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Livestock is essential for sustainable agri-food systems

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@AnimalTaskFrc

@PeyraudJean

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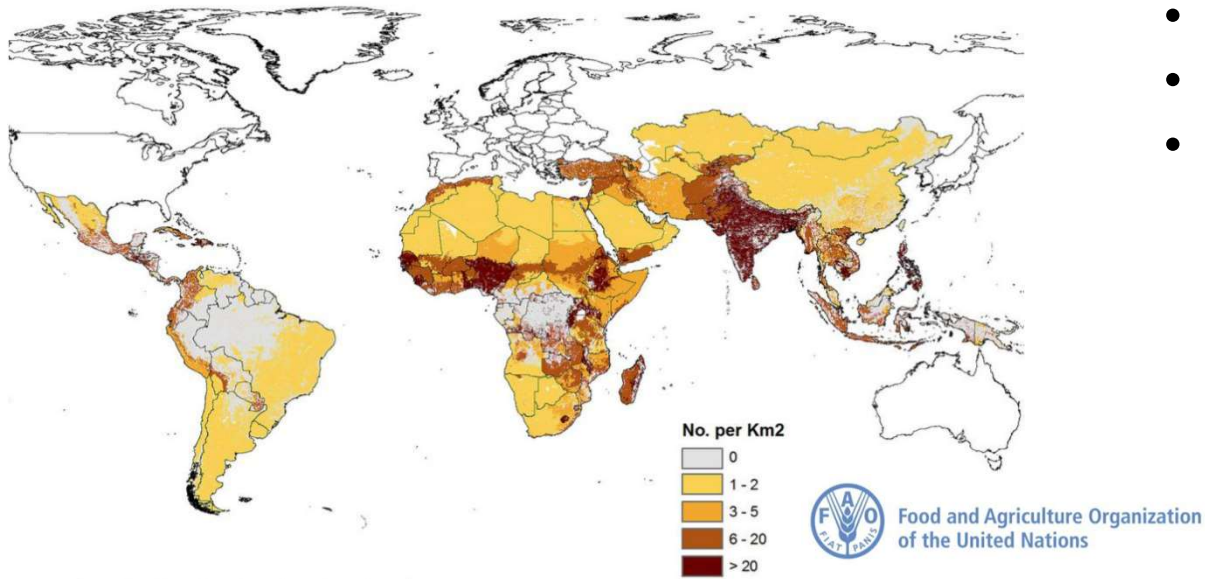
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Part 1: A world without livestock is a nonsense

A humanitarian, economic and agronomic nonsense

- Livestock provides livelihood to more than 800 million poor people

Density of Poor Livestock Keepers
Year 2010*



- In smallholders family farming systems, livestock enhances food security
 - Nutritious food
 - organic fertilizer for crops & soils
 - workforce and transport (lack of roads)
 - source of regular income and savings
 - gender equity

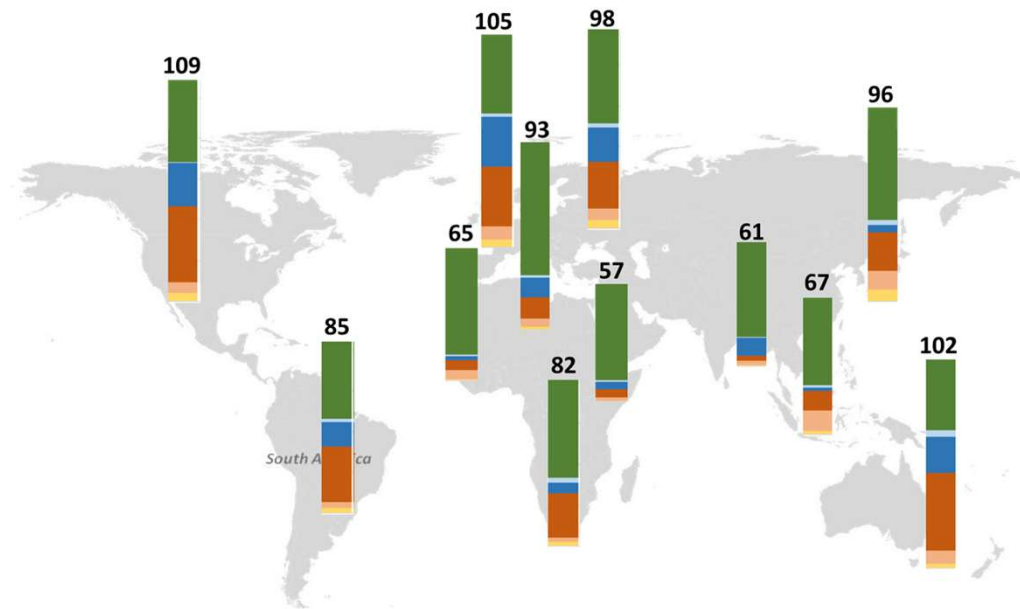


A nonsense for global food and nutrition security

- A lack of protein of animal origin cause anemia and stunting in some parts of the world



Food and Agriculture Organization
of the United Nations



- Food from marginal lands?
Ruminants can do!!!
- In Europe, permanent grasslands and rangelands cover 73 M ha (40% Eu AA)



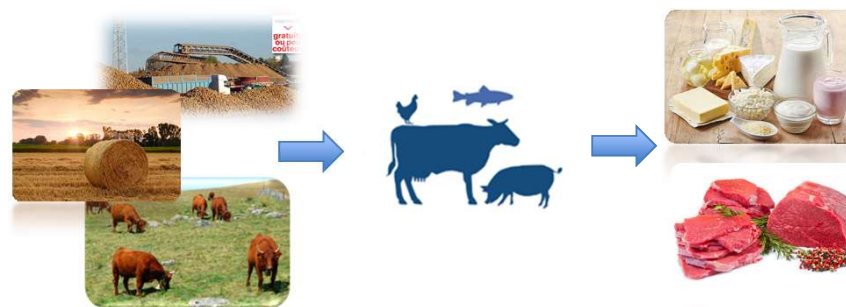
- 360 M cattle and 600 M small ruminants provide 25% of world animal product from marginal land



Livestock farming for a more efficient agriculture

We would feed more people without livestock: it's wrong!

