Animal genetic diversity and sustainable diets

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Motivation

- Broad consensus that red meat and other foods of animal origin contain many essential nutrients necessary for **healthy growth and development in children**. Nutrients in red meat include iron, zinc, vitamin B_{12}, and protein....

- Consumption of large quantities of meat and dairy products, like overconsumption of any caloric food, has certain **adverse effects**

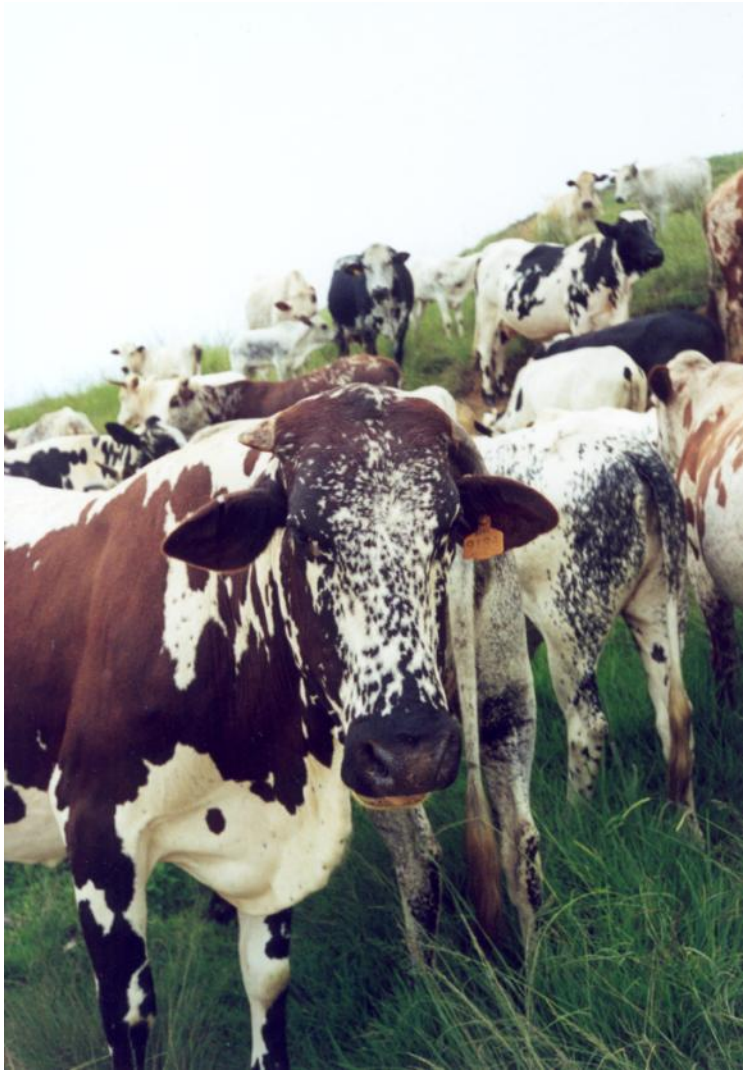
Contents

- Definitions
  - Sustainable Diet
  - Animal genetic diversity
- Livestock products and services
- Current situation: livestock production systems & livestock diversity
- Trends
- Possible solutions & impact on animal genetic diversity
- Conclusions

Definitions

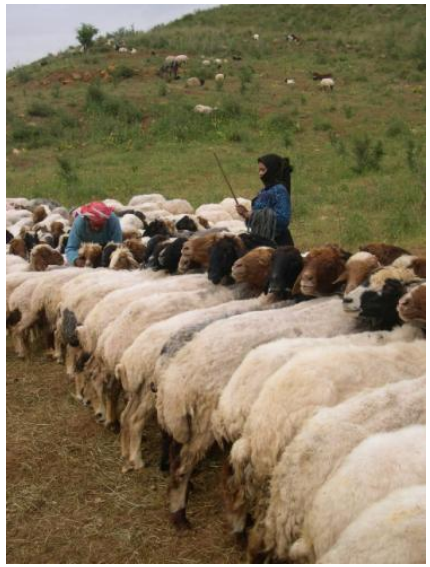
- Sustainable Diet
  - related to food/**production system**
    - provides healthy food to meet current needs
    - maintaining healthy ecosystems
    - humane and just, protecting farmers and other workers, consumers, and communities
  - major component of overall ethical consumerism
  - WHO favors diets low in meat, rich in fruits and vegetables, low in added sugar and limited salt
- Animal genetic diversity
  - Wildlife - **Livestock**
  - Within – **Between** species/**breed**/population

