Carrefours de l'innovation agronomique

INRA SCIENCE & IMPACT

Gestion du risque en agriculture

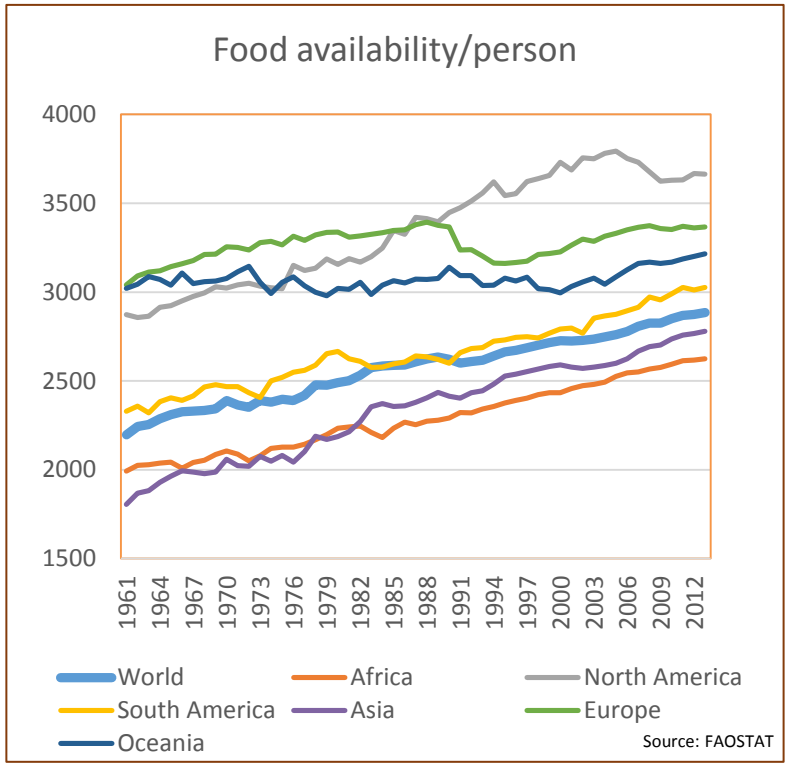
27 juin 2019 | Espace de conférence IRIS | PARIS

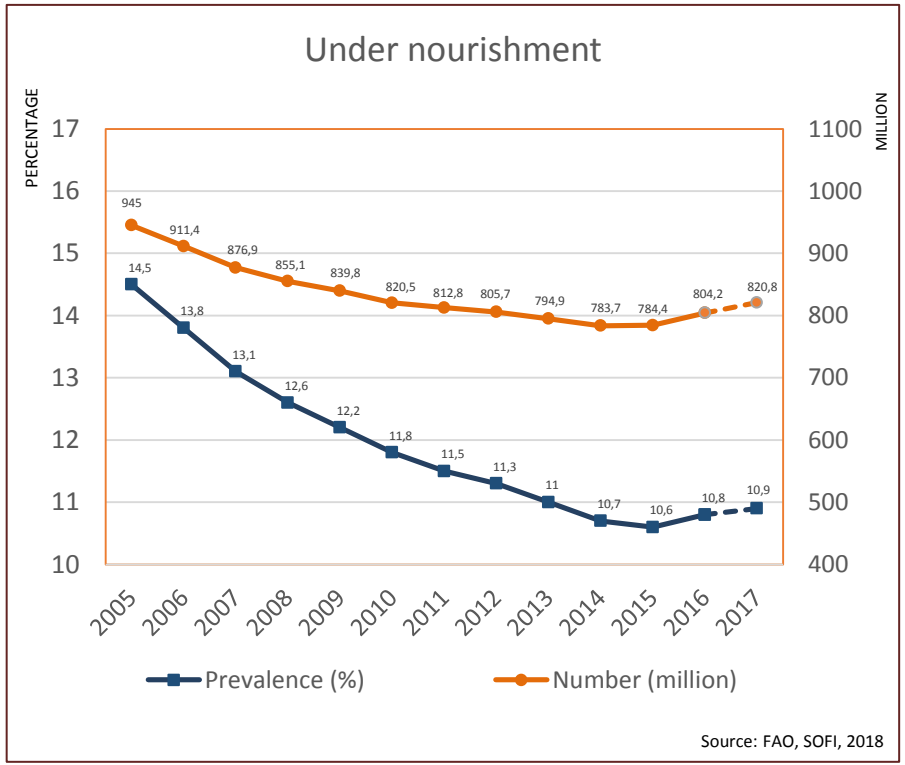
Systèmes alimentaires en danger:
Tendances et défis

Presentation prepared for HLE, Food & Agriculture in times of crisis, Brussels, 2-3 April 2019

Nicolas Bricas & Pauline Bendjebbar

Food security: the paradox





Food systems

STRATEGIC OUTCOMES

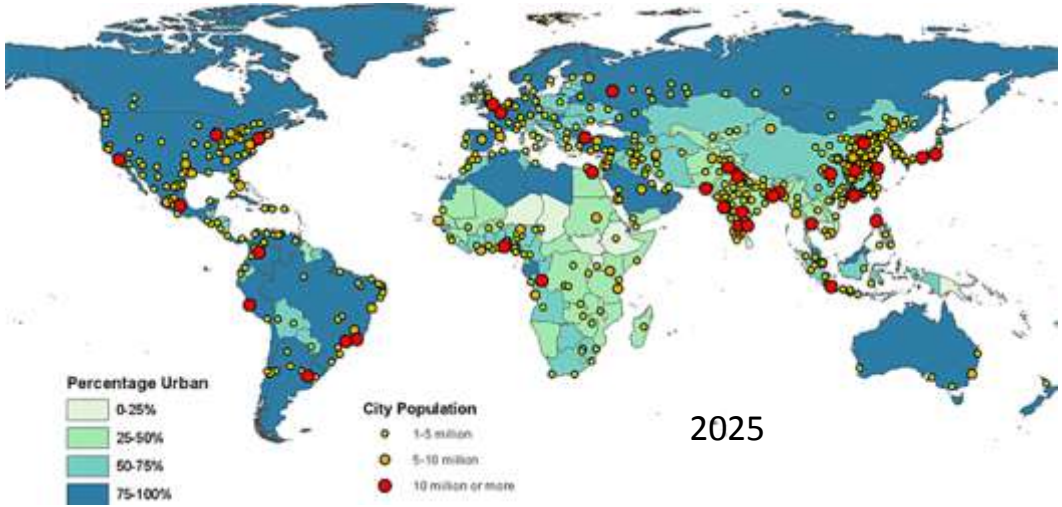
- Food security and Nutrition
- Livelihoods, employment
- Environmental integrity

Outline

1. **Demography and economic changes** and their consequences on:
   - food demand and nutrition
   - employment needs
2. **Climate and Environmental change** and their consequences on food production
3. **International Markets** and their consequences on reliability of supplies
4. **Disasters, Conflicts and Displacements** and their consequences on food systems

Demography and economic changes

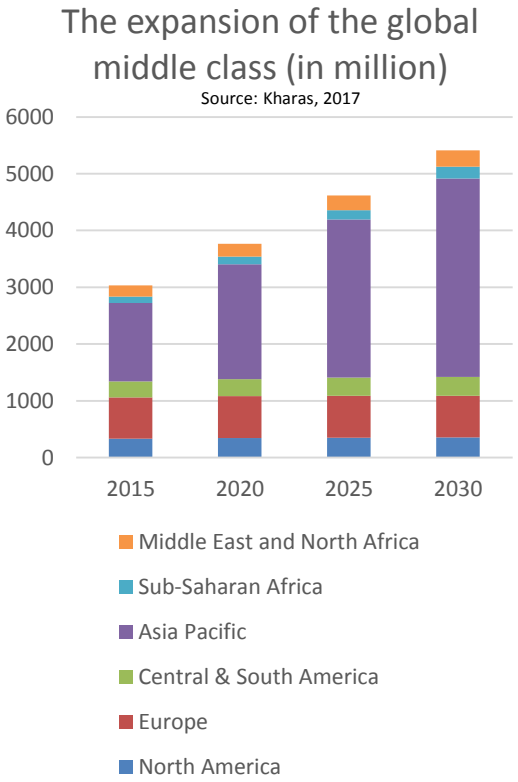
- Population growth:
  - + 20 million / year in Low Income Countries (LIC)
- Urbanisation:
  - 86% of urban increase by 2030 will be in Asia and in Africa

