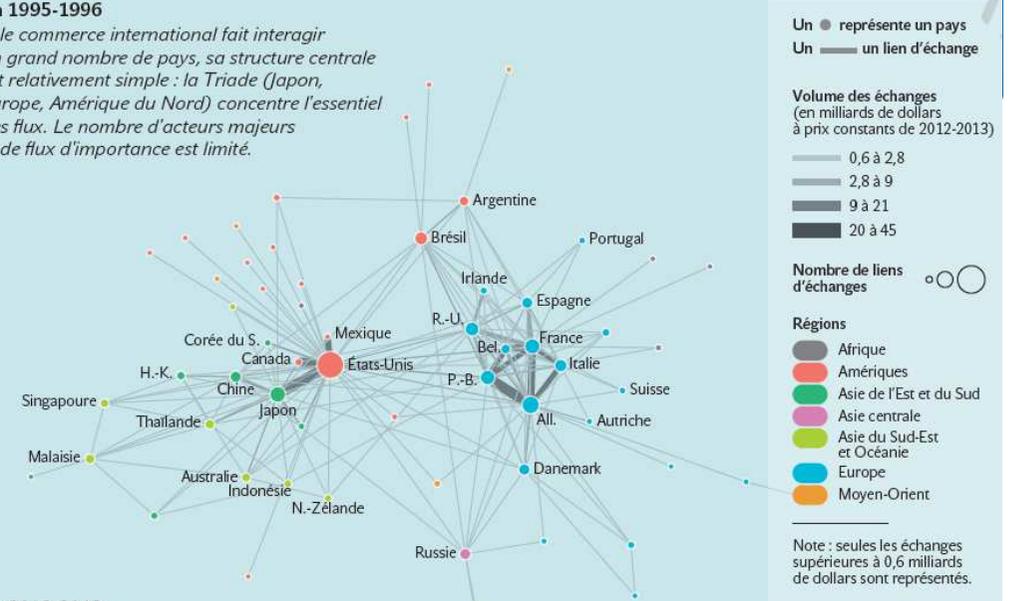
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Nombre d'interactions 4 5 8 11 14

- If risks are increasingly interdependent...
 - ... so are local situations
- risk transfer, snowball effect, “cornerstone” global players, mutualization effect, dilution effect, etc.