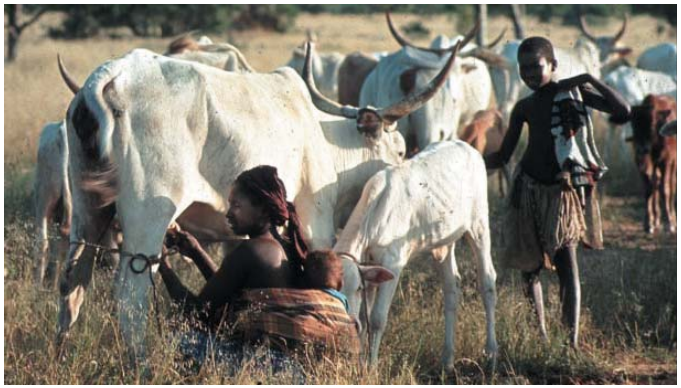
Animals make plants useful



Livestock converts plants into food and energy. Grazing adds value to „natural“ plant biodiversity.

Food: Meat, milk, eggs





Rural employment and income

Wool and fibres, hides and skins

Transport

Nutrient recycling, fuel and waste recycling

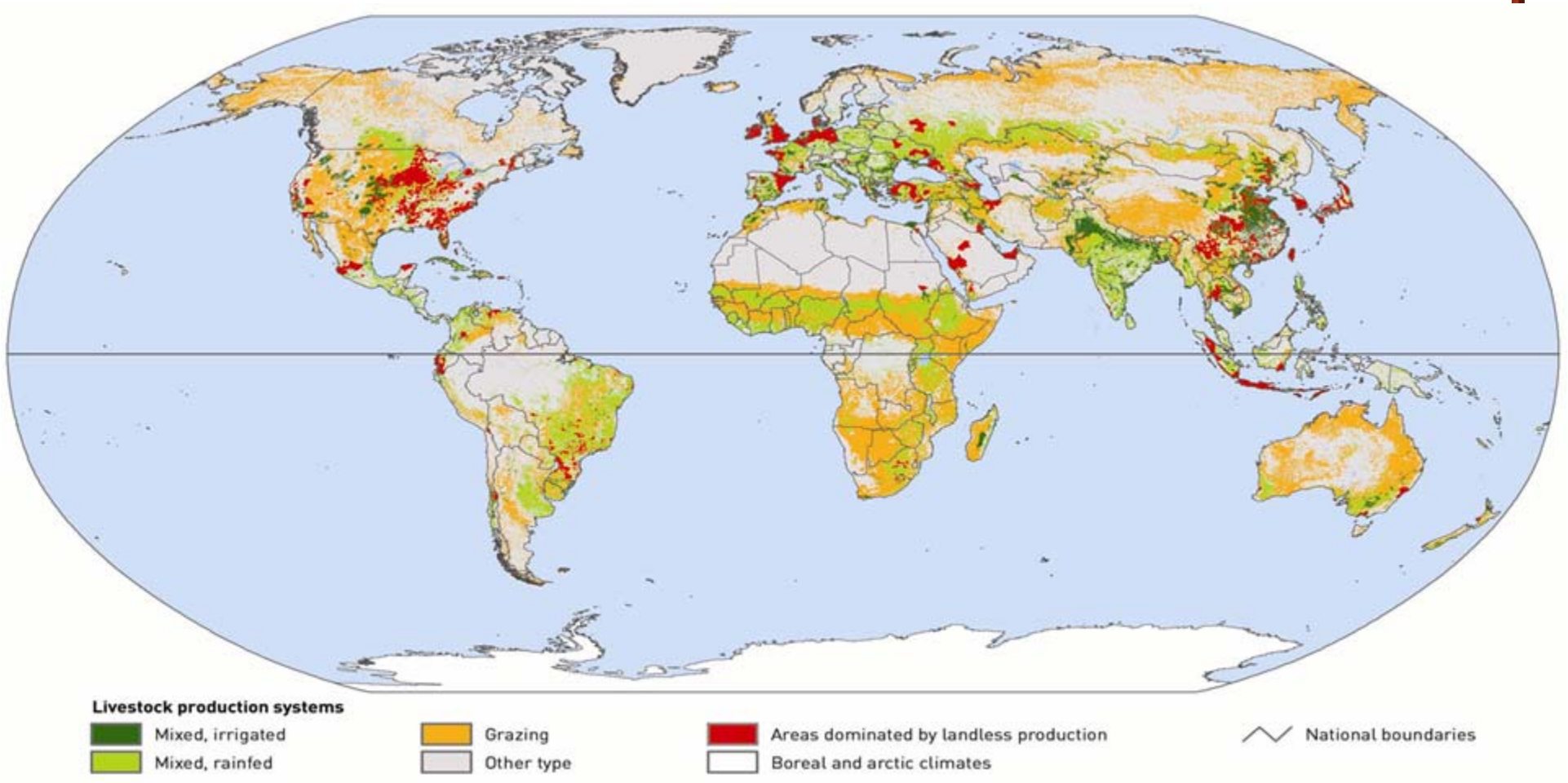
Field preparation, irrigation, post-harvest processing

