



Food and Agriculture Organization  
of the United Nations

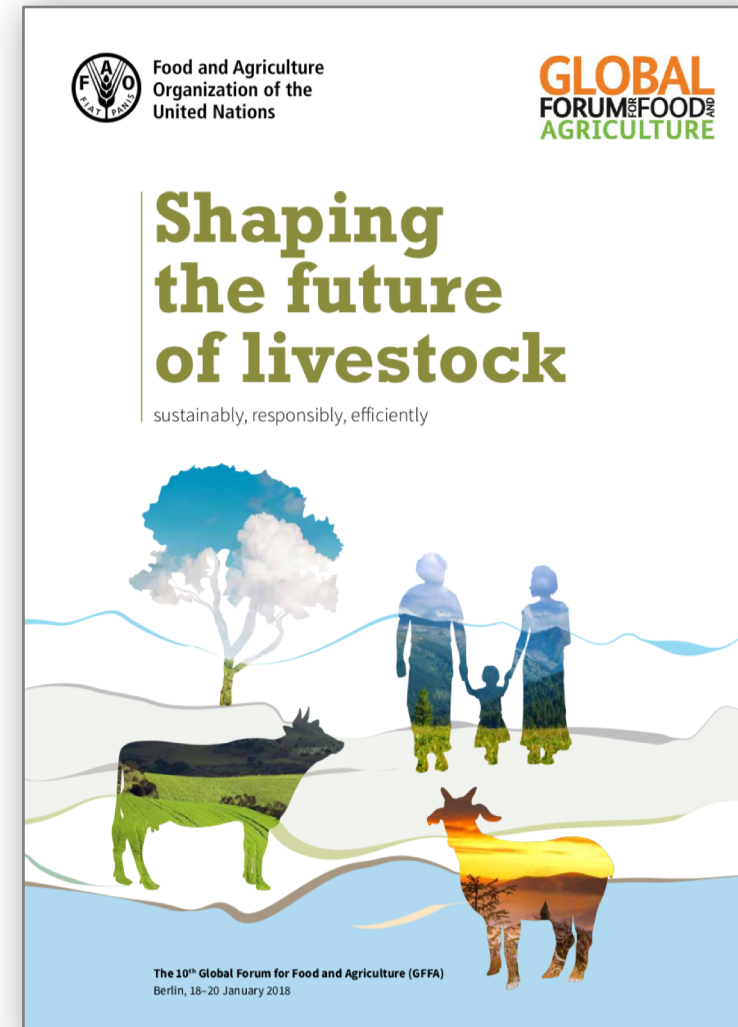
# Tools for future livestock planning