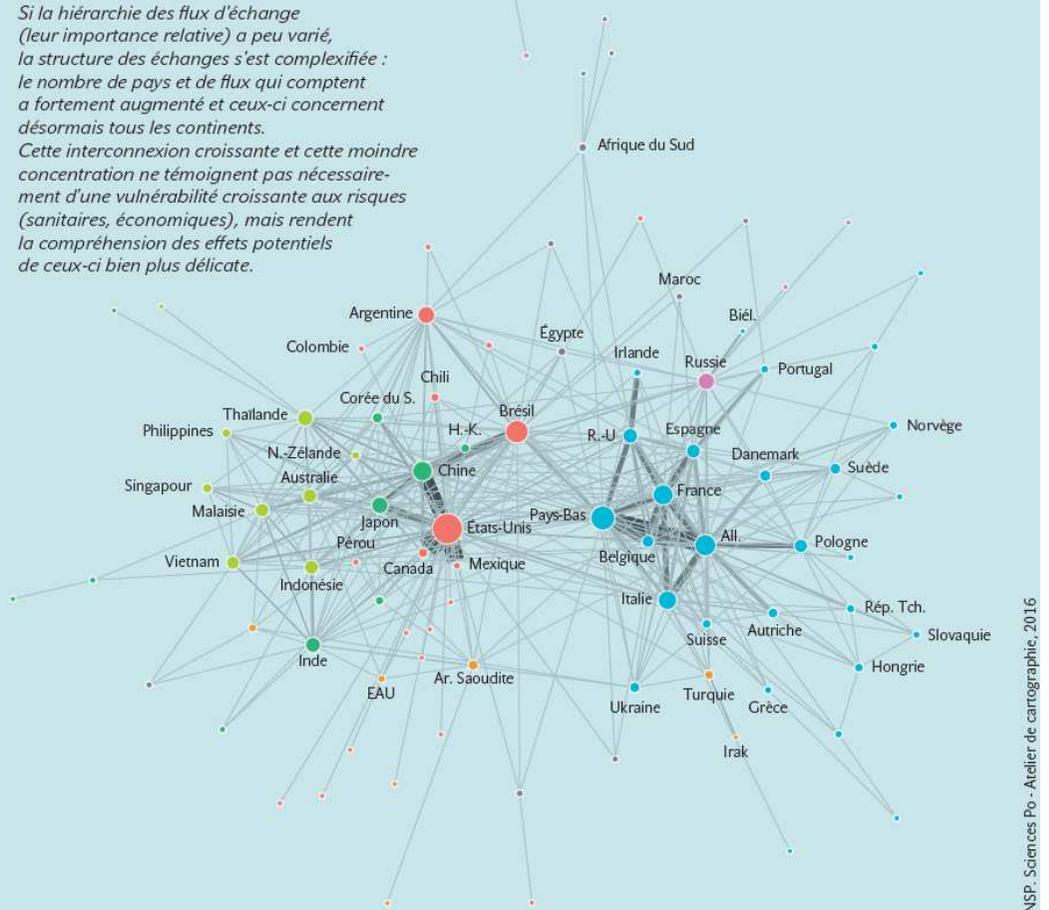
En 1995-1996

Si le commerce international fait interagir un grand nombre de pays, sa structure centrale est relativement simple : la Triade (Japon, Europe, Amérique du Nord) concentre l'essentiel des flux. Le nombre d'acteurs majeurs et de flux d'importance est limité.



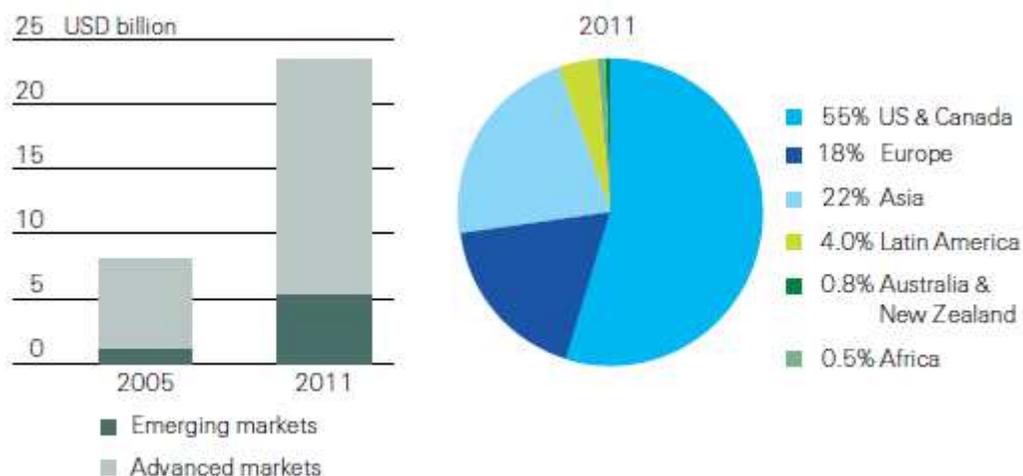
En 2012-2013

Si la hiérarchie des flux d'échange (leur importance relative) a peu varié, la structure des échanges s'est complexifiée : le nombre de pays et de flux qui comptent a fortement augmenté et ceux-ci concernent désormais tous les continents. Cette interconnexion croissante et cette moindre concentration ne témoignent pas nécessairement d'une vulnérabilité croissante aux risques (sanitaires, économiques), mais rendent la compréhension des effets potentiels de ceux-ci bien plus délicate.