- Complementarity between livestock and crops to maximize food production
 - Valorisation of co-products
 - Valorisation of uncultivated land



Non edible biomass

20 g protein/hab/day

(Adapted from Van Kernebeck et al., 2014 et De Boer et al., 2018)

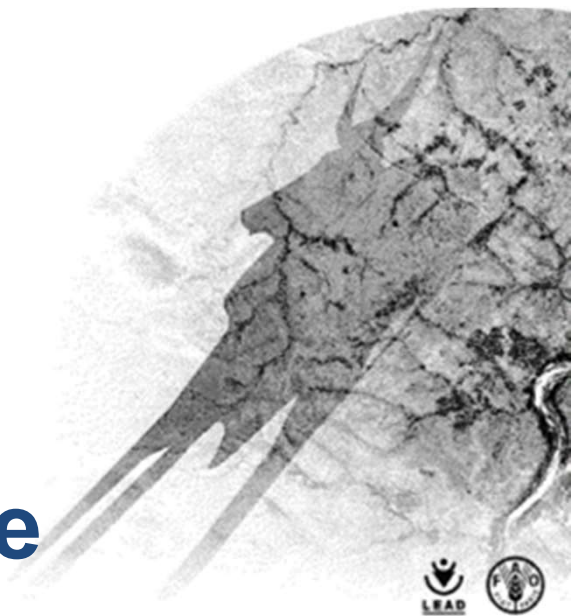
- More land is needed to feed a vegan population than a population eating 20 g of protein of animal origin per day (1/3 of the current supply of animal protein)

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Part 2: Shadows and benefits of livestock: beyond false assumptions, towards a more balanced vision



Livestock between Food and Feed!

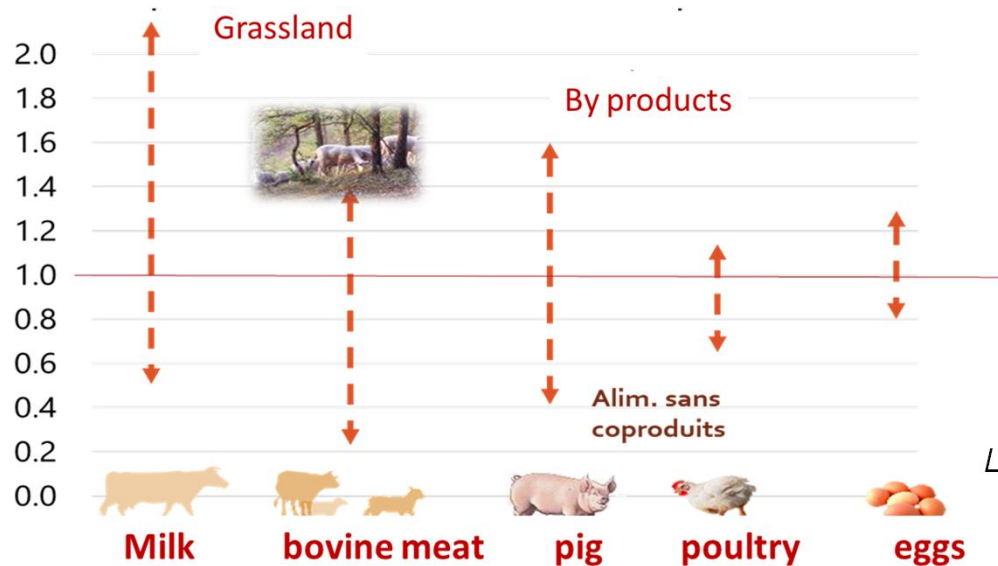
“10 kg of plant proteins to produce 1 kg of animal proteins!”

- Livestock consume 6 Billion tons dry matter, of which 86% are non edible as human food

Mottet et al., 2018

Kg of protein of animal origin per kg of edible plant protein used as feed

- Feed vs food competition does in fact concern those proteins of plant origin that are consumable by human (actually not consumed by animals)