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Timothy Robinson *FAO*

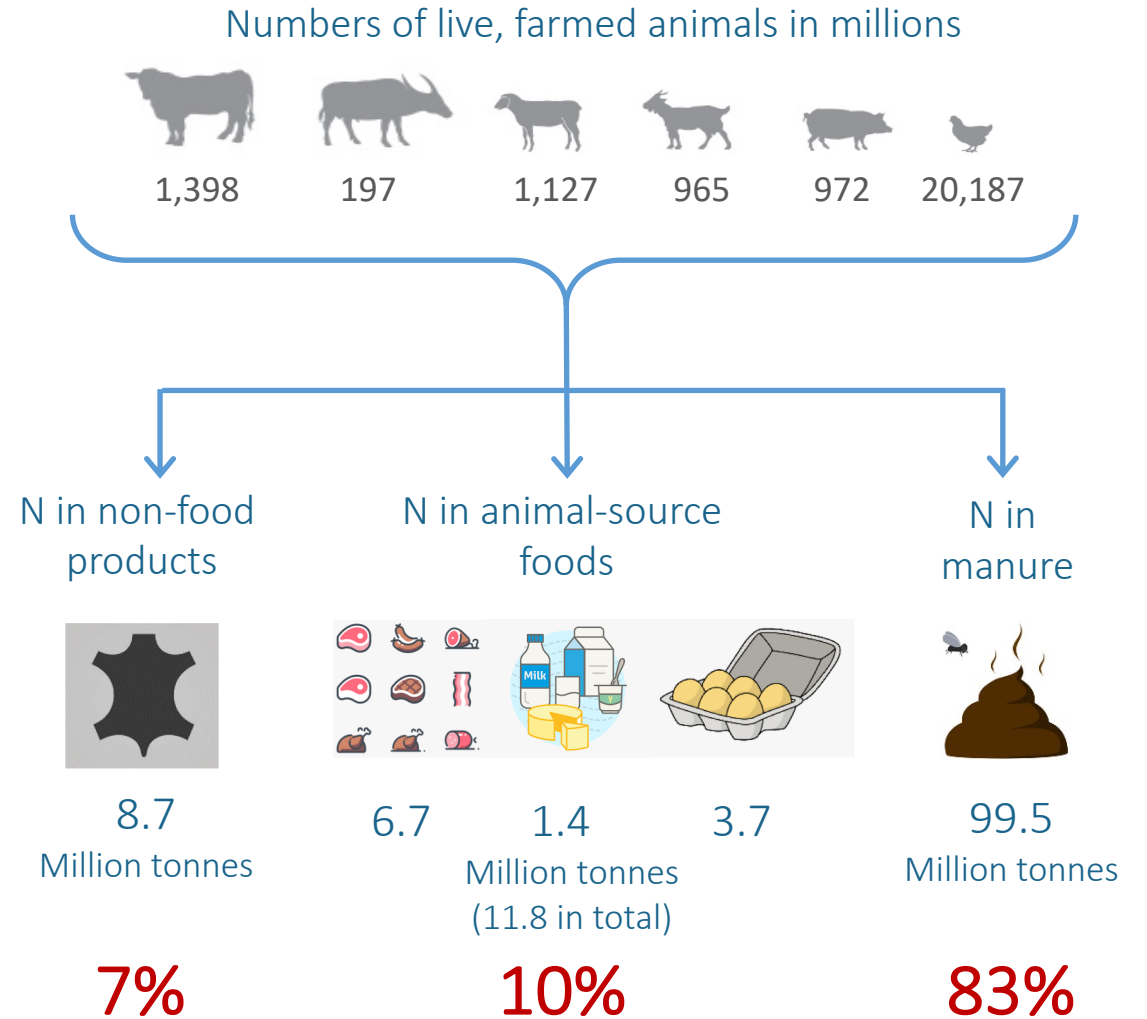
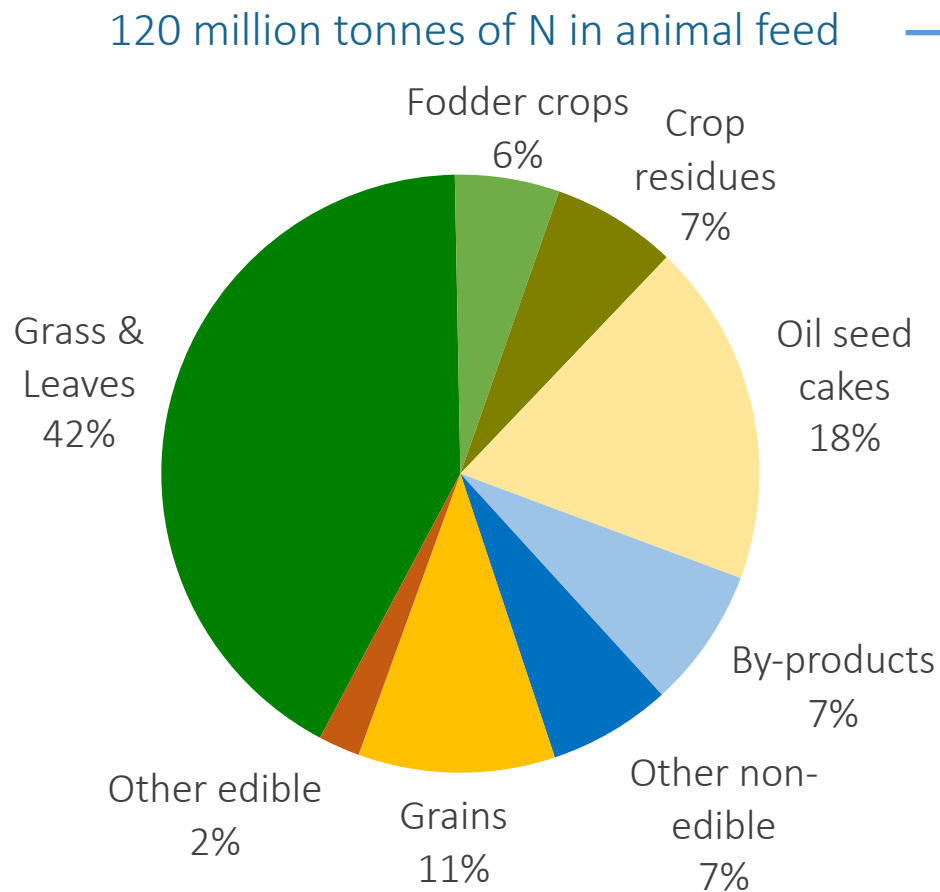