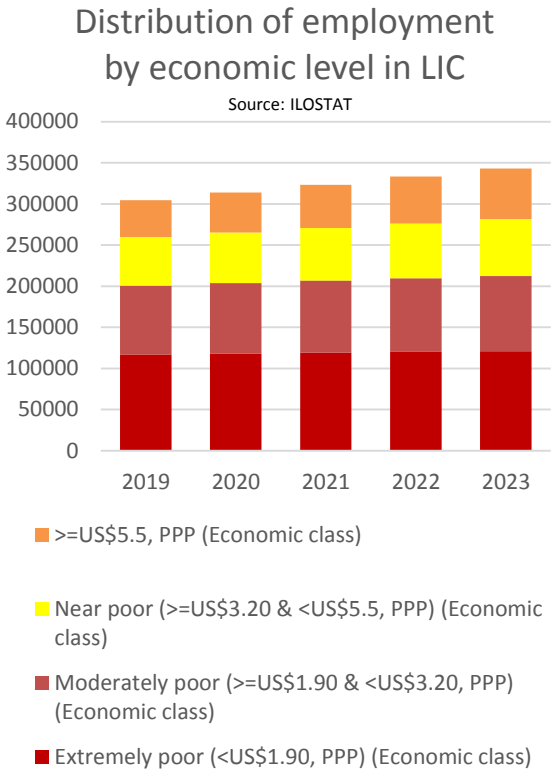


2025

Demography and economic changes

- Population growth:
  - + 20 million / year in Low Income Countries (LIC)
- Urbanisation:
  - 86% of urban increase by 2030 will be in Asia and in Africa
- Expansion of middle class
  - Asia: 2,0 to 3,5 billion by 2030
  - SSA: 132 to 212 million by 2030

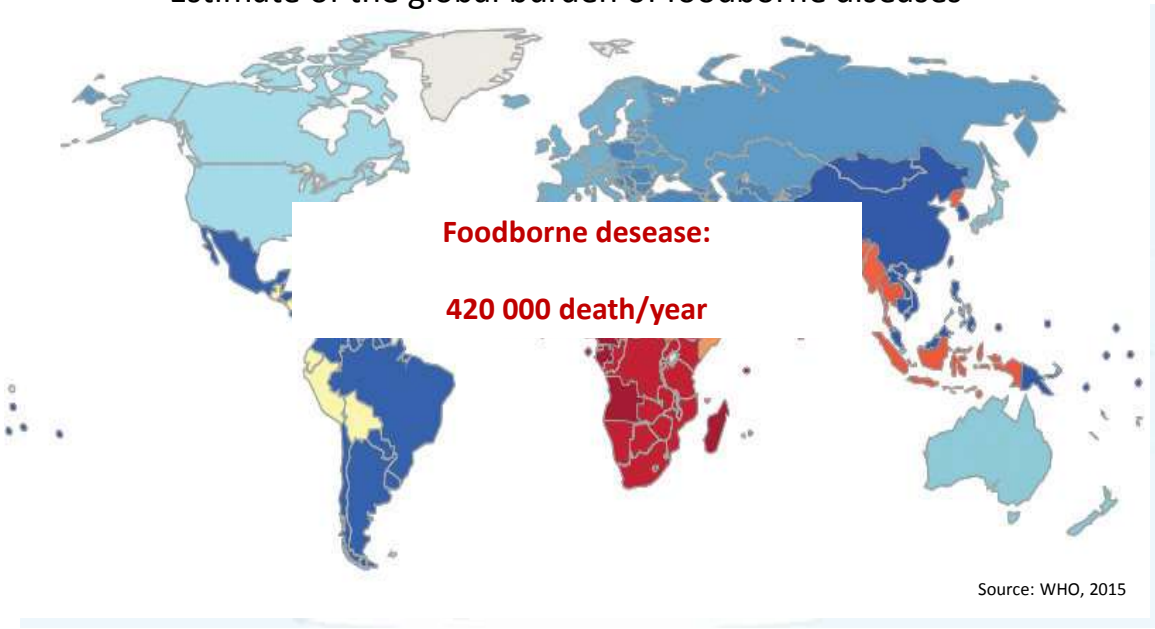




Consequences on food demand and nutrition

- Need to produce more food in some regions
  - Animal products
  - Processed food
- A triple burden
- Undernourishement
- Micronutrient deficiency
- + Obesity, diabetes, etc.
- New food safety issues
- Bacteria, Mycotoxins
- + Chemicals

Estimate of the global burden of foodborne diseases



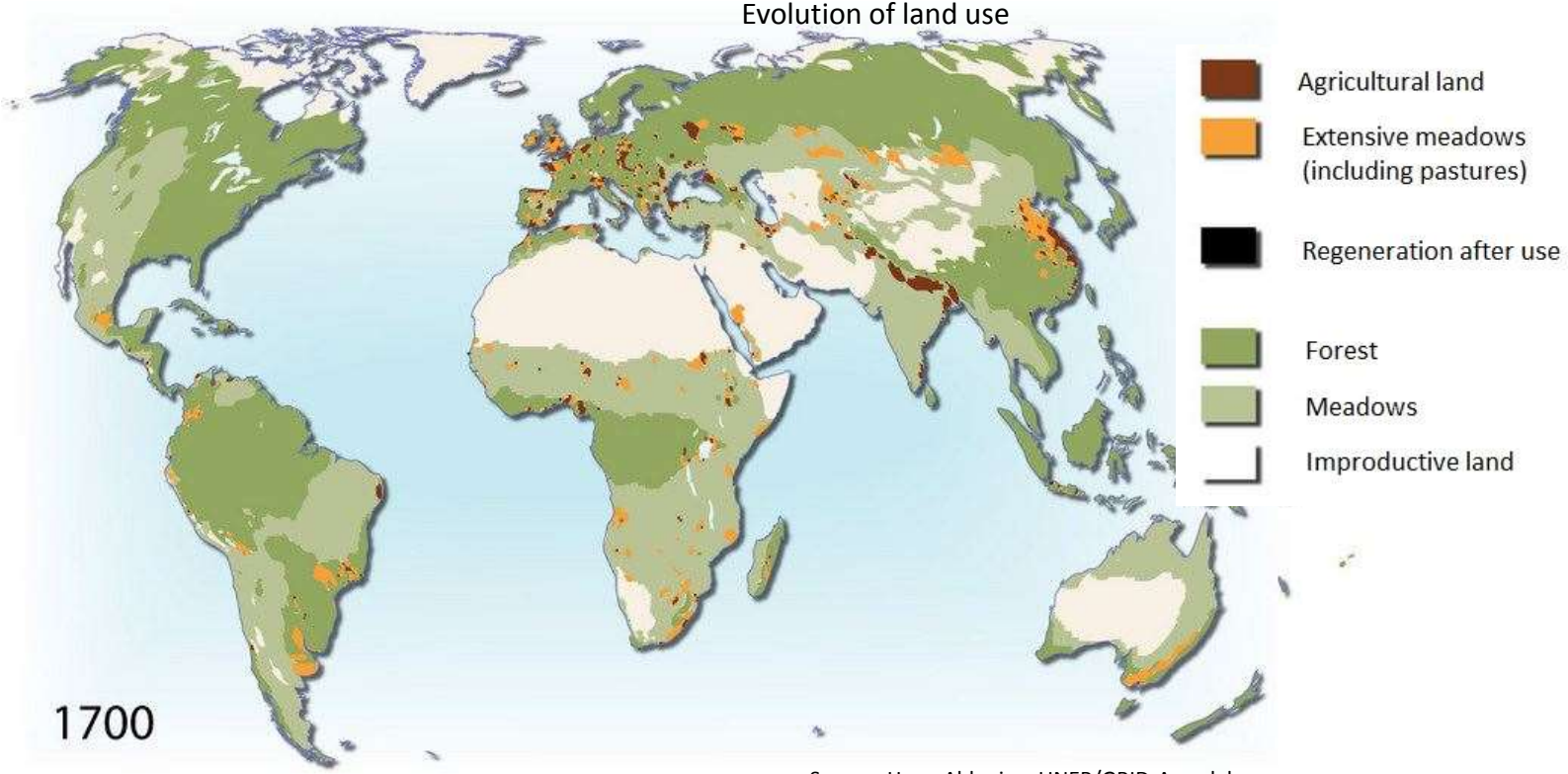
Source: WHO, 2015

Consequences on employment

- 62% of jobs
  - are in agriculture in LIC
- 91% of jobs
  - are in
- Food Systems
- in Eastern and Southern Africa