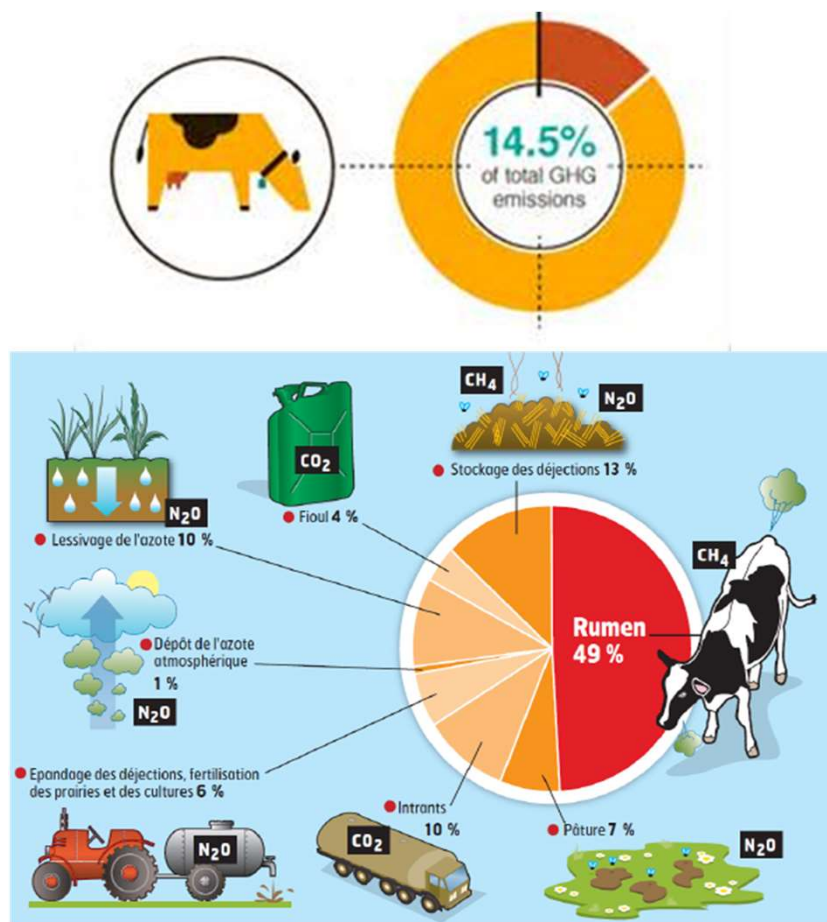


Laisse et al., 2018

Real Carbon footprint of ruminants



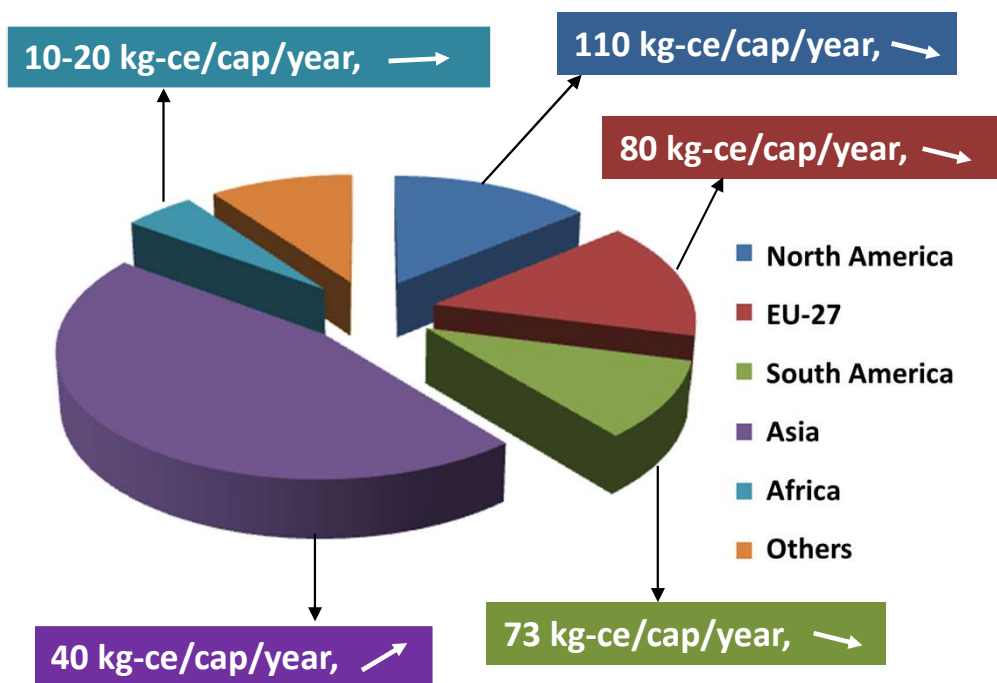
> 40% reduction



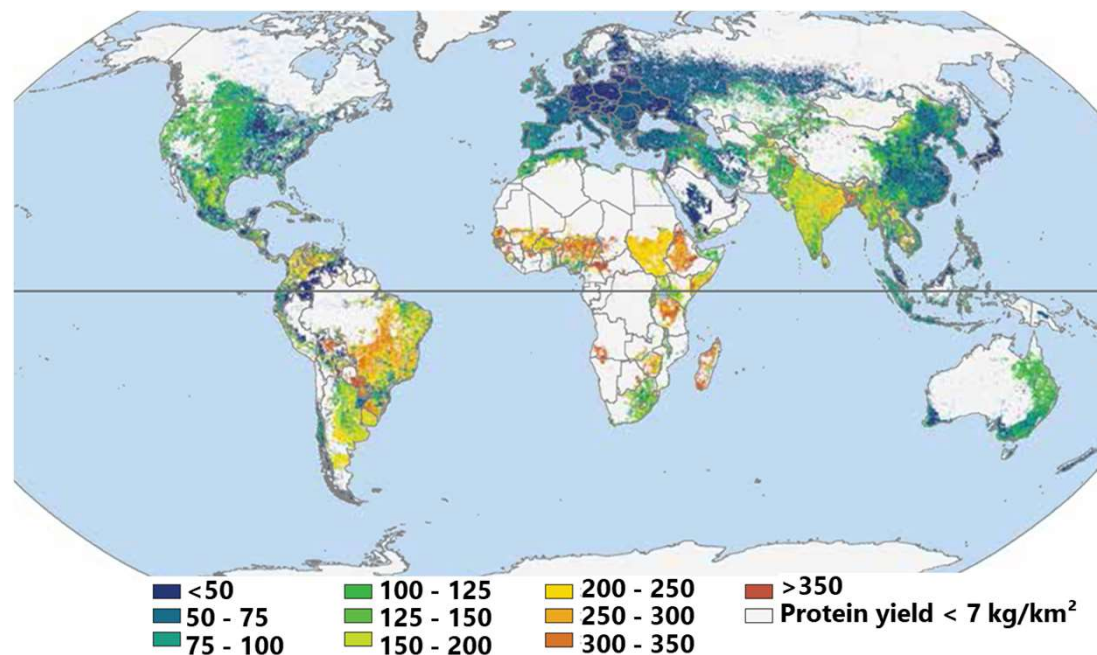
- Genotyping low methane production for selection
- Rumen microbiomes
- Improving animal health and husbandry conditions
- Smart use of manure
- More C sequestration (grassland, agroforestry)
- Precision Livestock Farming
- Feed production (circularity)
 - More efficient production (legumes)
 - Better agricultural land use (rotations)
 - Less/no specific feed production