# Shaping the future of livestock - GFFA

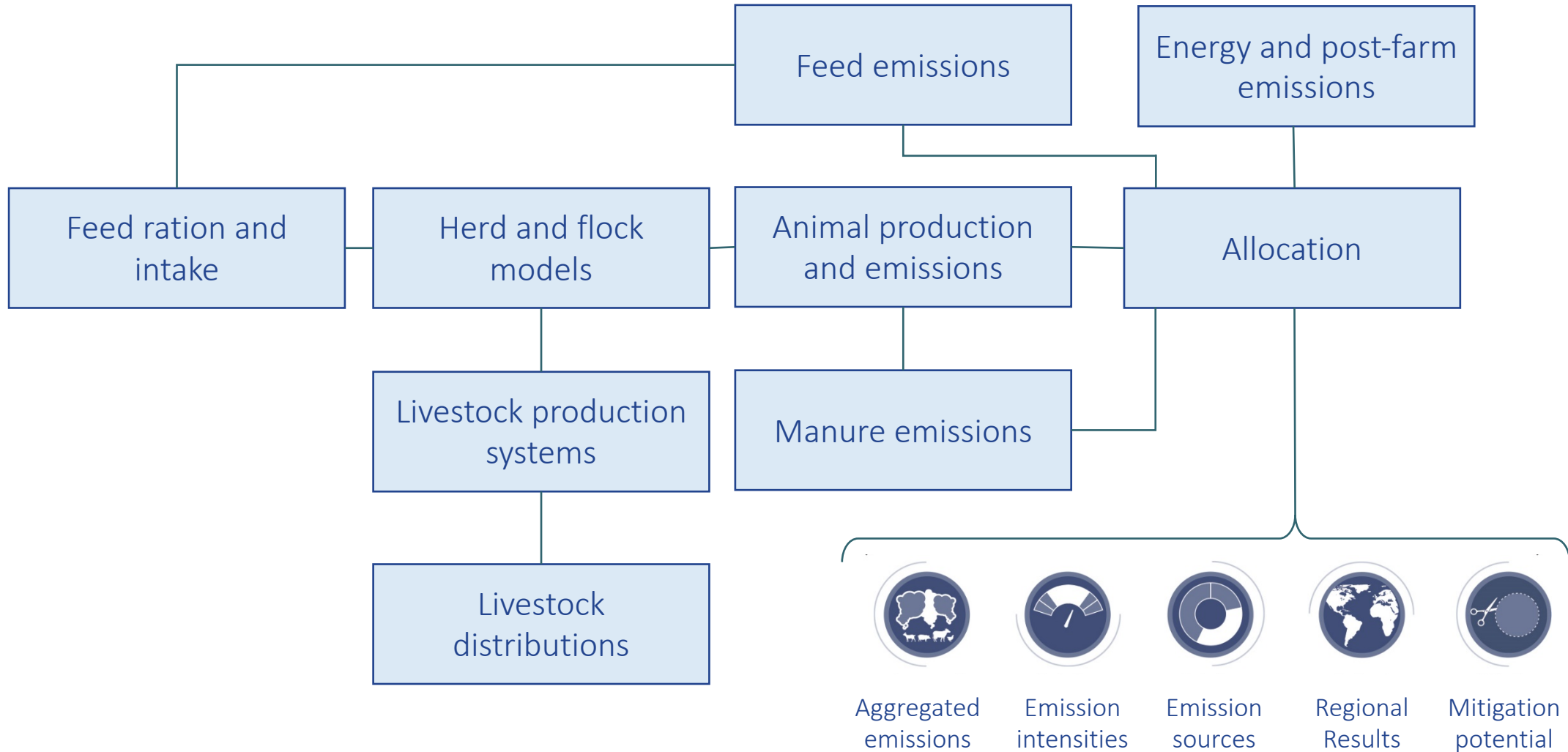


# Inefficiencies in livestock production

## The fate of the nitrogen fed to farmed animals

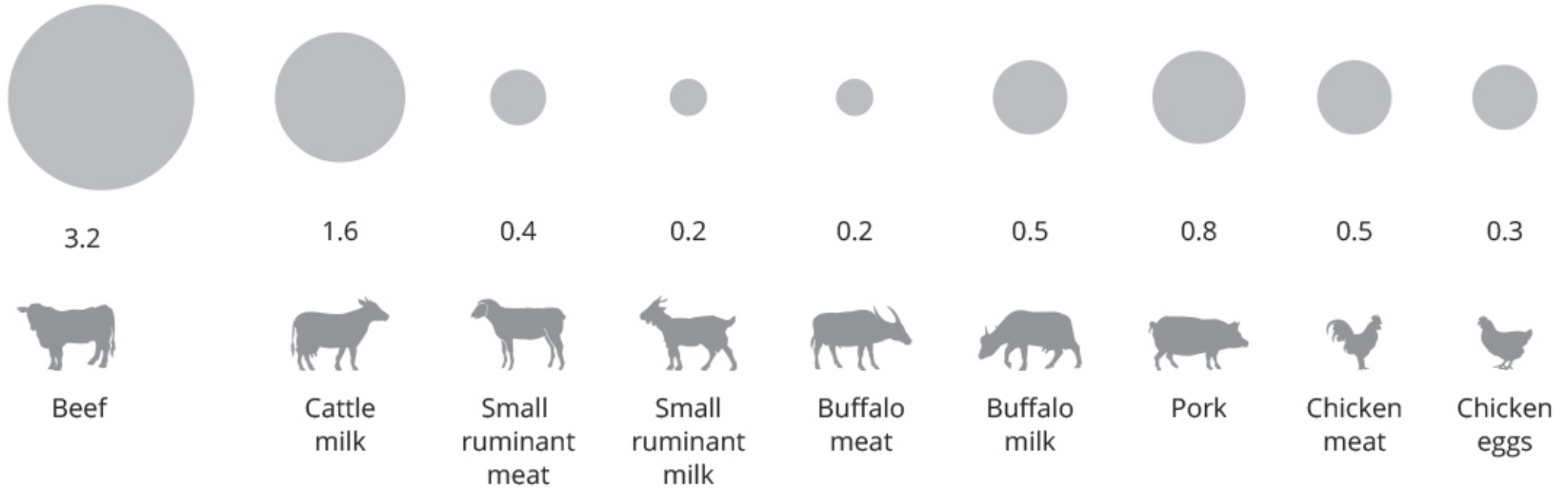