Resources scarcity

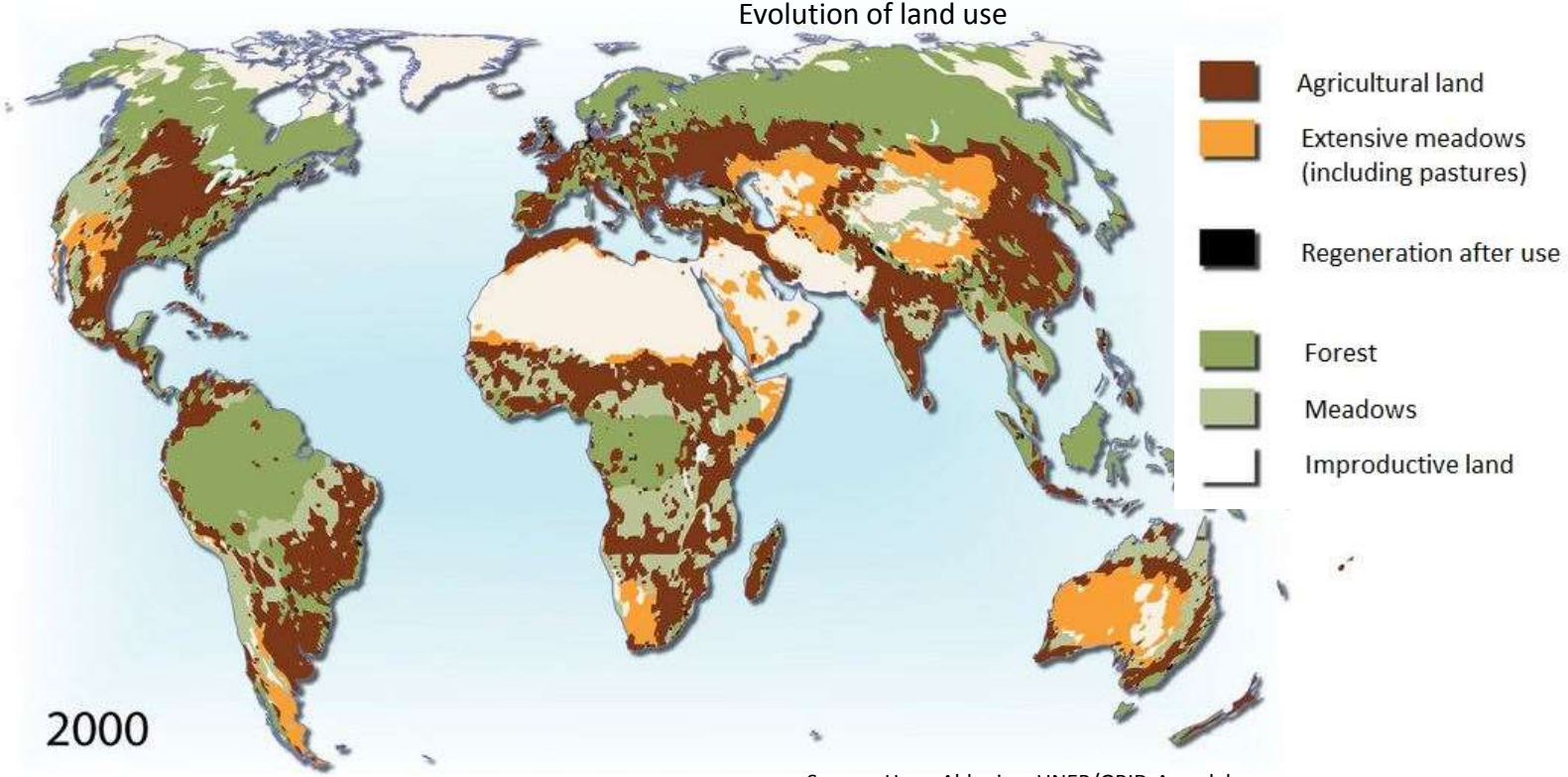
Evolution of land use



Source: Hugo Ahlenius, UNEP/GRID-Arendal

Resources scarcity

Evolution of land use



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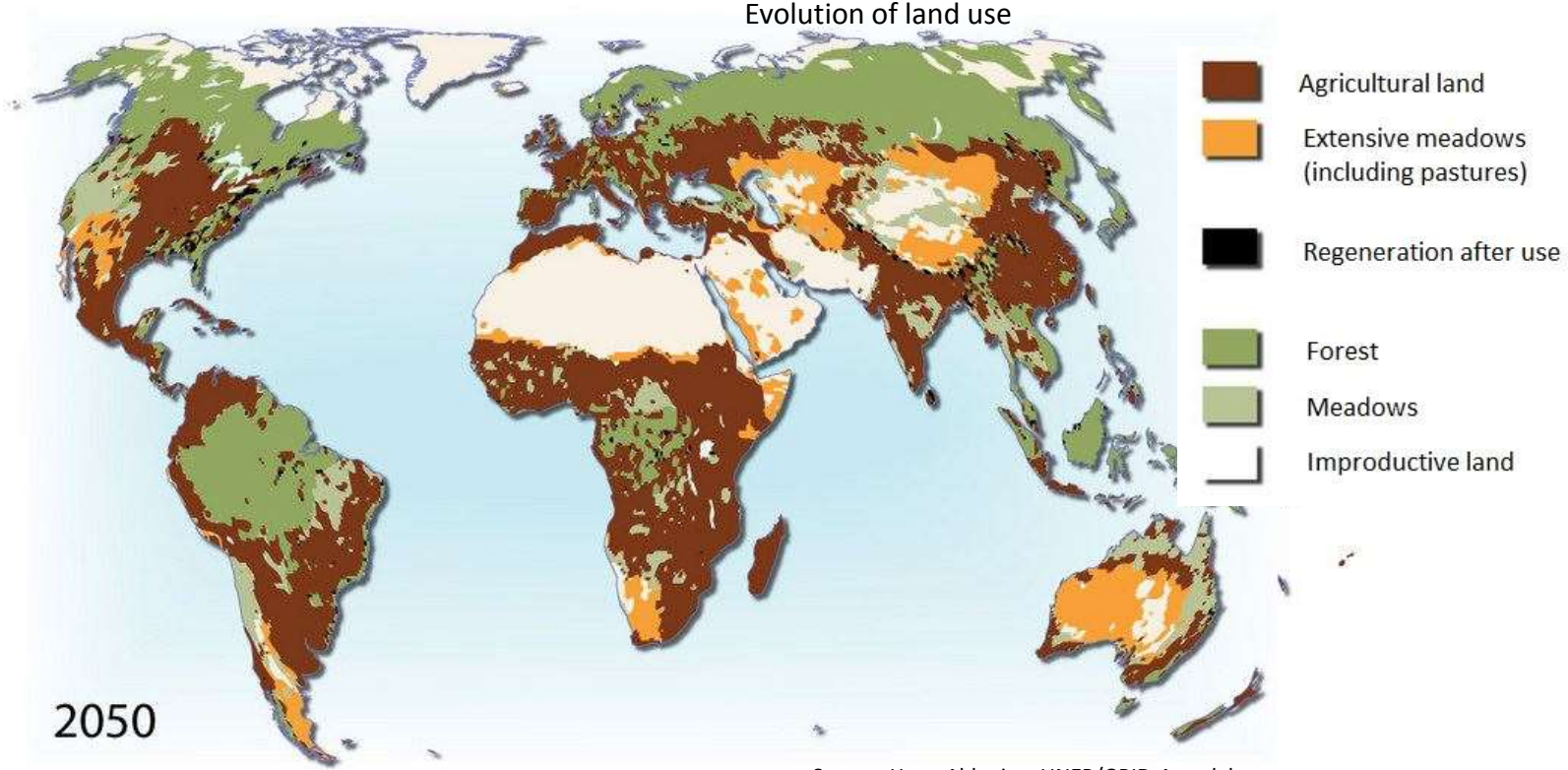
Resources scarcity