Meat consumption vs GHG emissions: where are the challenges?

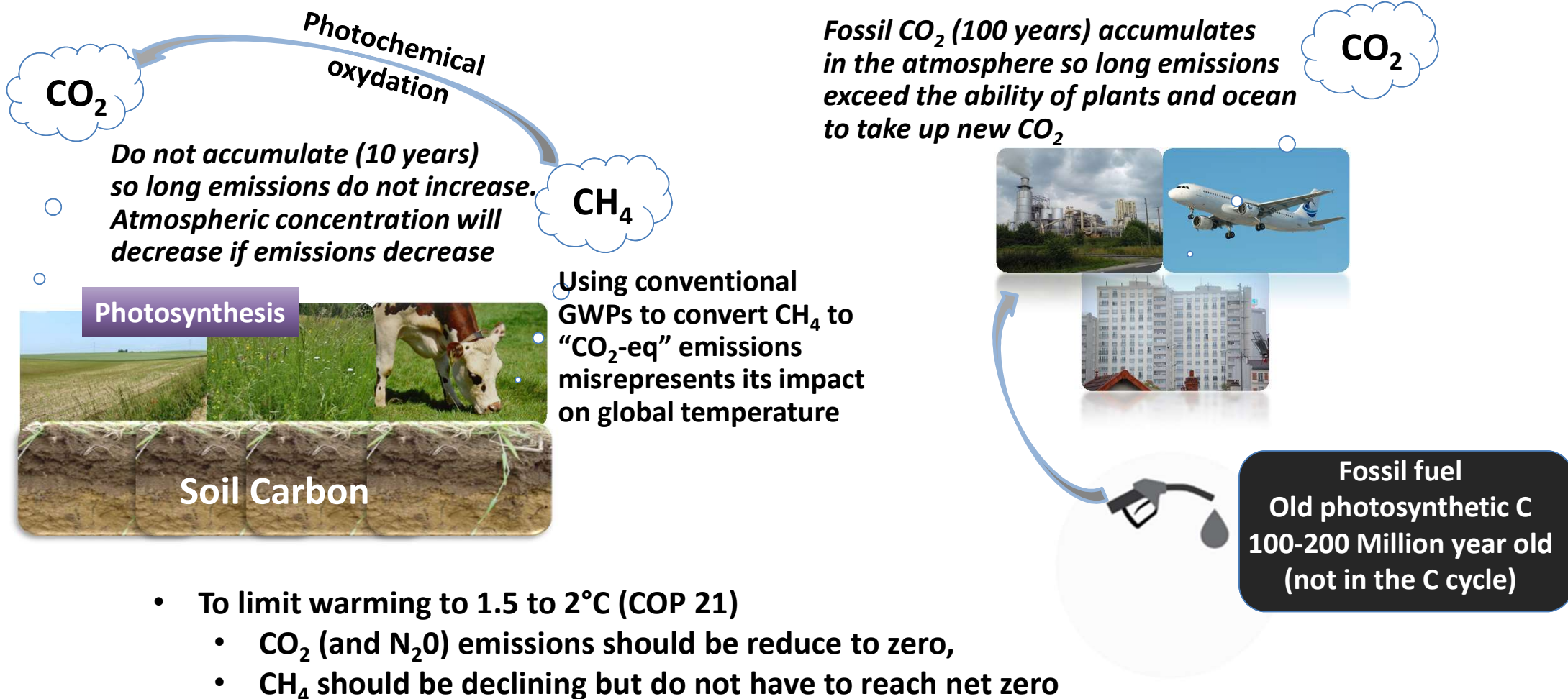
- Meat consumption



- Emission intensity



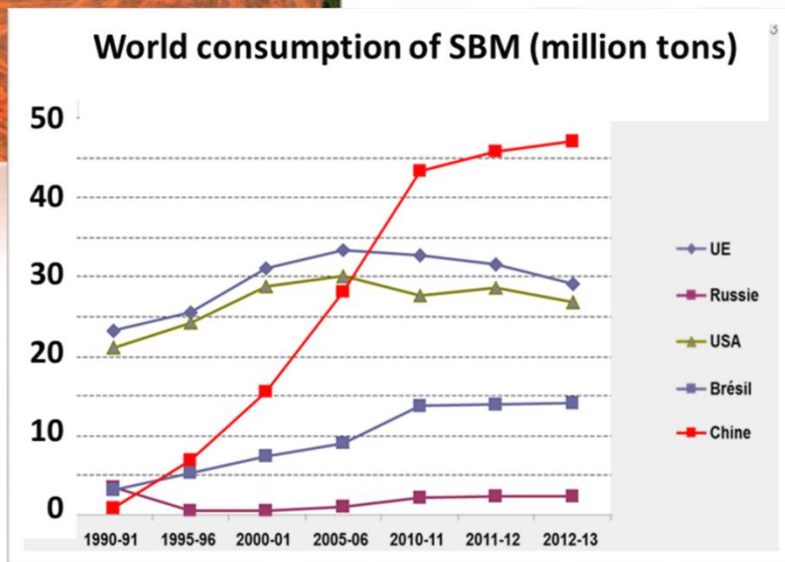
Is cow methane to blame for global warming?



Adapted from Allen et al., (2018) - Nature

The ambivalent effect of livestock on biodiversity

- Intensive livestock contributes to biodiversity losses

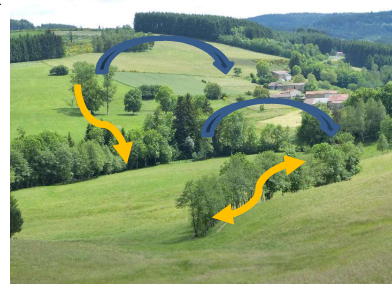


- Ruminants produce biodiversity