# GLEAM: Workflow for livestock emissions

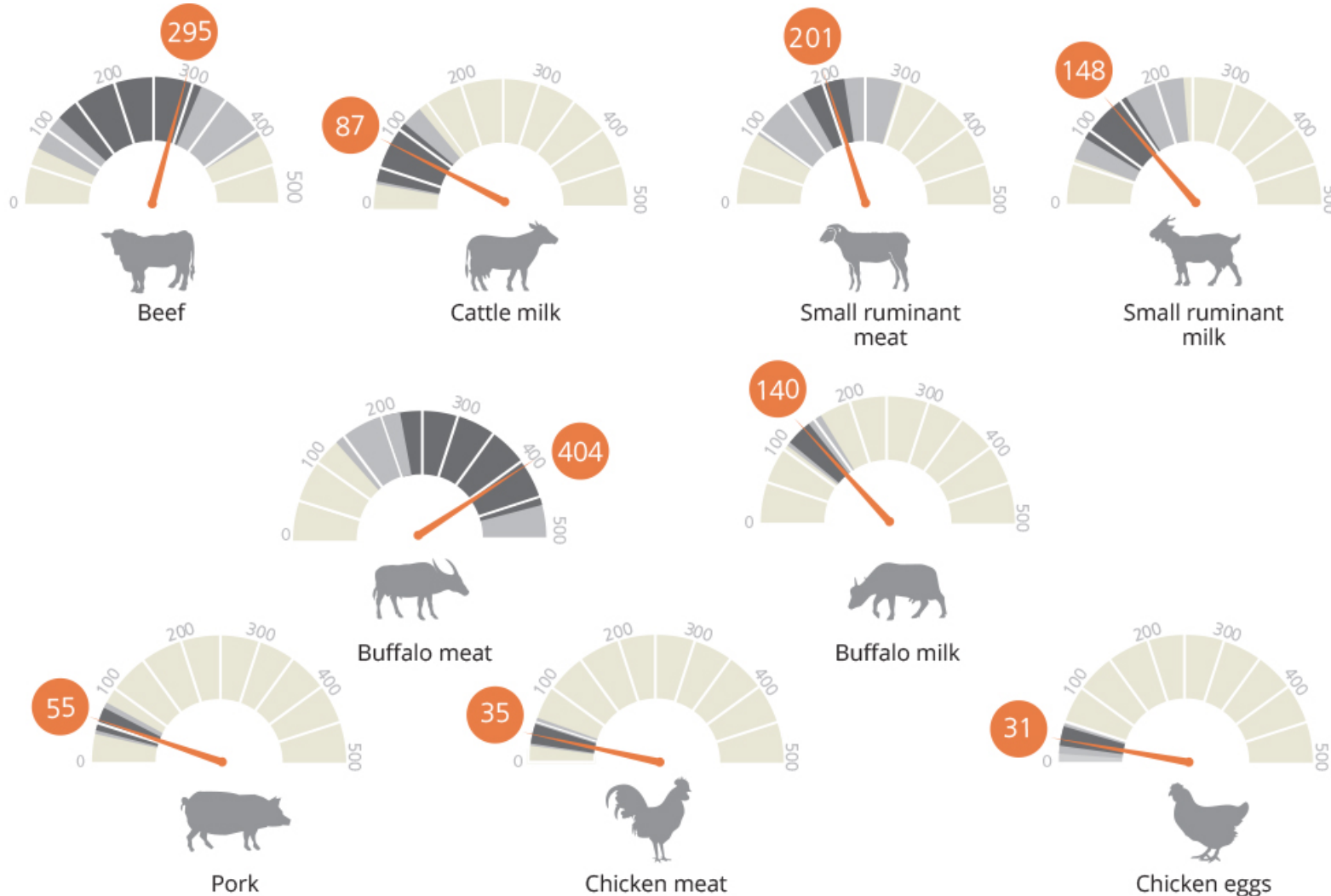


# Aggregated emissions

Gt CO<sub>2</sub> eq. per year



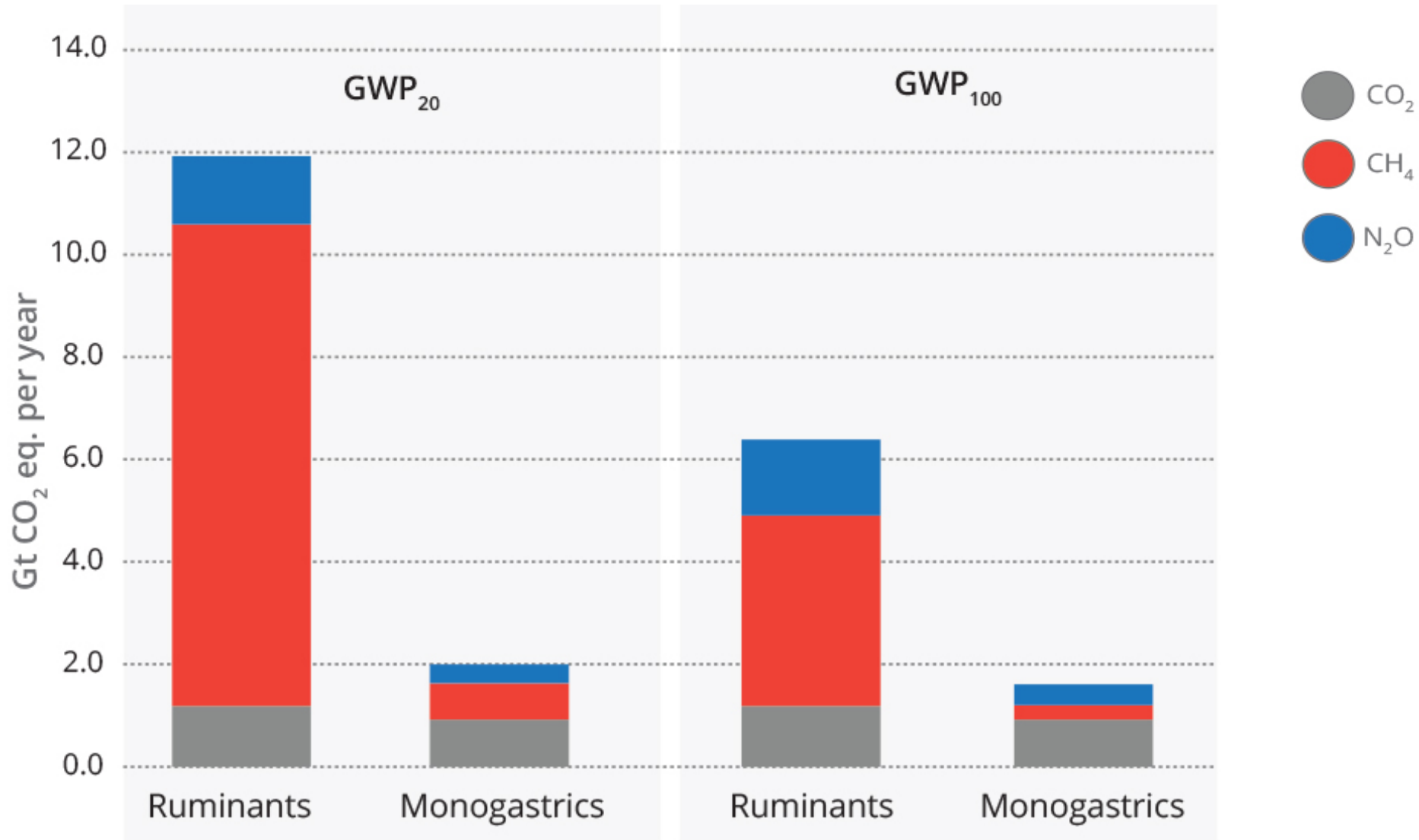