Evolution of land use



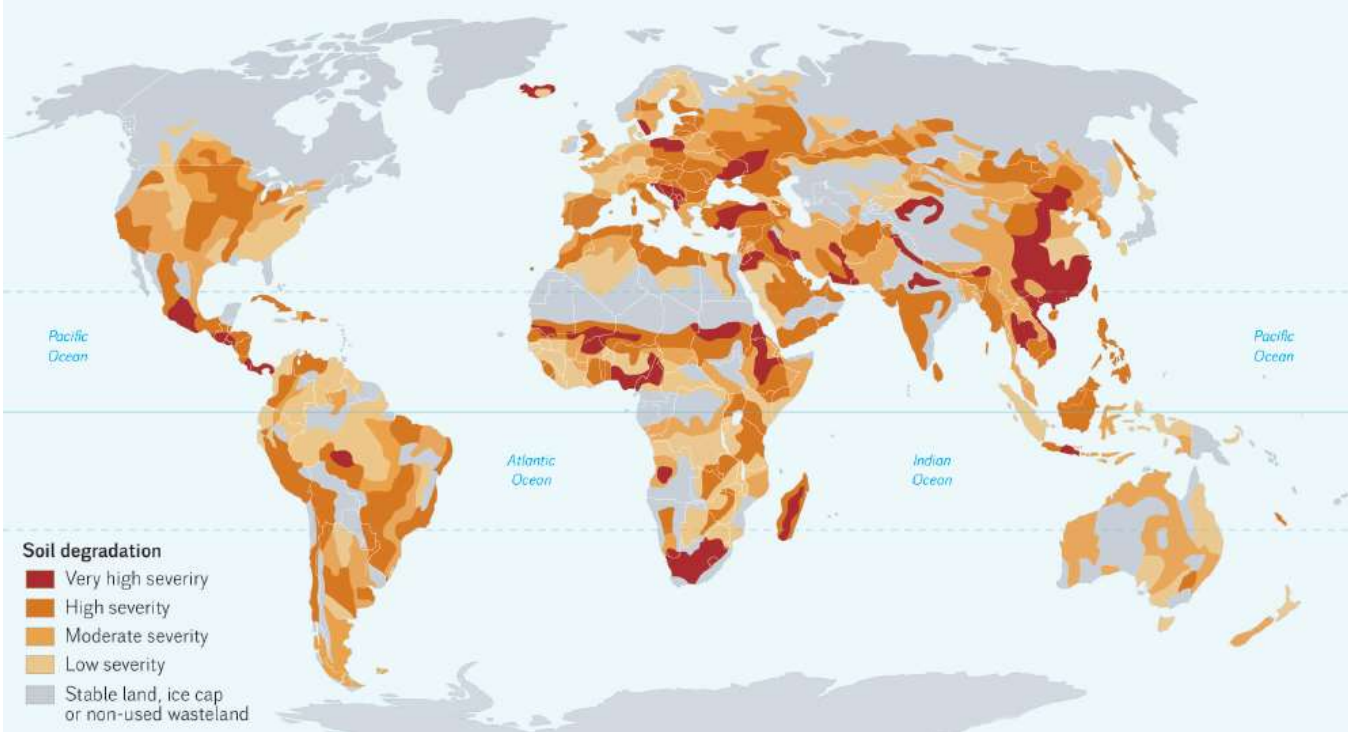
Source: Hugo Ahlenius, UNEP/GRID-Arendal