- Diversity of forage species (including honey plants) and grassland types

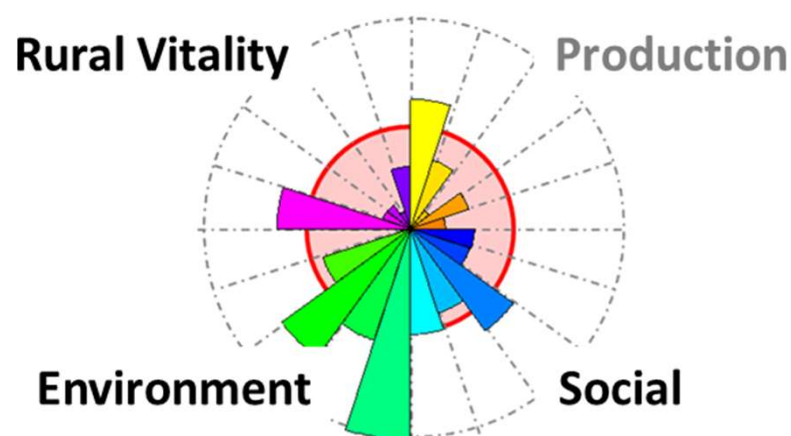
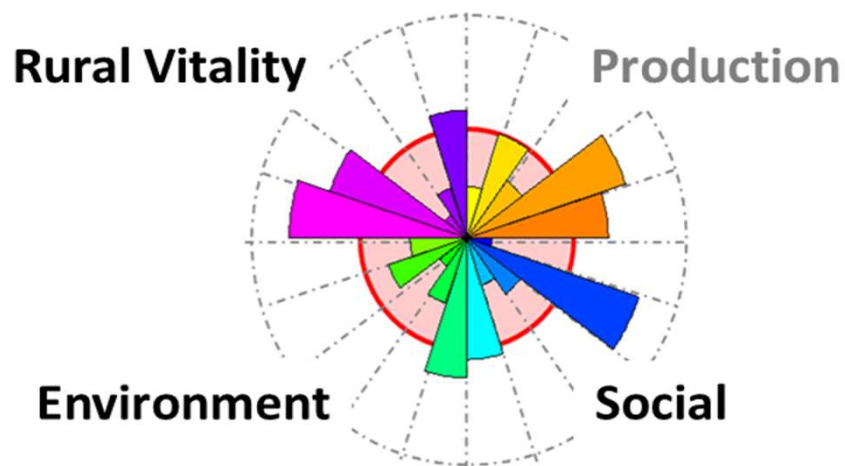


- Diversification of land uses, landscapes and maintenance of open habitats (with grasslands)



Livestock provides ecosystem and social services

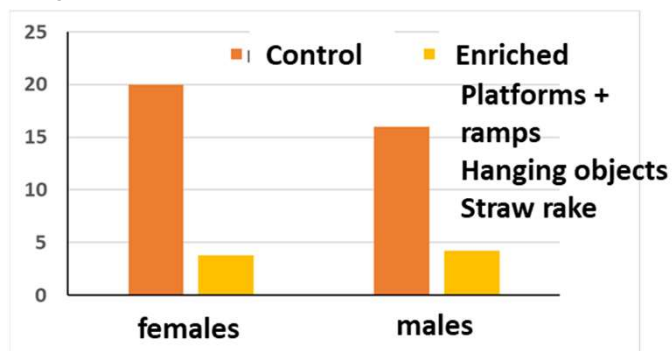
- Various benefits of a sustainable EU livestock sector for rural area
- The bundle of services varies according to local contexts
 - Intensive systems
 - Extensive systems