# Emission intensities



Kg CO<sub>2</sub> eq. per kg protein

- Average
- 90% of production
- 50% of production

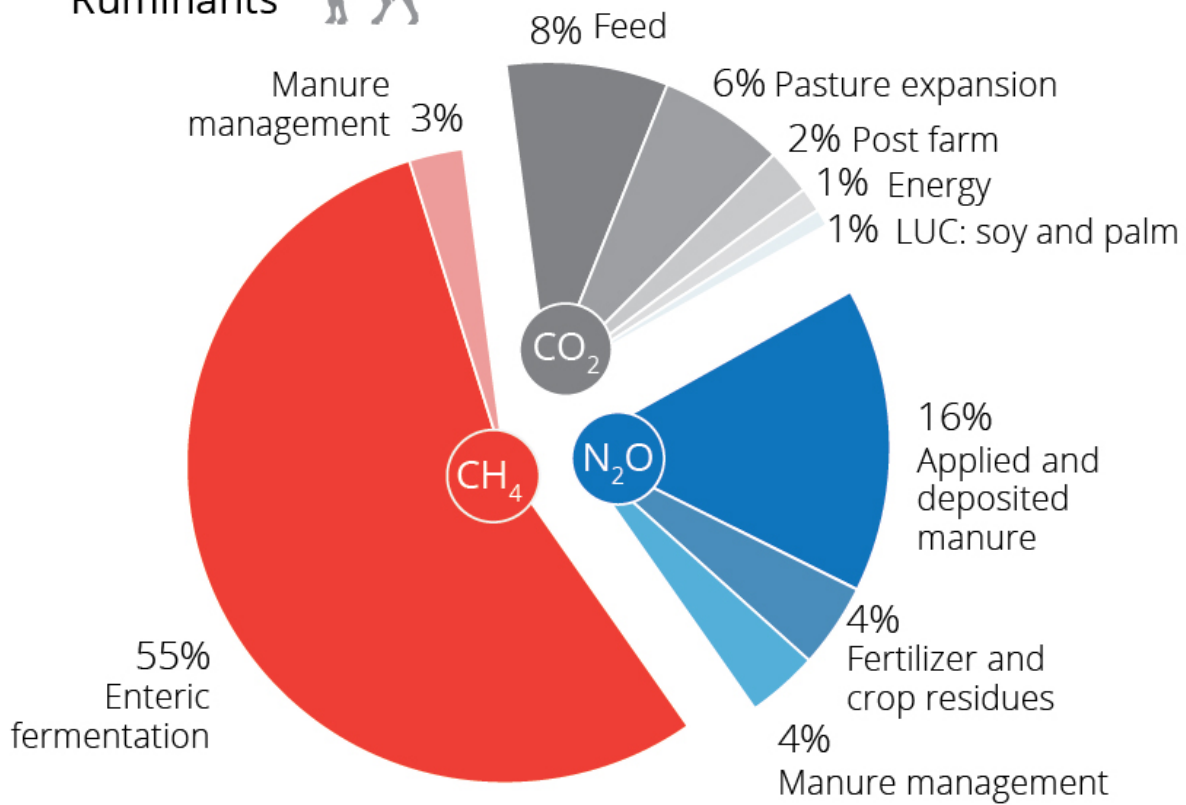
# Different gasses, systems and measures