Environmental degradation

- Wildlife
  - Fish
  - Insects
- Biodiversity
- Pollutions
- Soils degradation

➢ Reduction of yields

Global soil degradation induced by humans



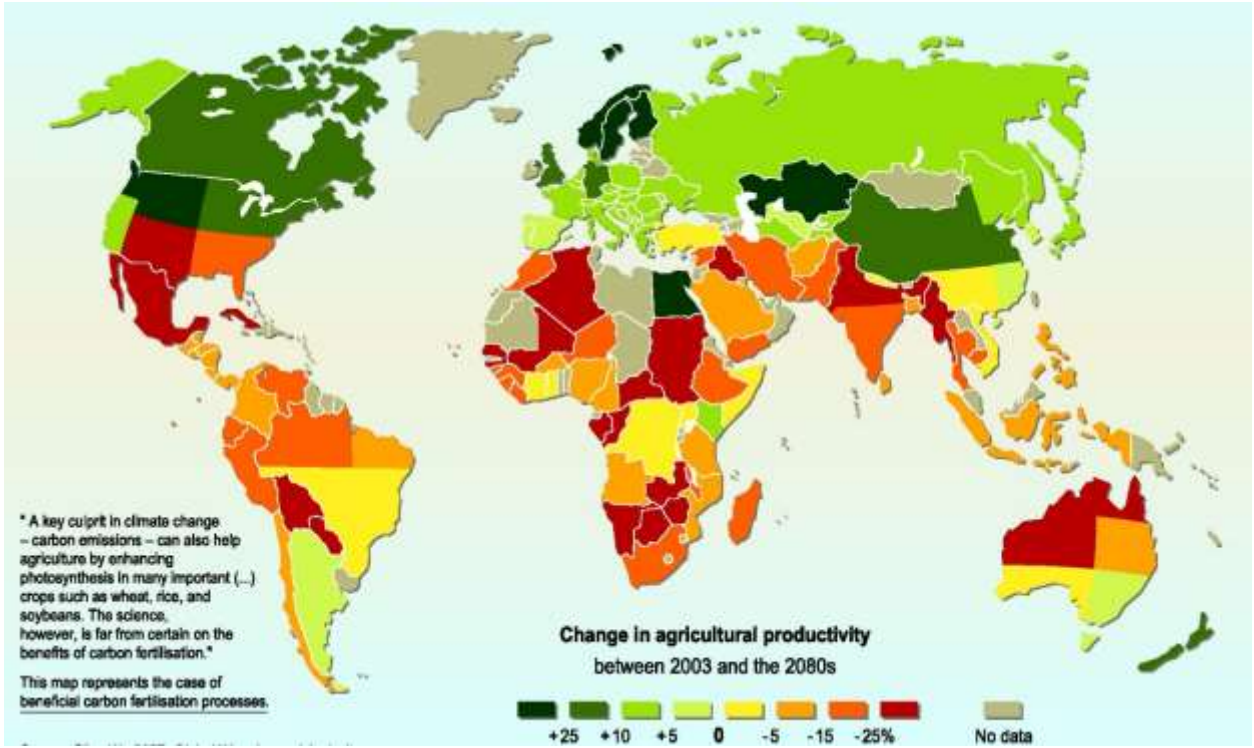
Climate change

- Reduction of yields
- More climate disasters
  - Flood
  - Drought

➢ Market tensions

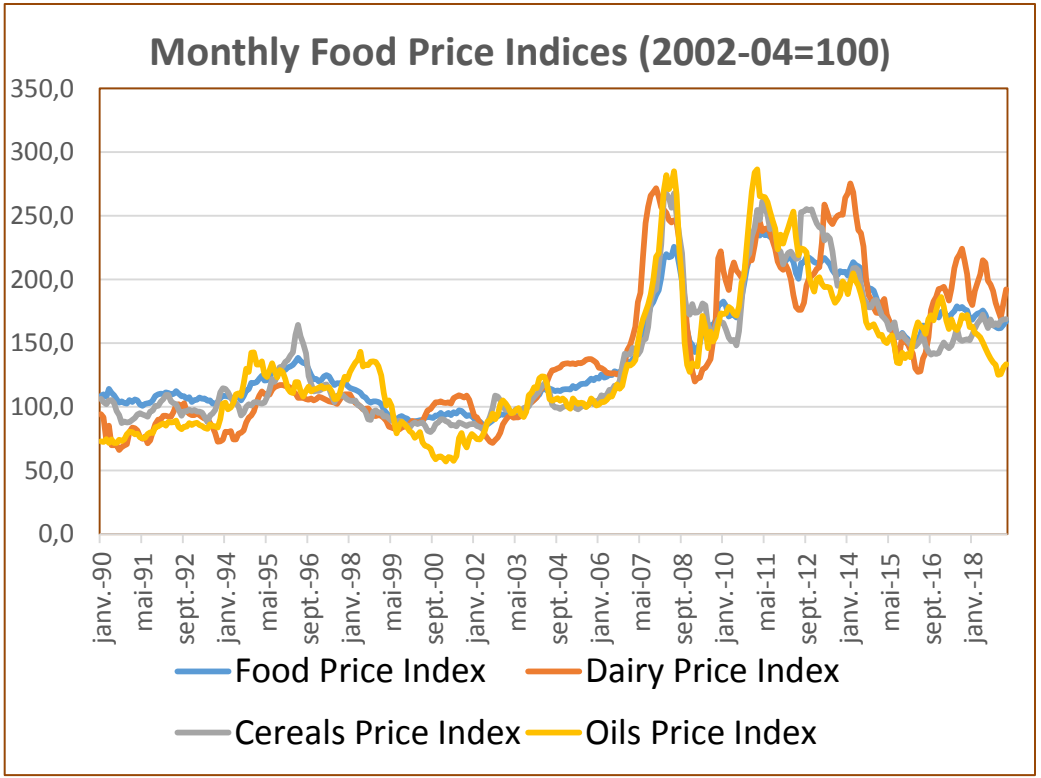
➢ Instability

Effects of climate change on agricultural productivity

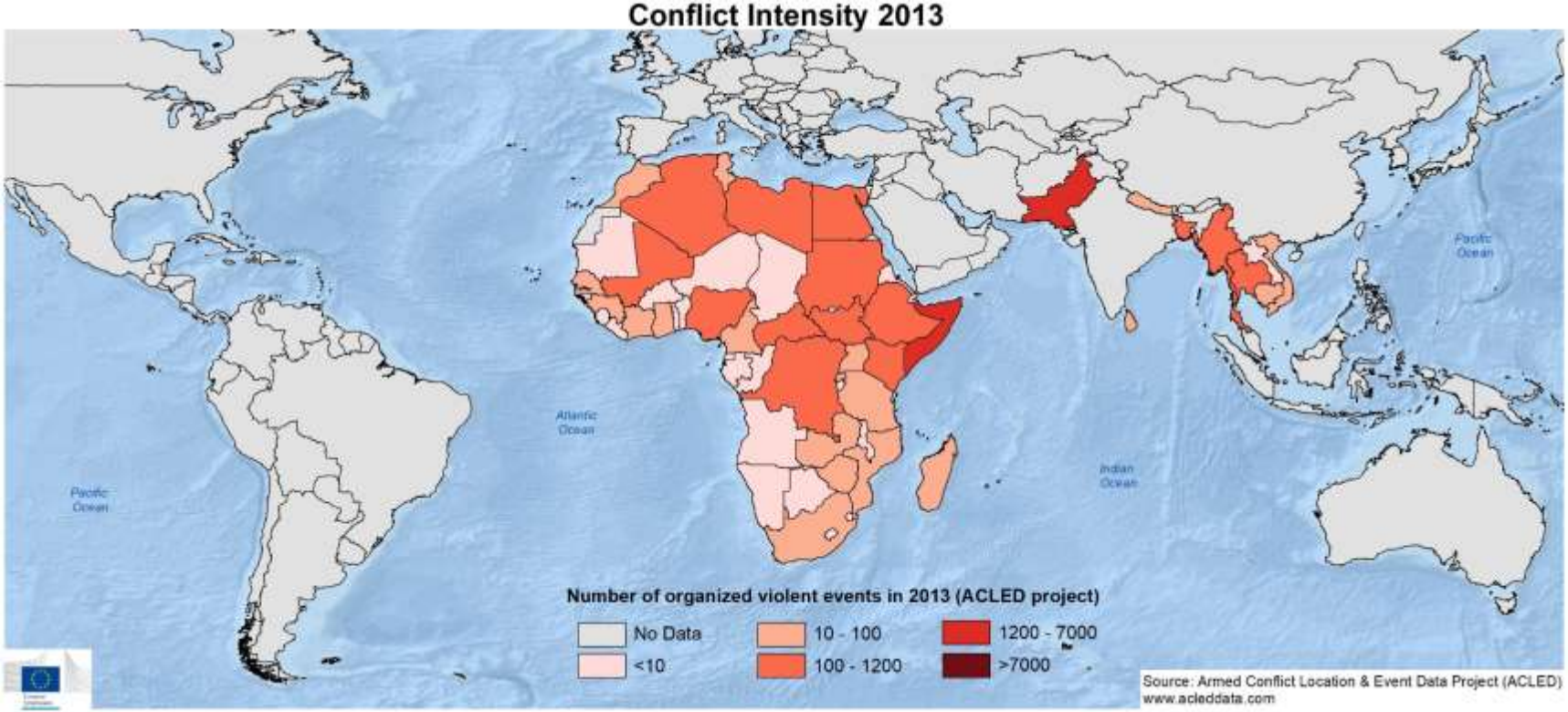


Instability on international food markets

- Climatic paroxysms
- Epidemics
- Financialization
- Competition between food and biofuels
- Thin and segmented markets
- Low level of stocks



Disasters & Conflicts → Displacements



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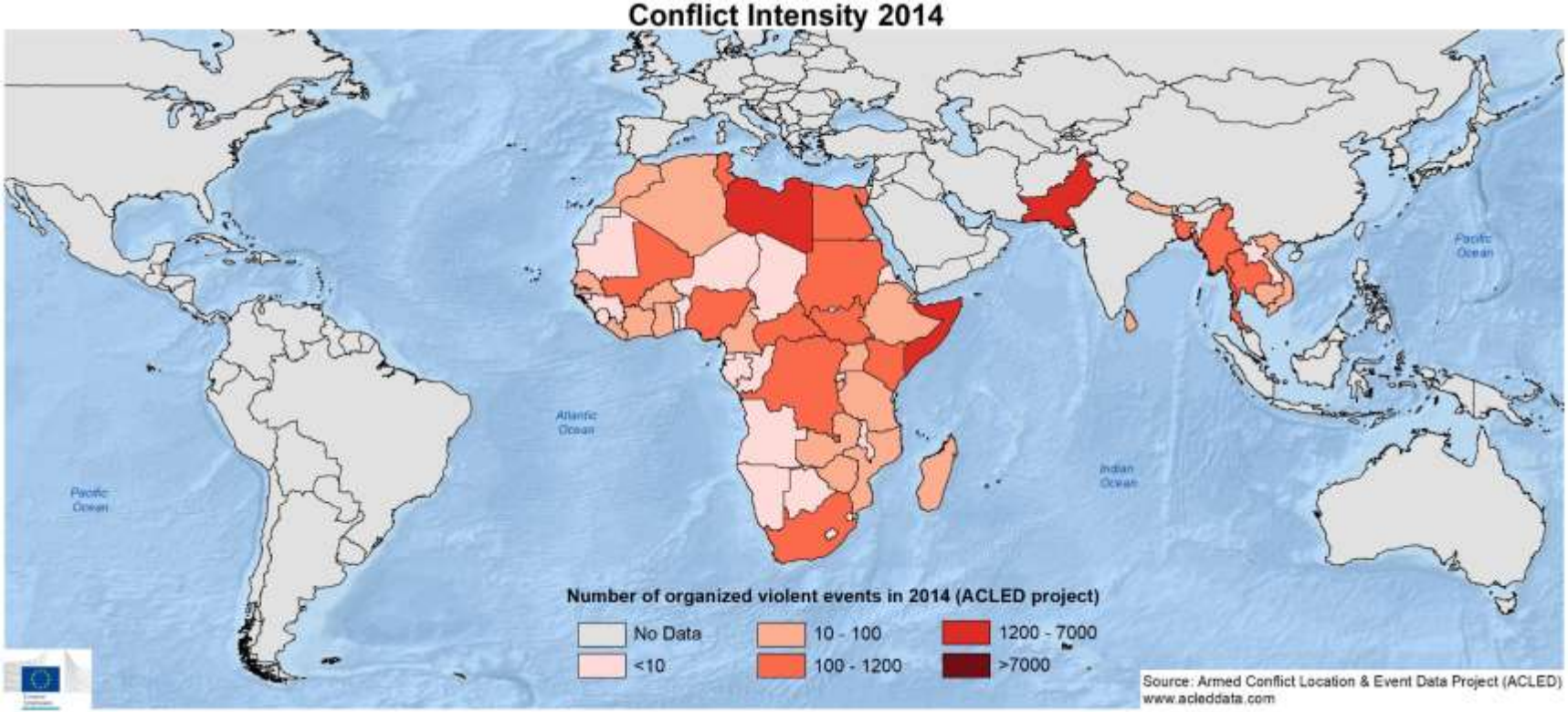