Designing animal-friendly systems

- Enrichment of the environment

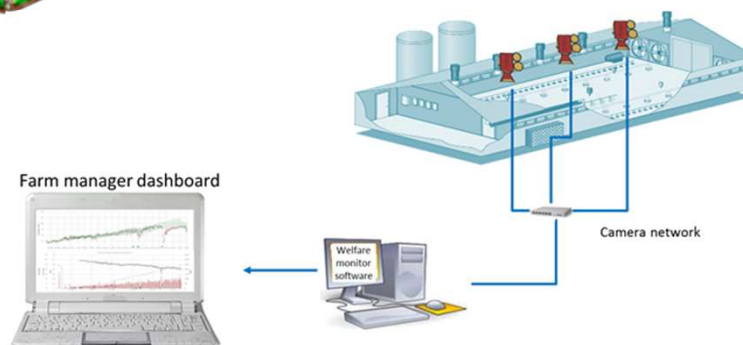
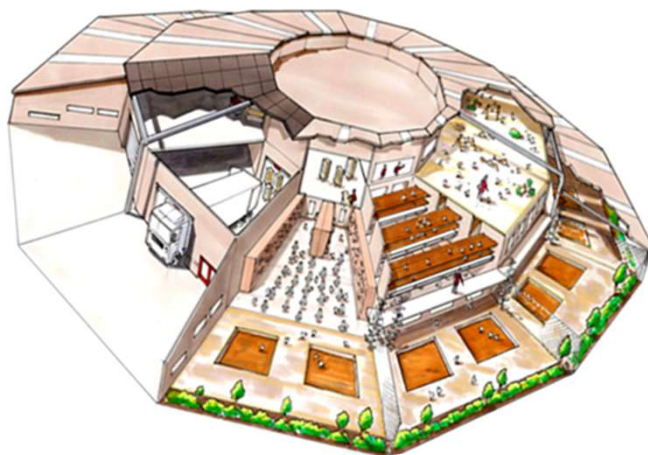
% injured animals



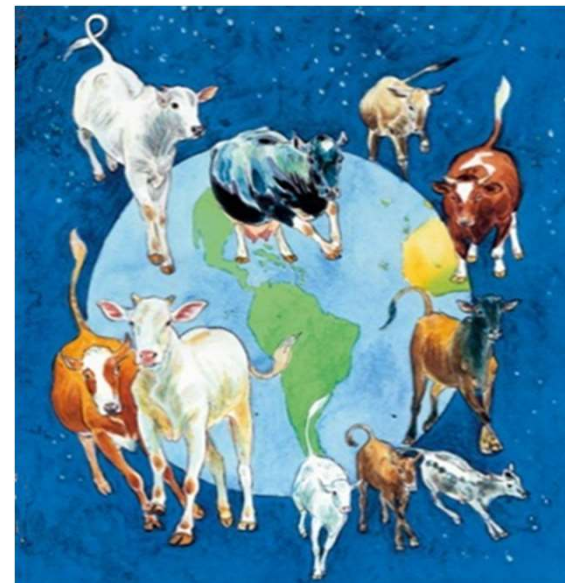
Mirabito et Michel (2003)



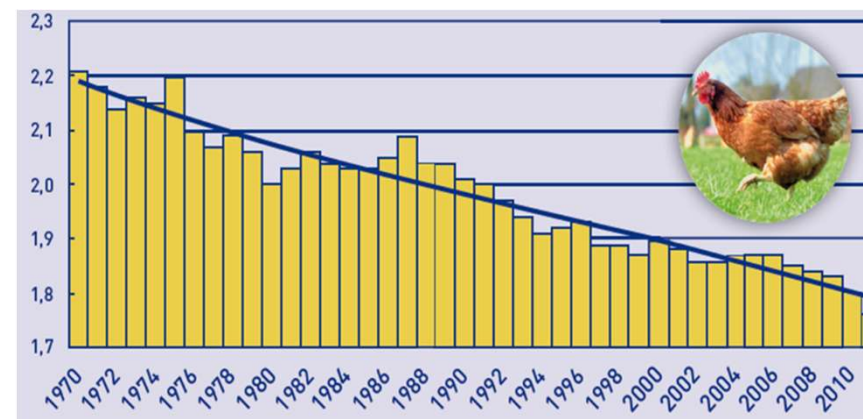
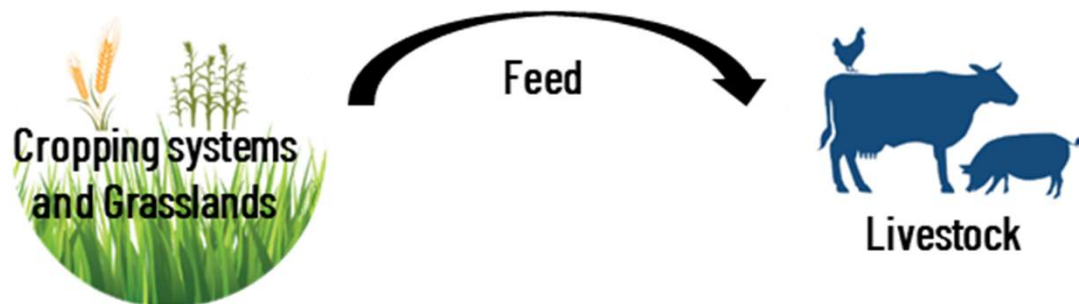
- Innovative buildings and precision livestock farming



Part 3: Changing paradigms: towards a renewed place and role of livestock farming in agri-food systems