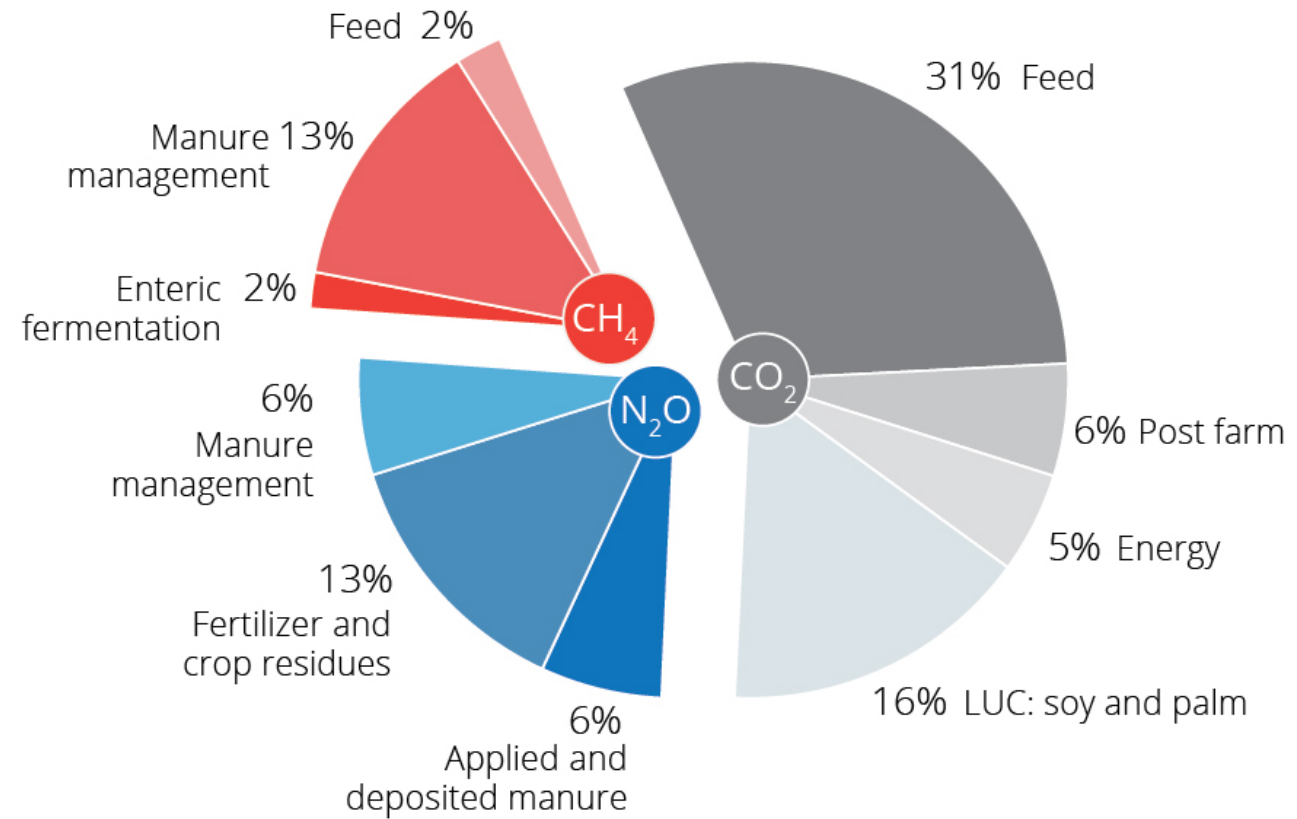
# Different gasses, systems and sources



Ruminants

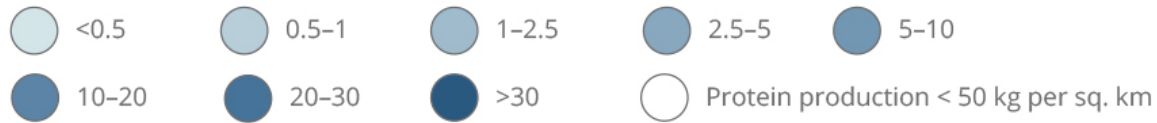