Post-harvest transport

Socio-cultural dimensions

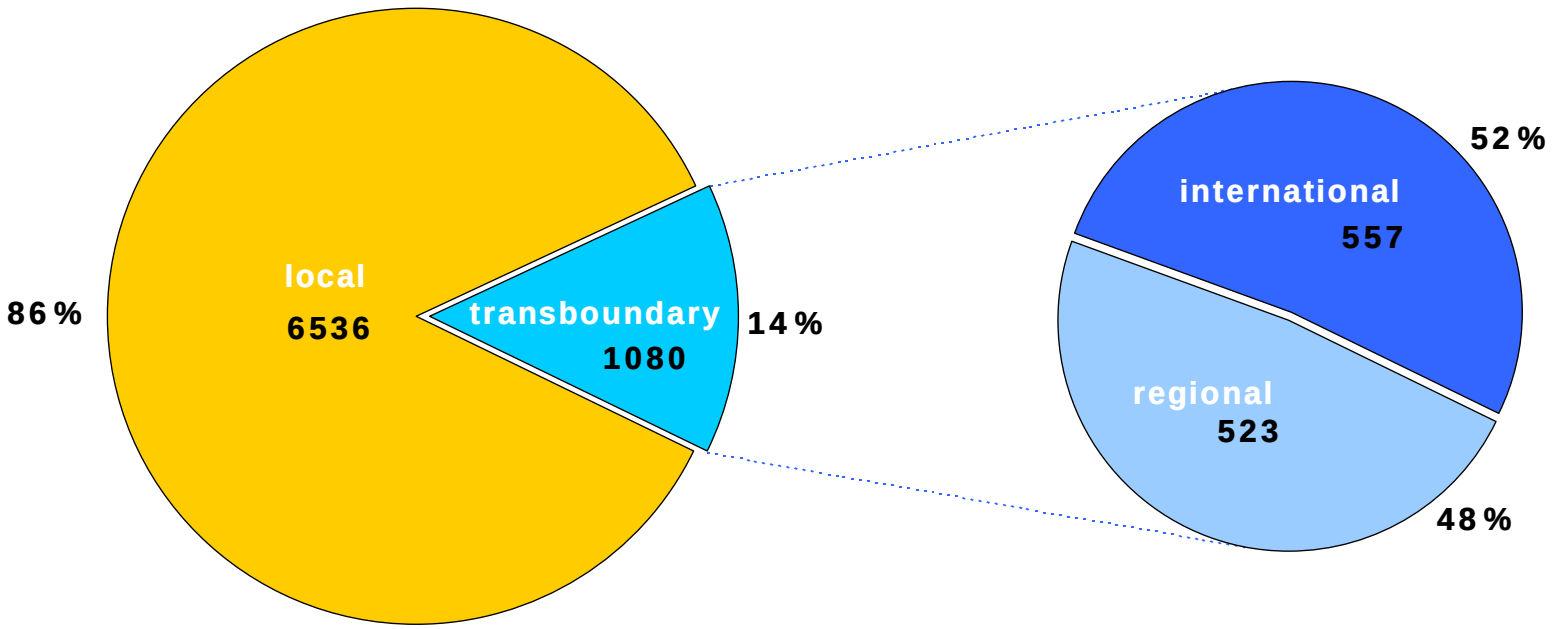
- Insurance against crop failure
- Exchangeable asset (dowry, social capital)