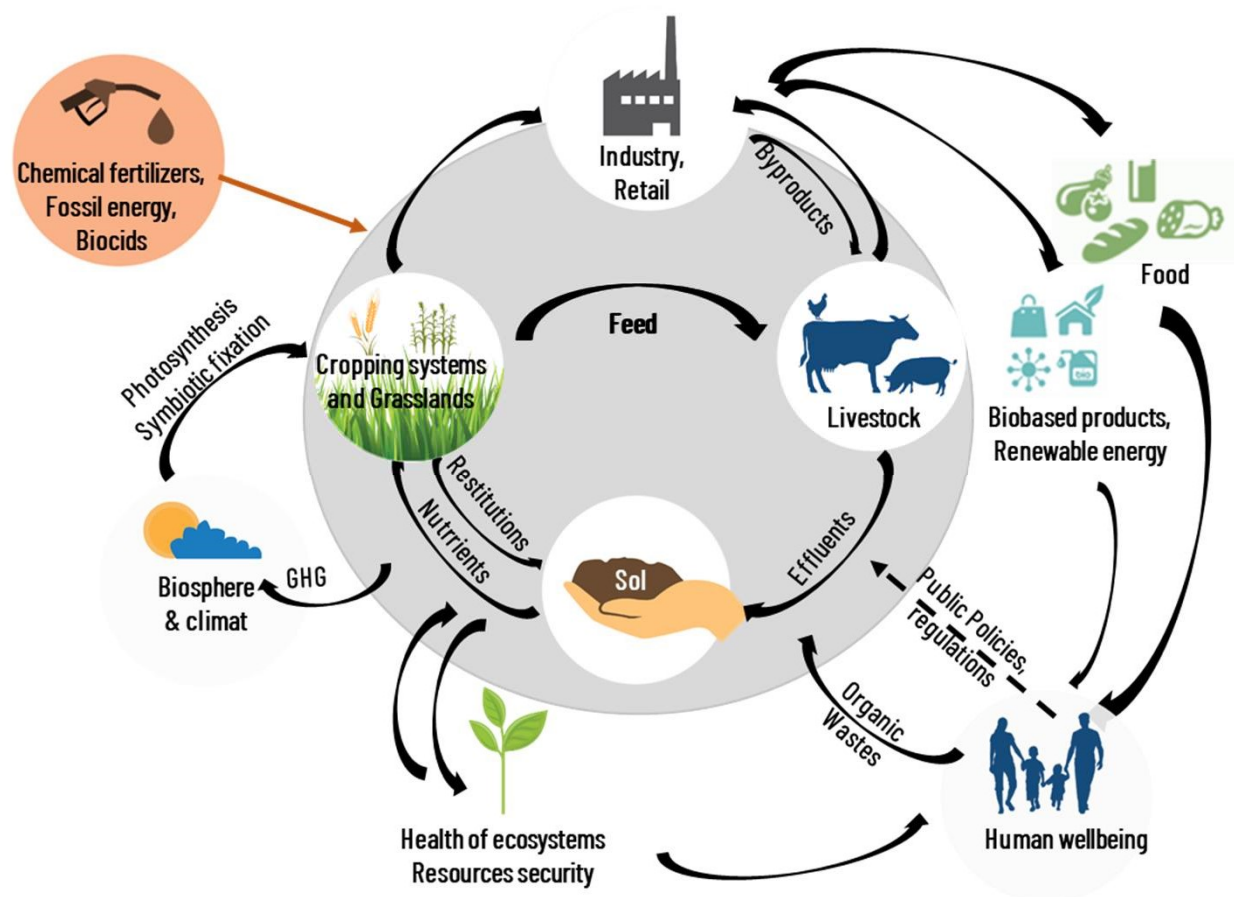
The “linear” vision



- This as led to significant productivity gains but
 - In a linear way of thinking (resource → production → product → waste)
 - Without considering the amount and origin of mobilized resources
 - Without preventing the degradation of ecosystems

A new paradigm

Livestock is a key issue for sustainable circular agri-food systems



- Rethinking the place, roles and performances of livestock
- Rethinking the links between livestock, crop production, soil fertility and environment
- Rethinking the links between livestock, livestock products and consumption of animal based products
- Balances are to be found according to the political choices and the territorial contexts.
There is no « one size fits all » optimal solution

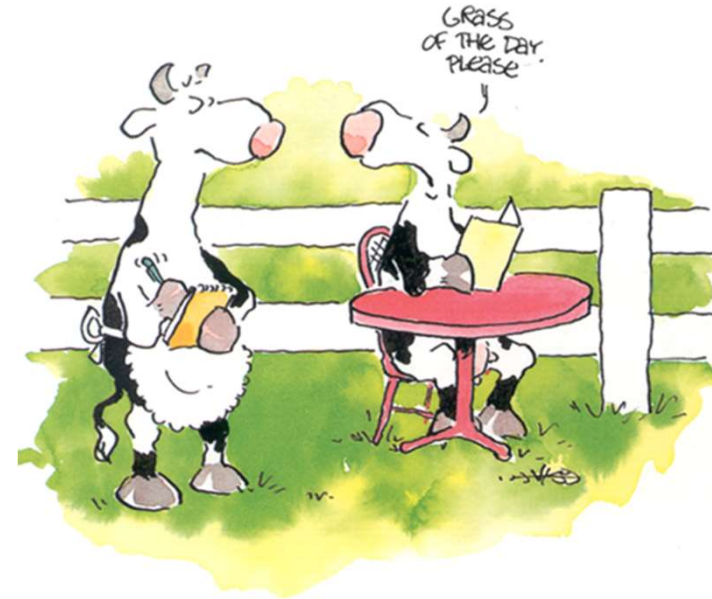
The logo for the Animal Task Force (ATF) features the lowercase letters 'atf' in a bold, white, sans-serif font, set against a dark blue rectangular background.