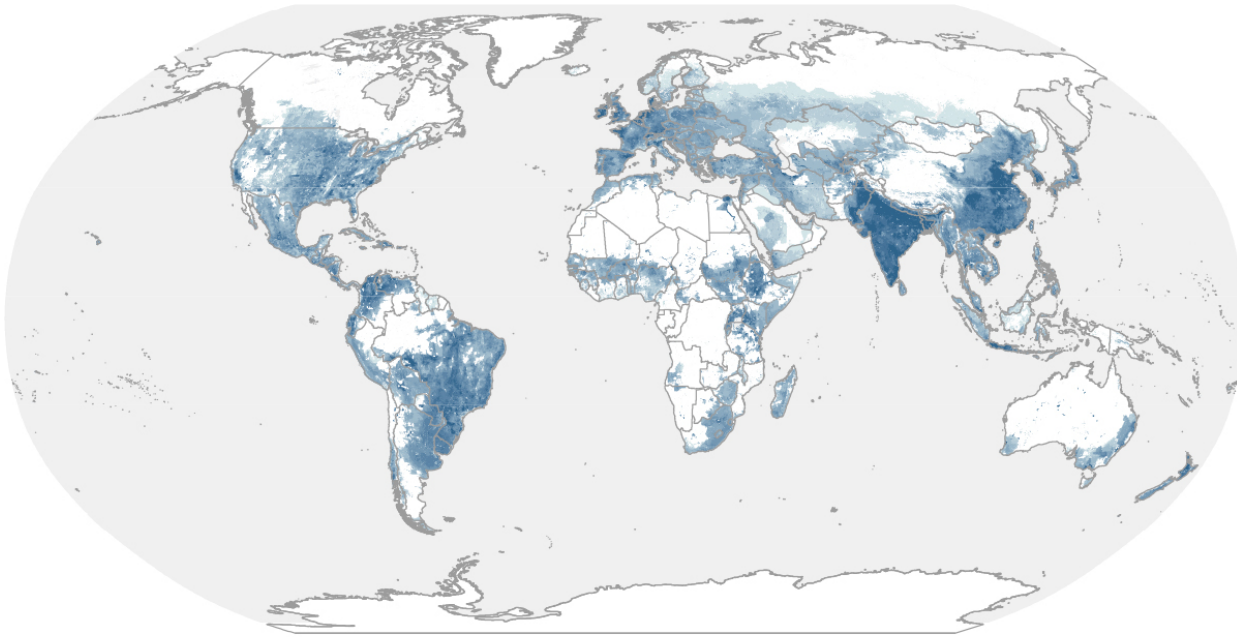


Monogastrics

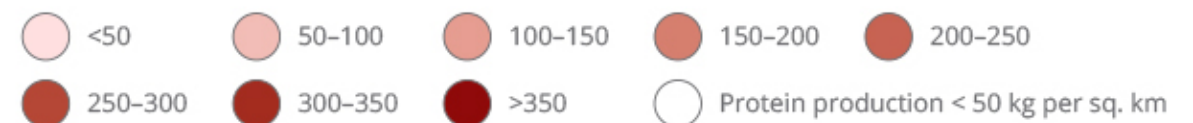
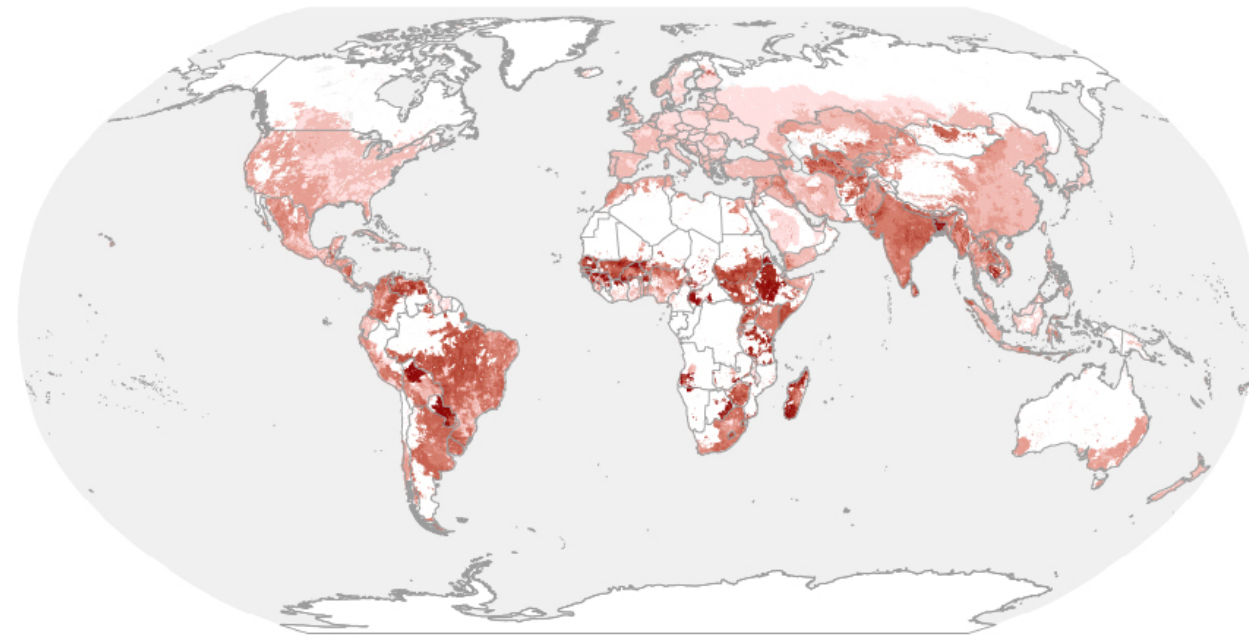