Estimated distribution of livestock production systems



Breed diversity – the global picture

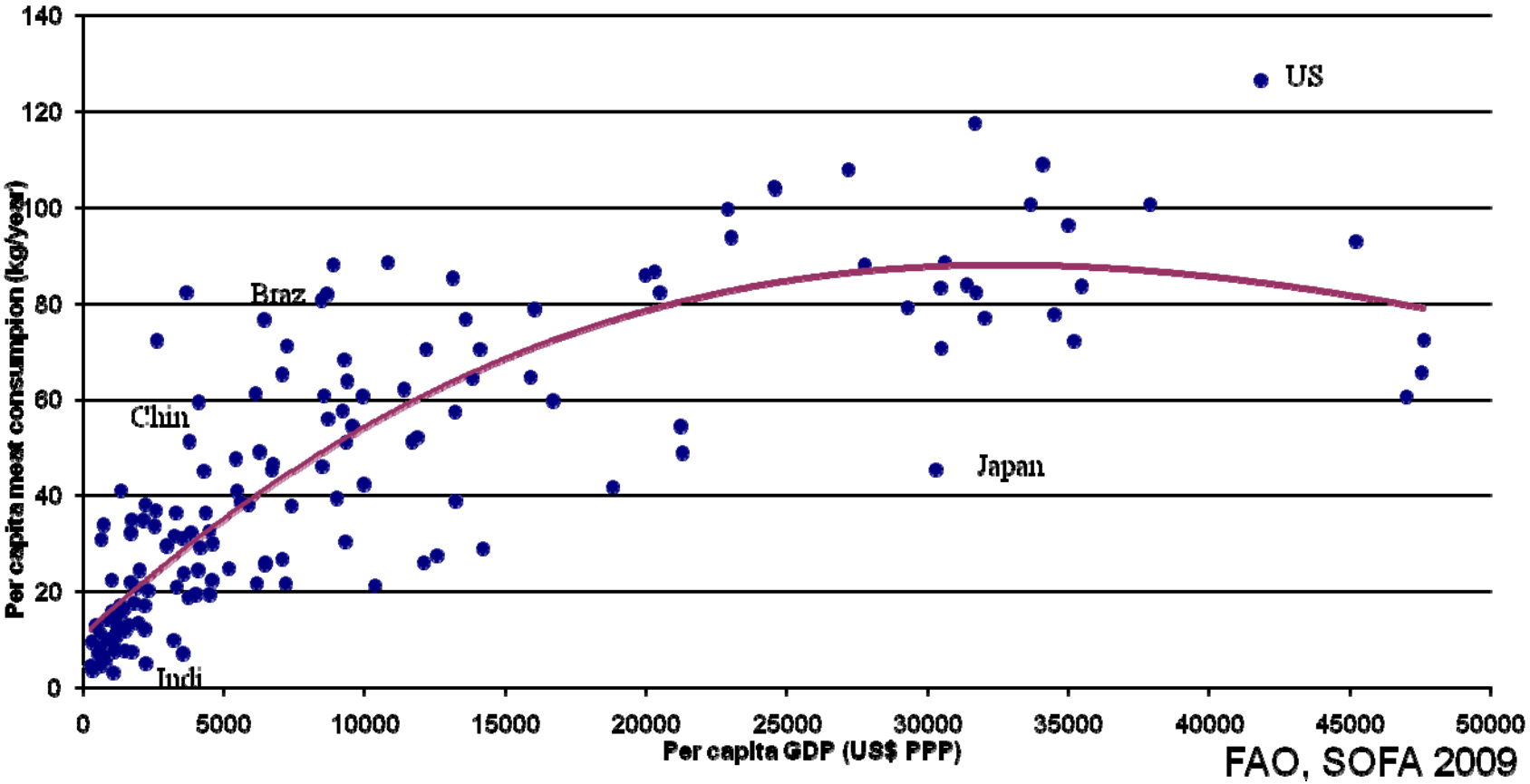
7616 breeds reported, out of which 690 are extinct