III. Managing risks

- **Risks globalization is not (only) a rising vulnerability of the global food system :**
 - spread of solutions (ex : insurances, futures market)
 - a risks governance in progress (slowly and step-by-step and notably in response to crisis)



Sources: The World Bank; Swiss Re Economic Research & Consulting

- **Thinking “resilience” : at local (farmer, sector) and global scales**
 In a broadly interconnected world, any isolationist or 100% certain strategy is not viable :
 managing its dependencies, undertaking some risks, adapting itself

Risks prevention cost less than *ex post* management.

III. Managing risks

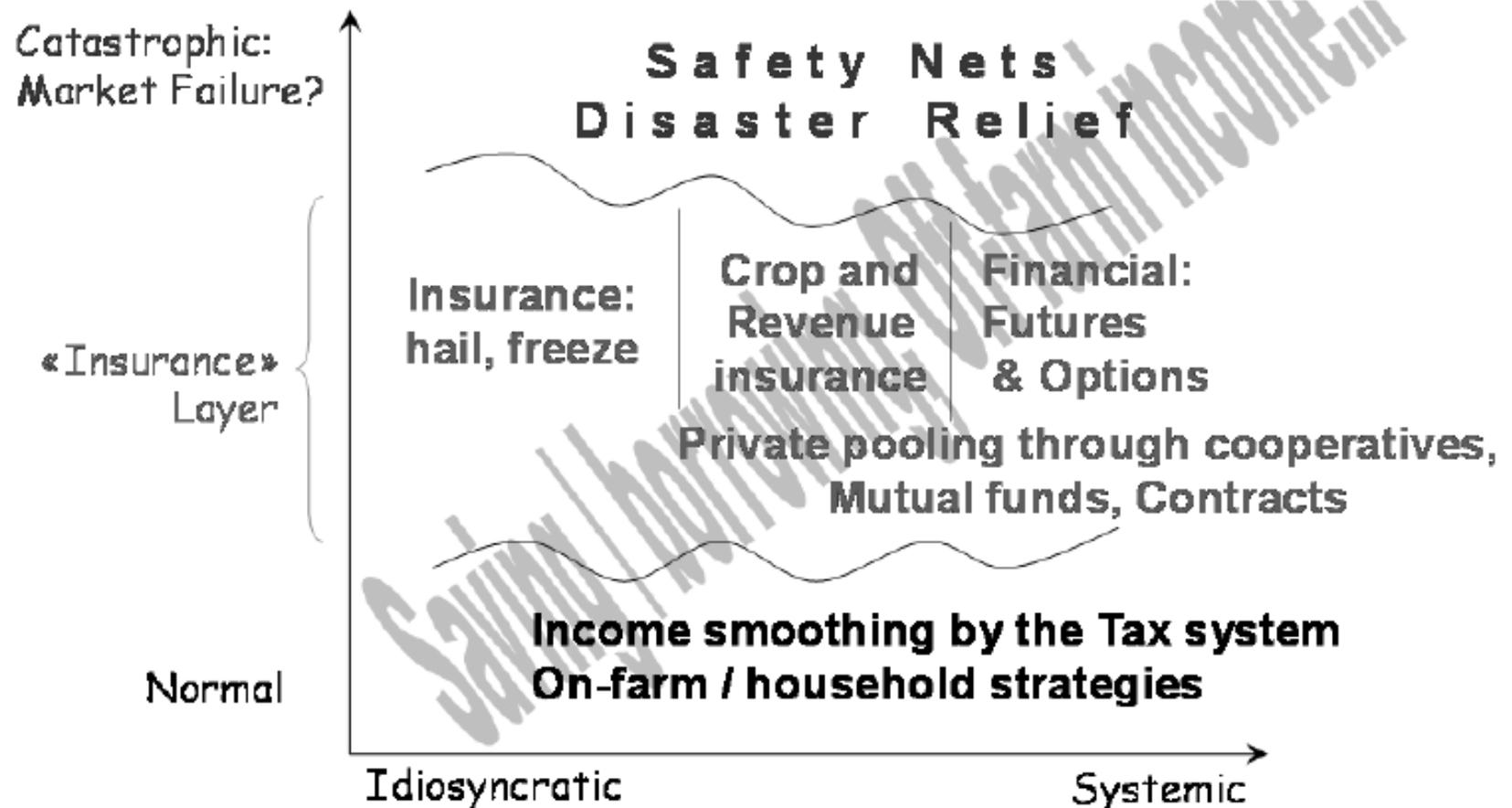
- Various behaviors towards risks : avoiding (to reduce the likelihood), diversifying (to reduce impacts), mutualizing ou transferring (to share the risk), etc.
- When to act ? : before (prevention), when the risks happen (impacts mitigation), after (strategic adjustment, compensation)
- A main question : who manage and who is baring the costs of risks ?
 - the farmer (indeed)
 - the banking system, the suppliers
 - the downstream operators (cooperatives, agri-food and distribution industries through contracts)
 - specialized operators (banks, insurance providers, reinsurers, futures markets)
 - public authorities
- Some risk management strategies don't lead to risk transfer (ex: learning, training, etc.)