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Part 4: Take home messages

- Think twice: do not step into a simple and narrow vision of livestock farming systems
- Reducing impacts of livestock farming is essential: the shadow of livestock can be mitigated
- Livestock is not only a problem, it is also part of the solution for circular sustainable agri-food systems
- Livestock farming systems should change to regain legitimacy
- Europe needs an ambition for livestock farming systems: articulate local and global, transformation or improvement, food production and/or immaterial functions (multifunctional livestock) ?



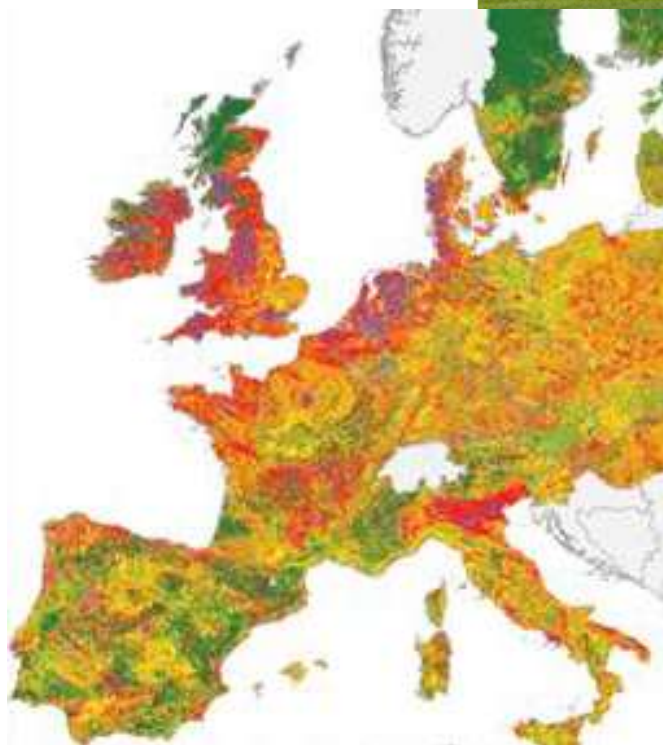
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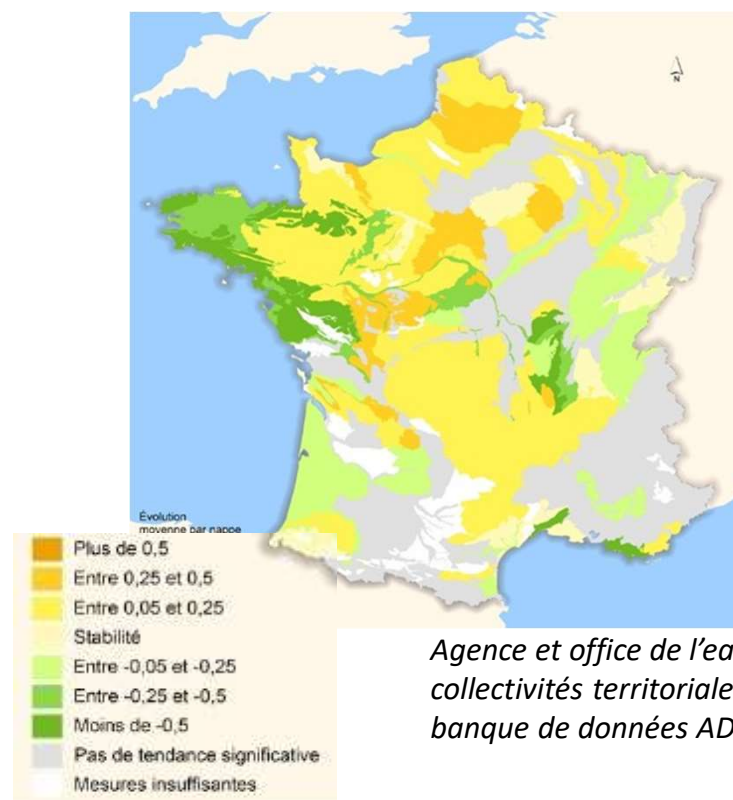
Local pollutions

NO₃ Emissions



Nitro Europe (2011)

Evolution of nitrate levels (mg / year) in groundwater (1998 – 2014)

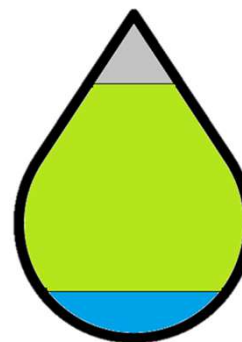


Agence et office de l'eau,
collectivités territoriales, BRGM,
banque de données ADES 2013

Water consumption by livestock

« 15 000 L of water per one kg of meat! »

- What are we talking about?
 - Green water (soil water consumed for crop cultivation): more than 95% is recycled
 - Blue water (surface water and groundwater)



- Livestock consume 8 to 15% of water resource worldwide (FAO, 2014)
- Comparison of farming systems

| | |
|-----------------------|-------------|
| 1 kg beef meat | 22 – 520 L |
| 1 kg pig/poultry meat | 190 L |
| 1 kg milk | < 1 - 100 L |
| 1 shower | 50 – 70 L |

Doreau et al. (2014)