Diversity and production sytems

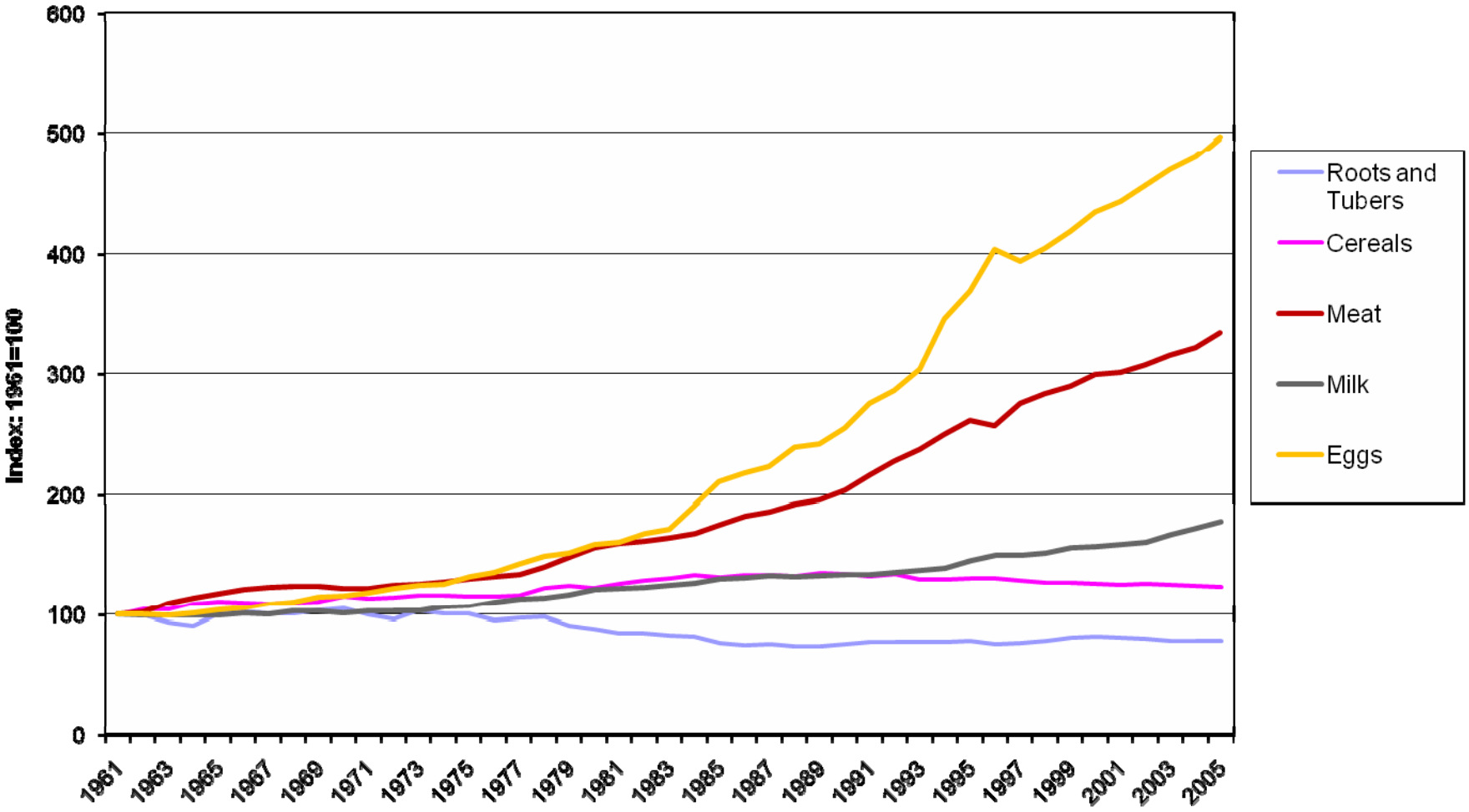
- Pre-industrial livestock production systems
  - Varity of production systems, rather extensive systems
  - High percentage of households with livestock
  - Often no market for livestock products – subsistence farming
  - Multiple roles/functions require **animal genetic diversity**
- Industrial livestock production systems
  - Geographic concentration
  - Separation of livestock and crop production
  - Access to markets
  - **Narrow range of specialized breeds**
  - Single products