# Regional results

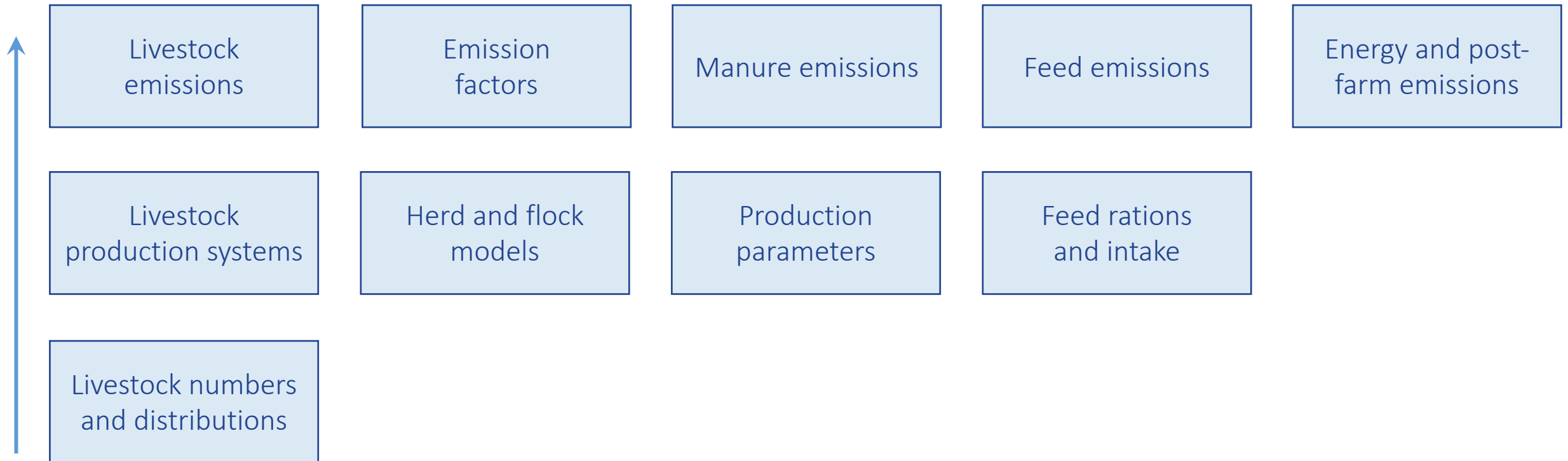
Total emissions  
Kg CO<sub>2</sub> eq. per year x 1 million



Emission intensities  
Kg CO<sub>2</sub> eq. per kg of protein

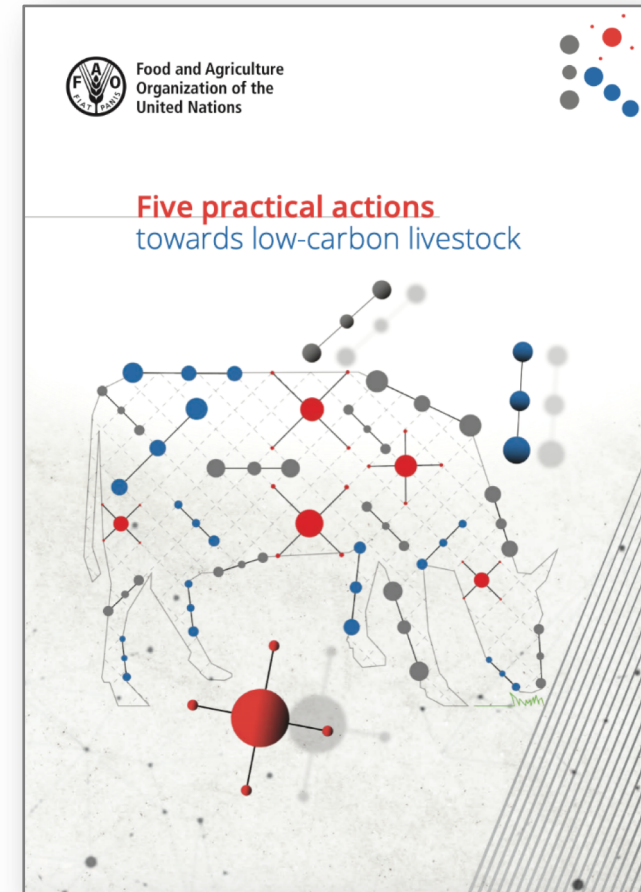


# Sources of error in livestock emissions



# Five practical actions towards low-carbon livestock

- Action 1. Boosting **efficiency** of livestock production and resource use
- Action 2. Intensifying **recycling** efforts and minimizing losses for a circular bio-economy
- Action 3 Capitalizing on nature-based solutions to ramp up **carbon offsets**
- Action 4. Striving for healthy, sustainable diets and accounting for **protein alternatives**
- Action 5. Developing **policy** measures to drive change



# Tackling livestock emissions .. a systems approach

- Need to account for the diversity of livestock production systems
- Appreciating diverse roles that livestock play in different contexts .. motivation
- The sources of emissions vary for different livestock systems
- Different GHGs work differently and these vary for different systems
- Mitigation approaches need to be tailored to different environments
- Need to enhance synergies
  - productivity
  - Adaptation to climate change
  - Enhanced resilience
- Need to manage tradeoffs with other sustainability objectives
  - Food and nutrition security
  - Livelihoods and economic growth
  - Animal health and welfare (also as it relates to public health)
  - Climate and natural resource use