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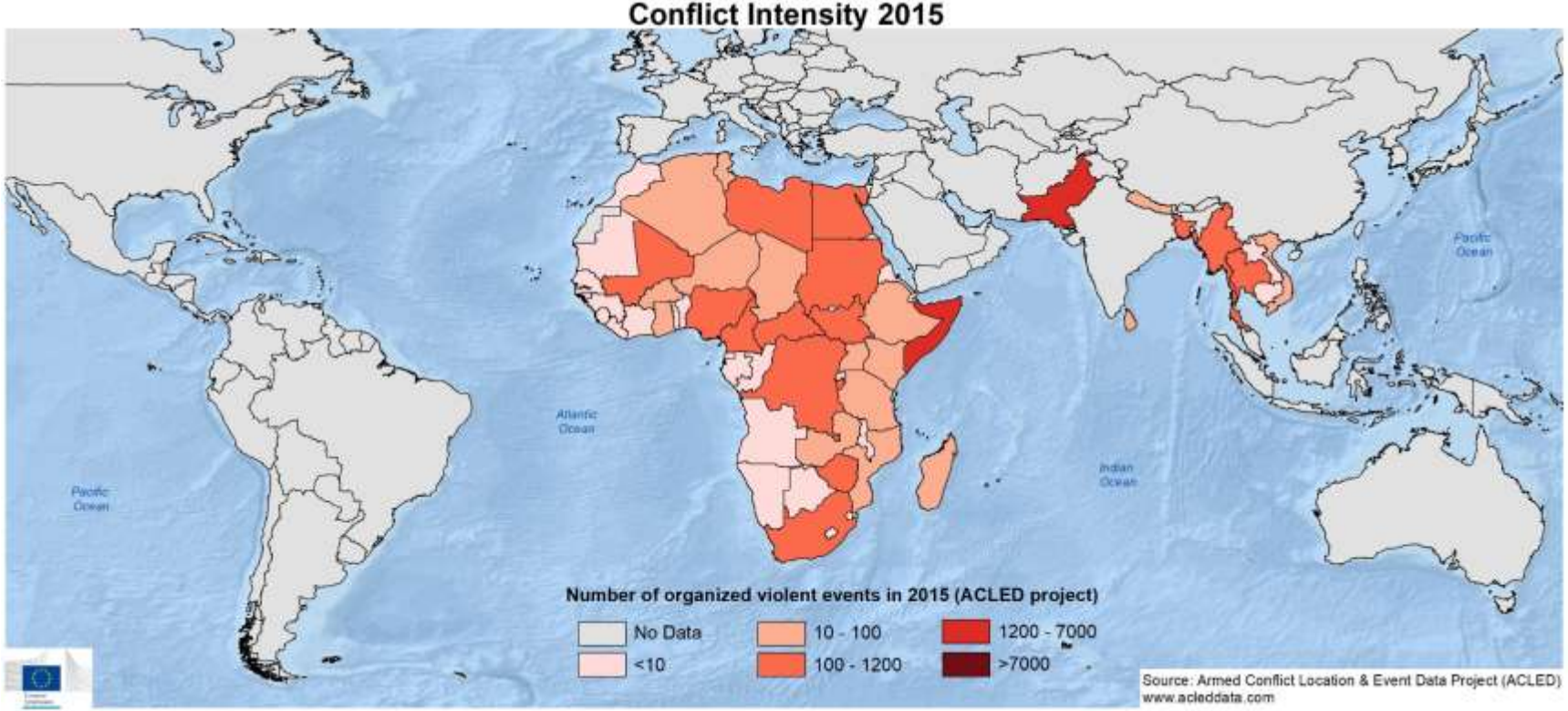

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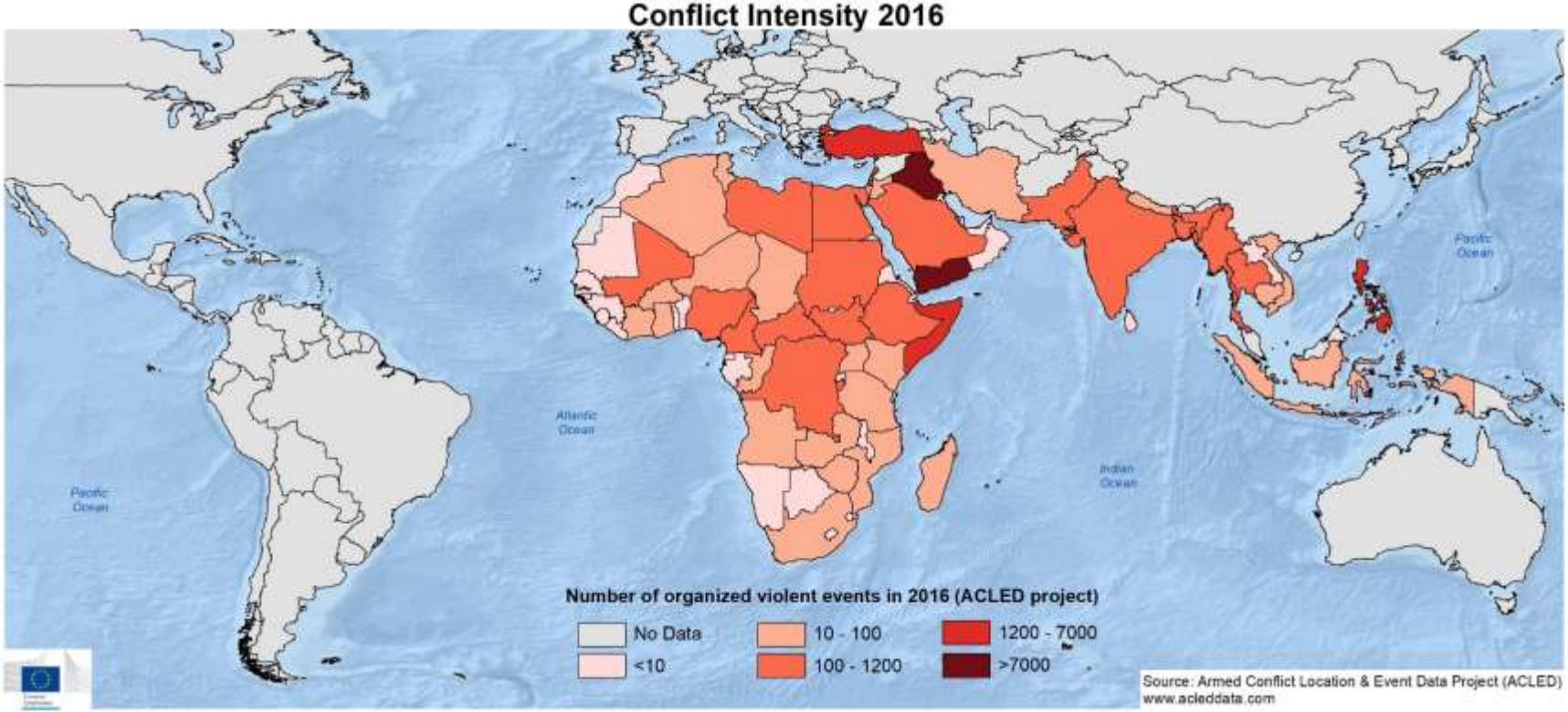

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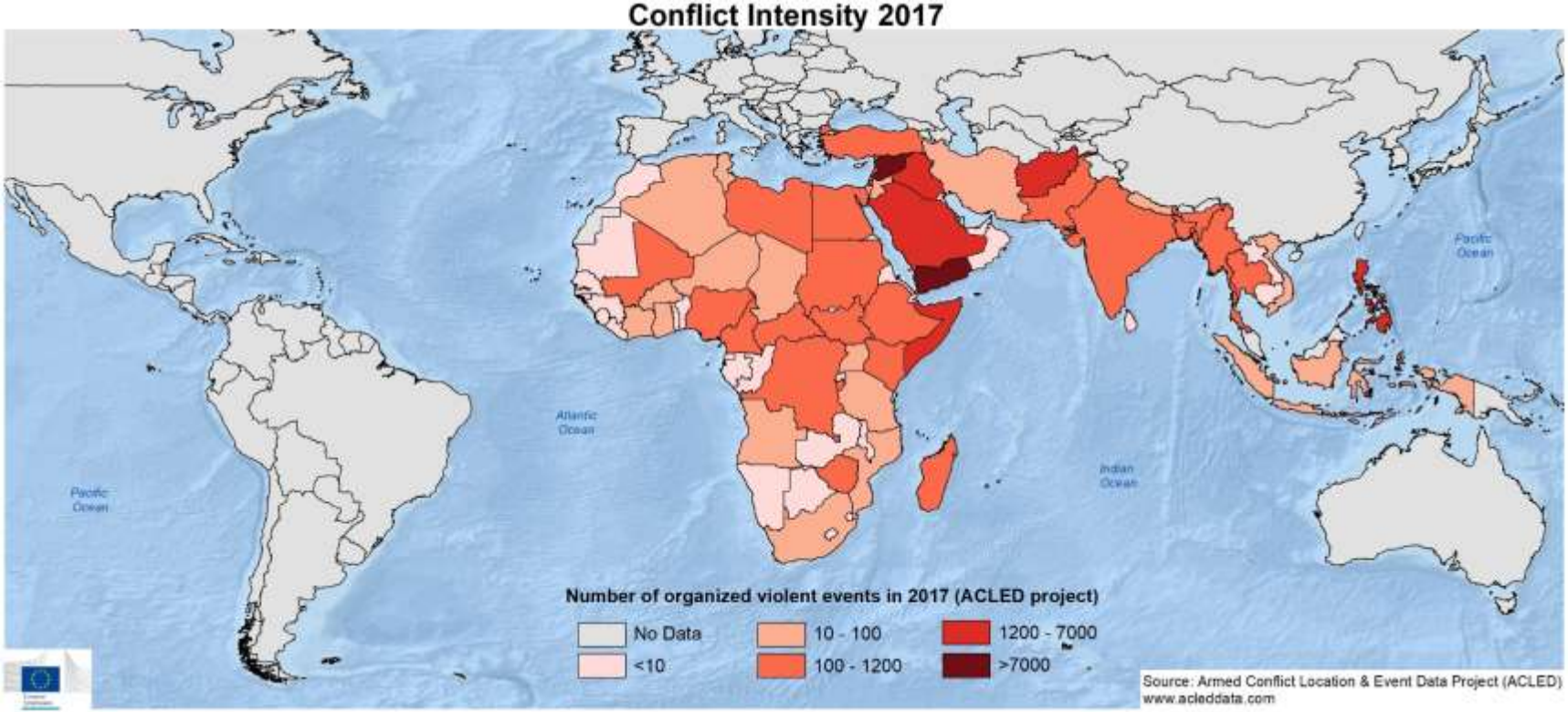