Per capita income and meat consumption, per country, 2005

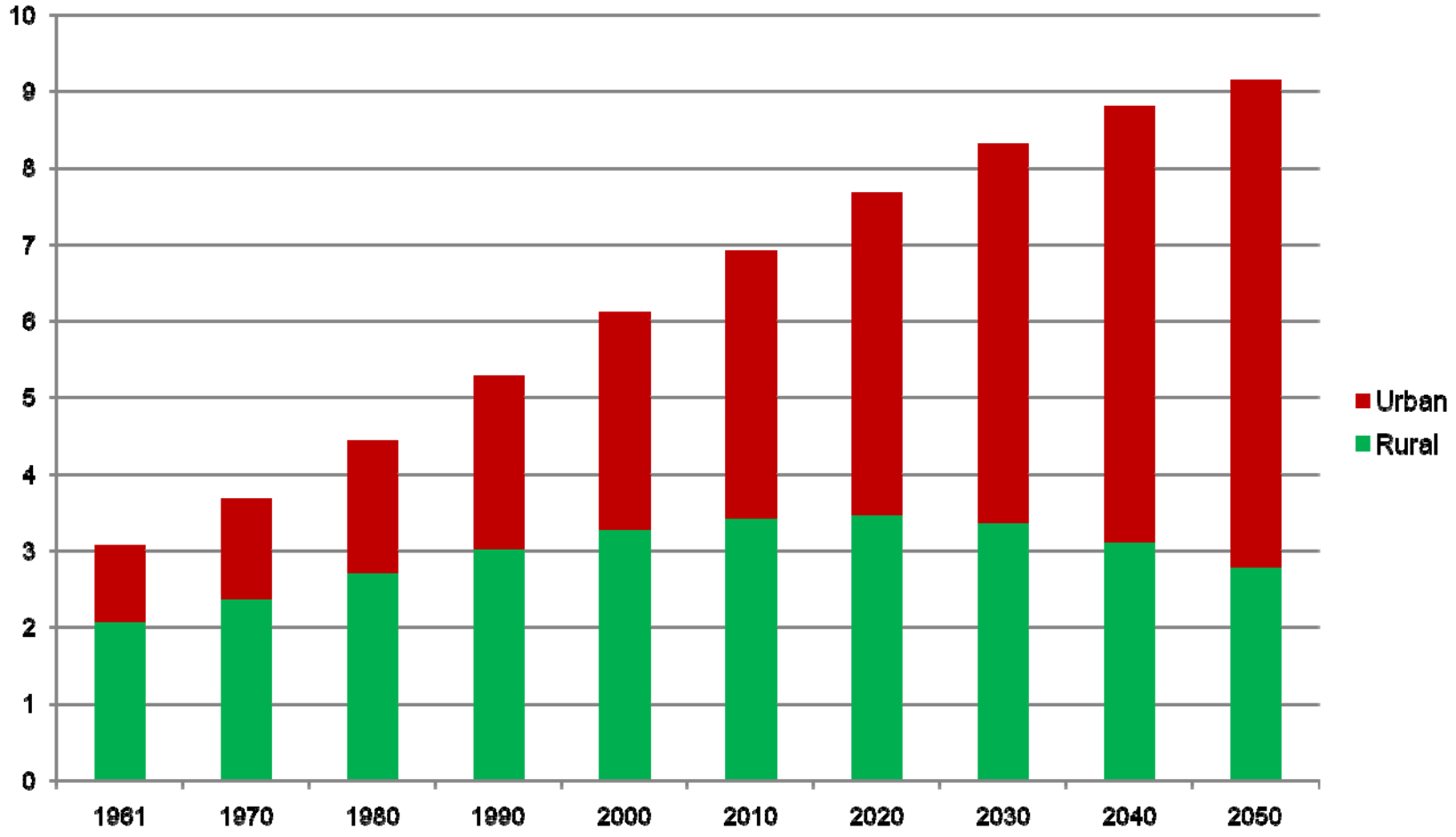


FAO, SOFA 2009

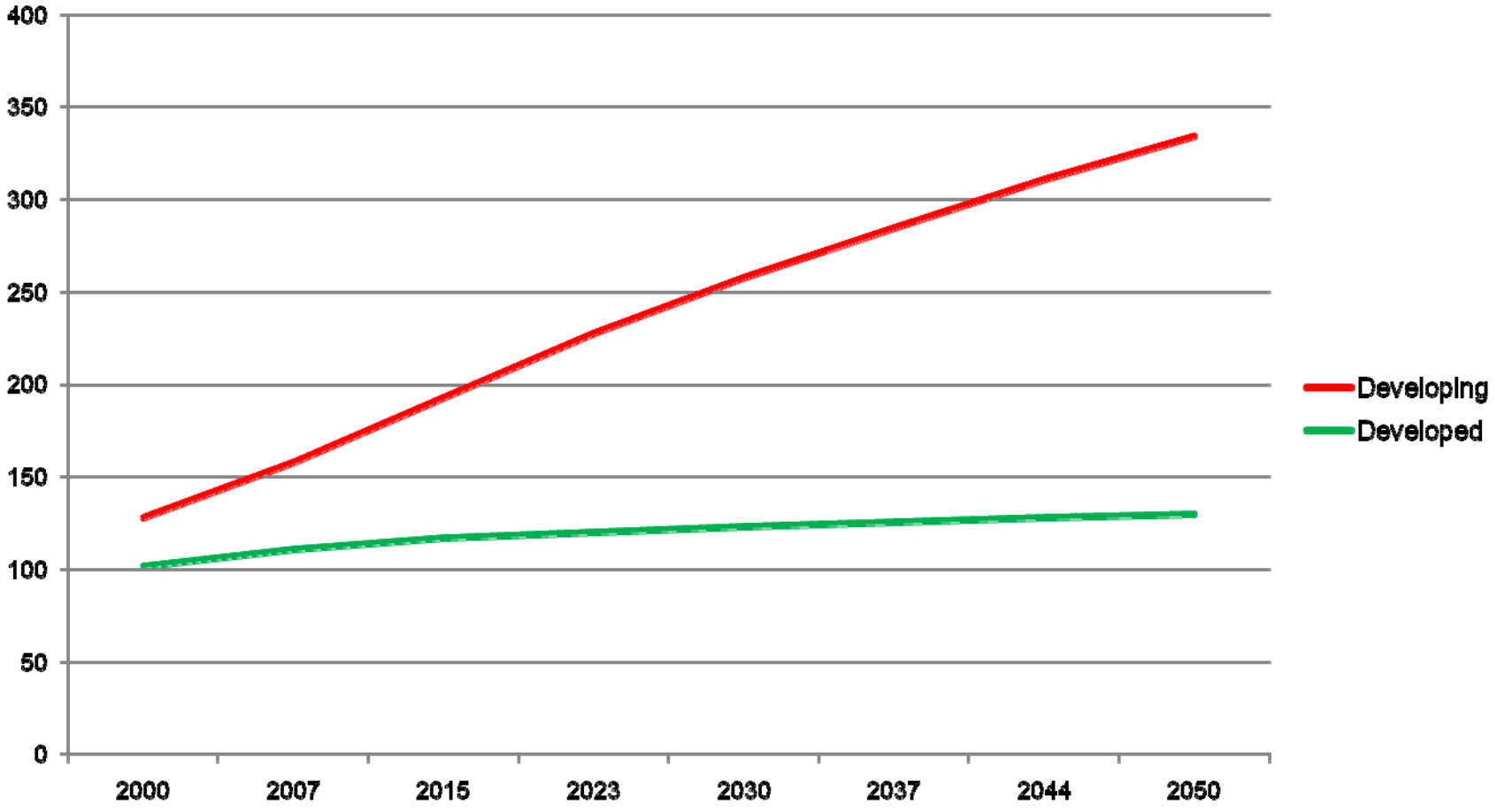
Consumption of livestock products growing rapidly