III. Managing risks

Diverse risks features

→ different levels of management

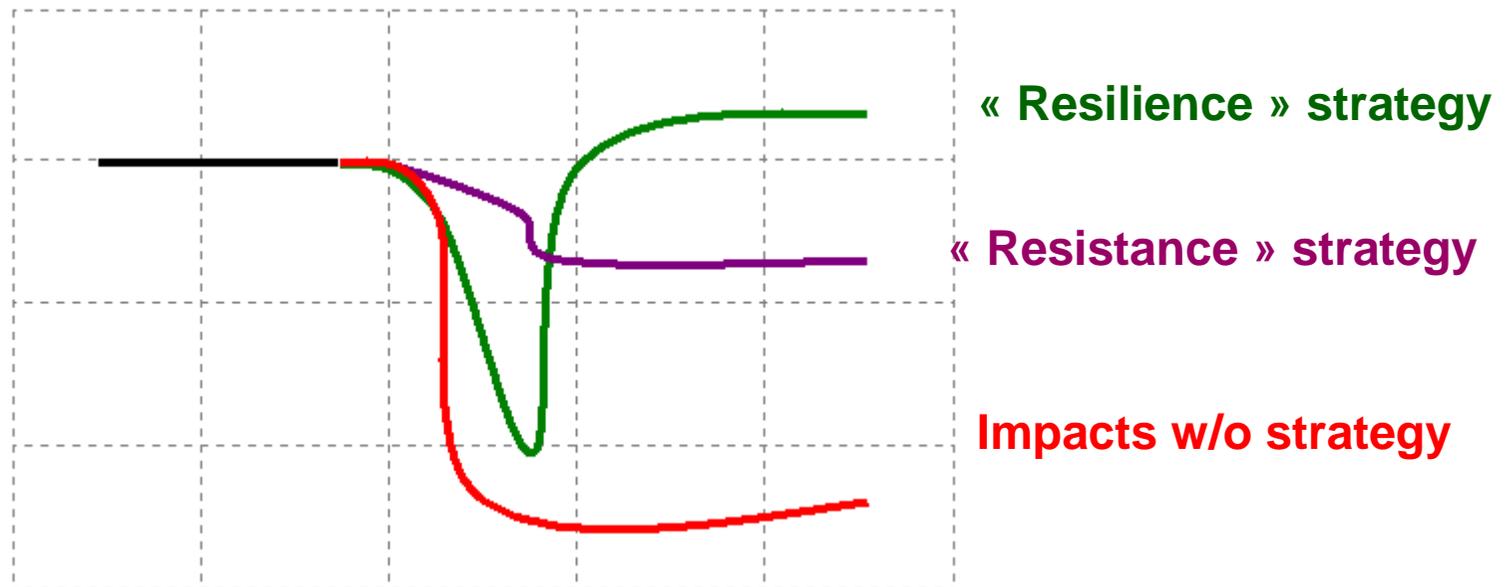
Figure 2.3. Mapping risk management instruments



III. Managing risks through resilience

Resilience ?

- Both a strategic orientation and a result of risks management strategies
- Resilience vs resistance : the Oak and the Reed



Thank you for your attention

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