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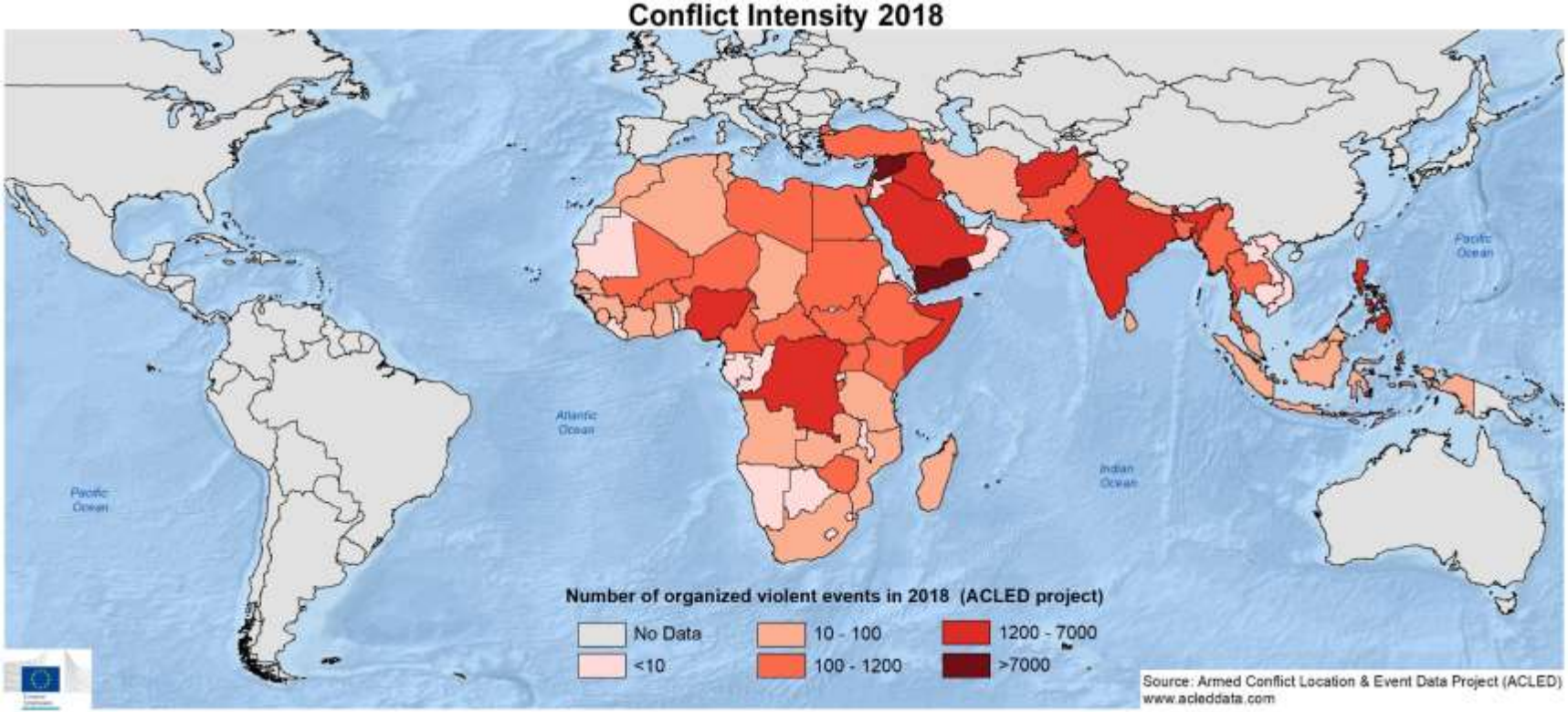
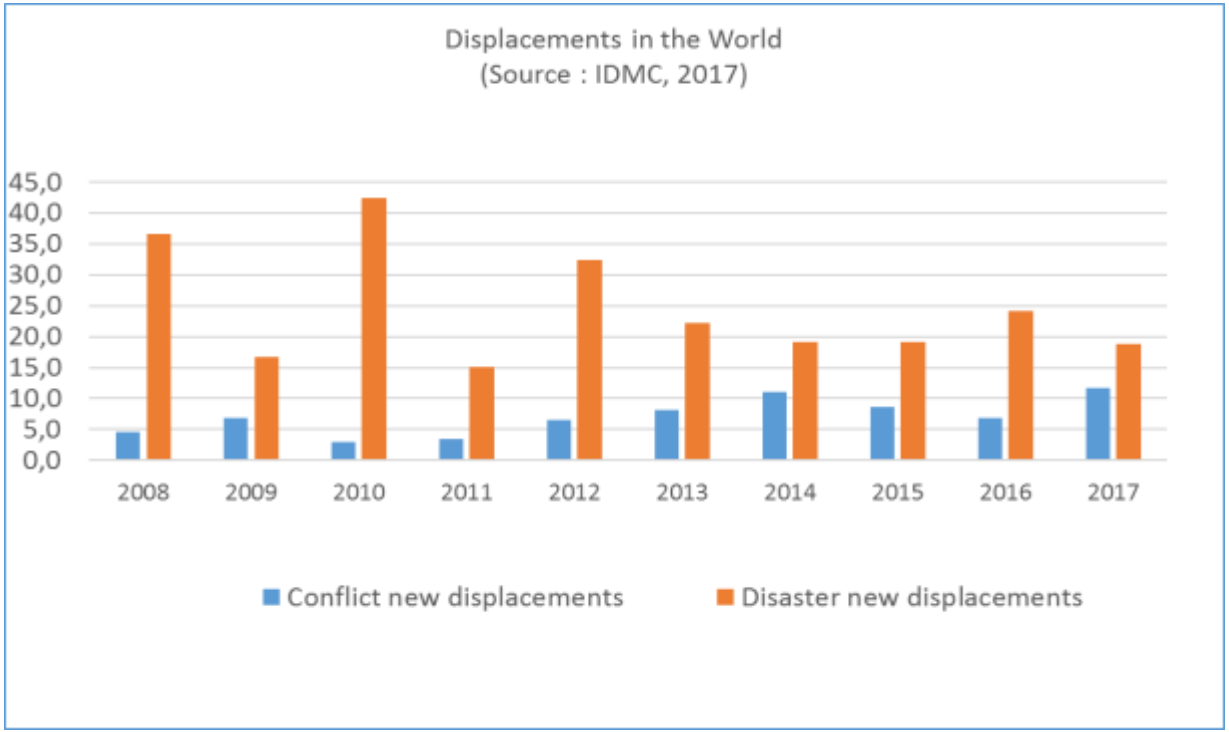
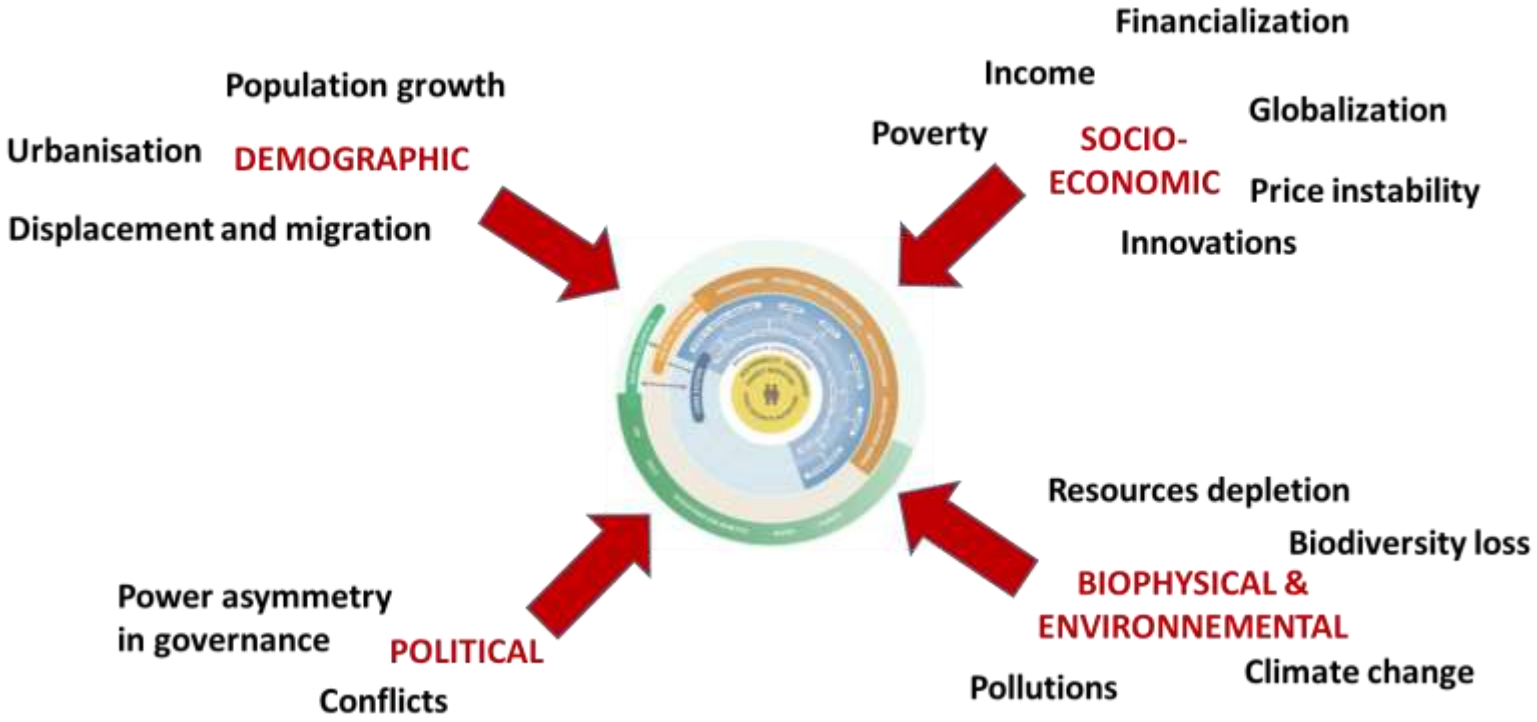