Population projections (bn)



Consumption projection, mill t carcass

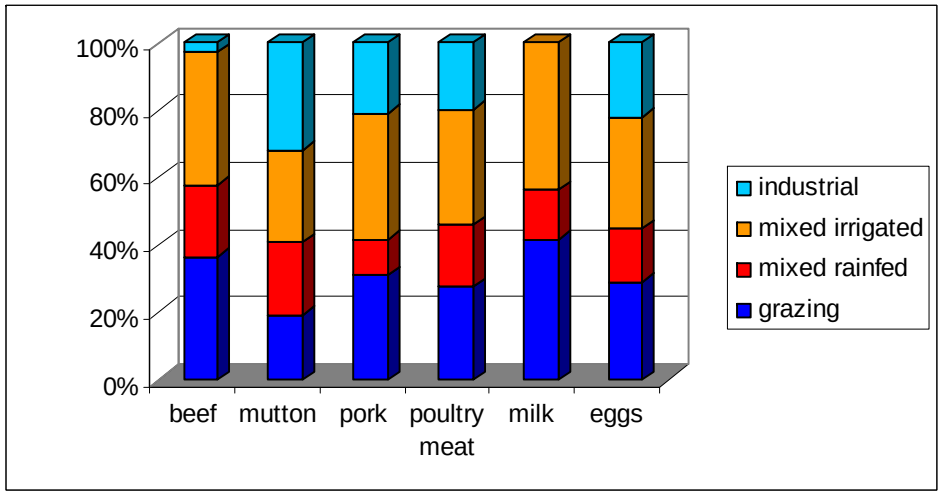


Alexandratos, 2009

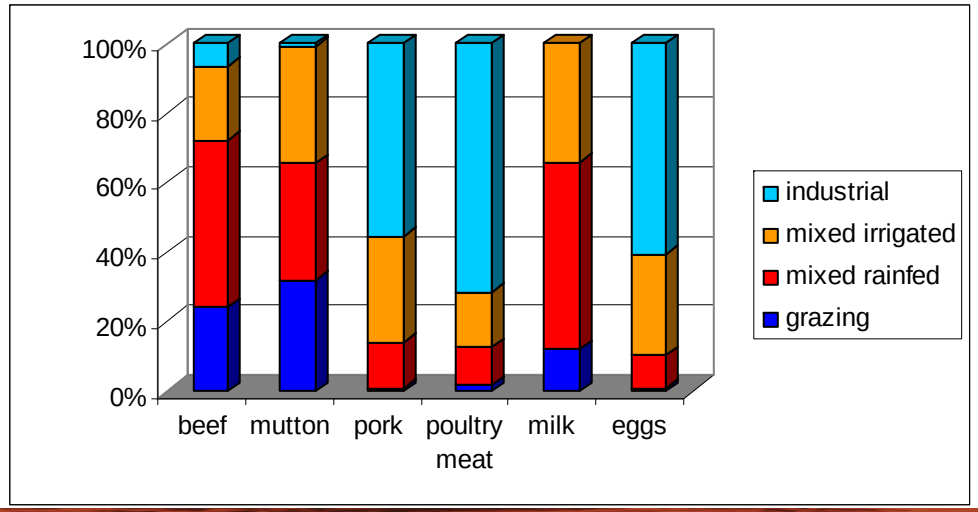
Impact

- Increased urbanization: Shift of production systems towards industrialized, landless production
  > range of breeds
- Increased pressure on production performance of livestock
  >breed replacement,
  >international transboundary breeds
  >loss of diversity within breeds
- Shifts in dietary preferences, more foods of animal origin, more broiler, eggs > range of species

Contribution of the production system to food production

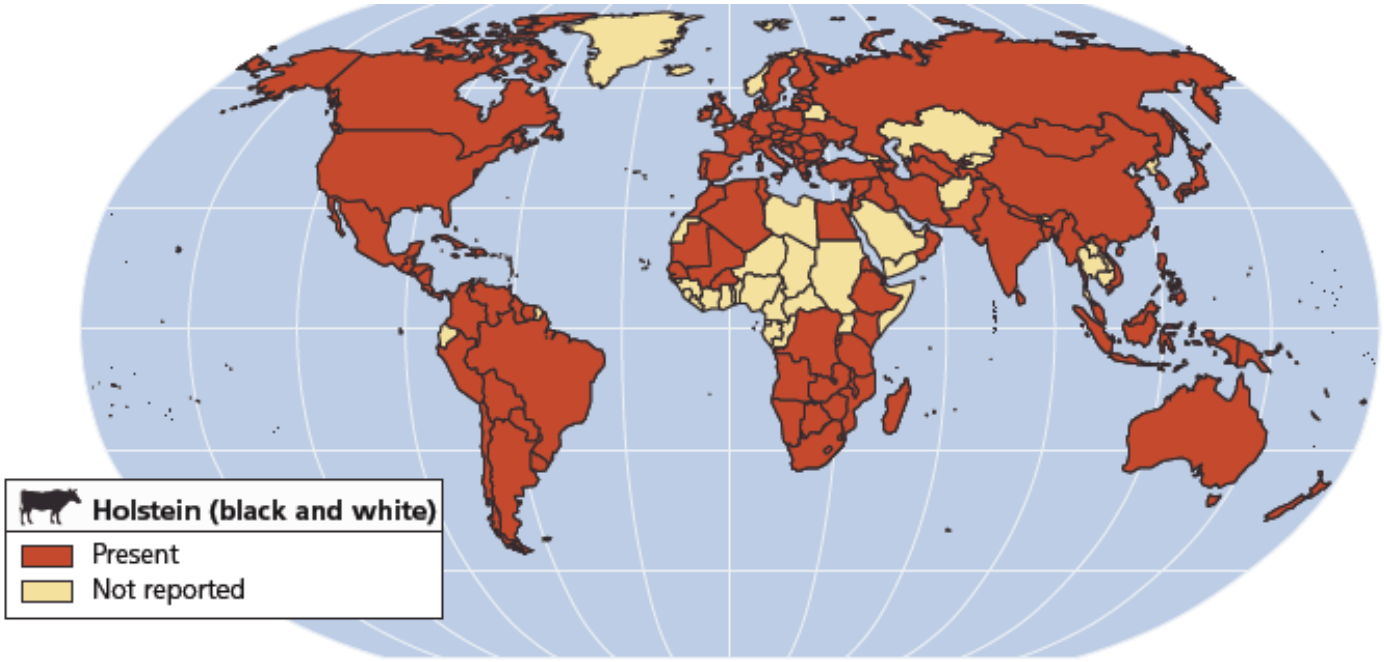


developing countries



global

Distribution of Holstein-Friesian cattle



Impacts

- Shift in production systems not necessarily towards more sustainable systems
  >growing impact on the environment

- Shift in composition of diets
  >not necessarily towards more healthy diets (number of overweight people has surpassed the number of malnourished people, increased number of diet-related diseases)

Possible solutions

- Intensification in production systems
  - extensive systems: often huge opportunities for productivity gains
  - intensive systems: limited options for mitigation; focus on land use emissions associated with feed; frontier research in breeding and feeding
- Separate meat from animal
- Substitute meat
  - **BUT: Loss of breeds**

Possible solutions

- **Consumption patterns** influenced by growing concerns about health, the environment, ethical, animal welfare and development issues
- Small market share
- **Strengthen** such **tends**:
  - **Nutrition education**
  - **Niche and labeled products**
  - **Local and faire trade**

CONCLUSIONS

- Demand will continue to increase, big push to enhance livestock productivity is needed
- New technologies are required / partly available > most of them lead to **loss of livestock diversity**
- Changing in consumer behaviour + development of niche markets and labelled products + sustainable agriculture, organic farming and local food production > **positive effect on livestock diversity (preserving biodiversity by what we eat)**
- Policy instruments are required to stimulate implementation of a portfolio of options

Thank you