Disasters & Conflicts → Displacements

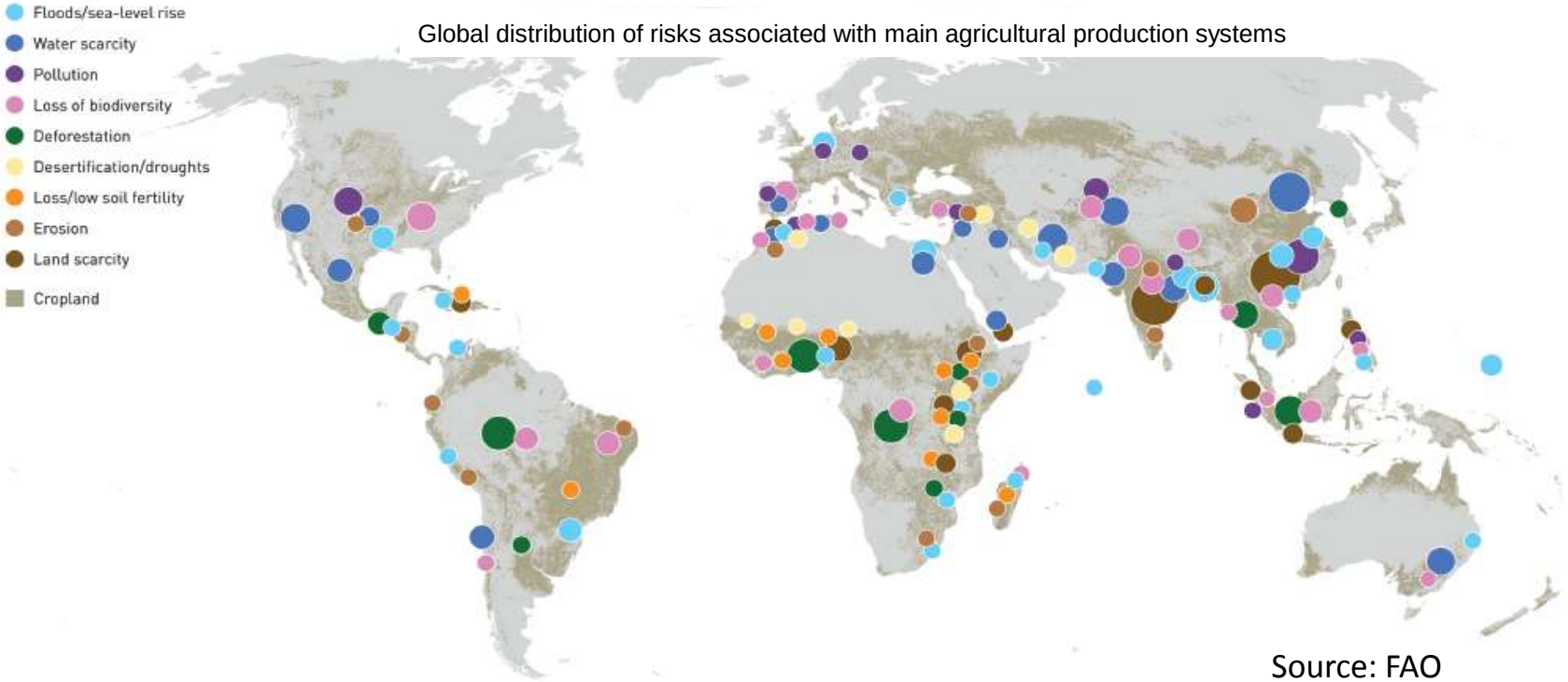
- **75 % of stunted children live in countries**
- **affected by conflict**



An unprecedented combination of risks



No one size fits all; need a case-by-case analysis



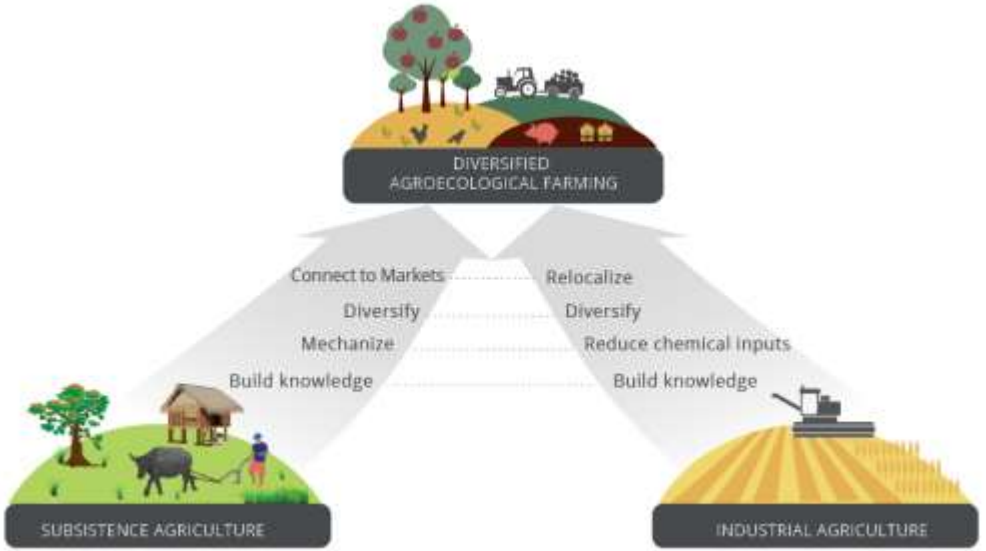
Global distribution of risks associated with main agricultural production systems

Source: FAO

Towards resilient food systems

- No thinking about risks without thinking about **resilience**
- Local actors combine endogeneous and exogeneous innovations
- Need to support different transition pathways towards sustainable and resilient food systems.

Transitioning from different starting point



IPES-Food, 2016

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Merci de votre attention.