



GHG emissions from beef production

A global perspective

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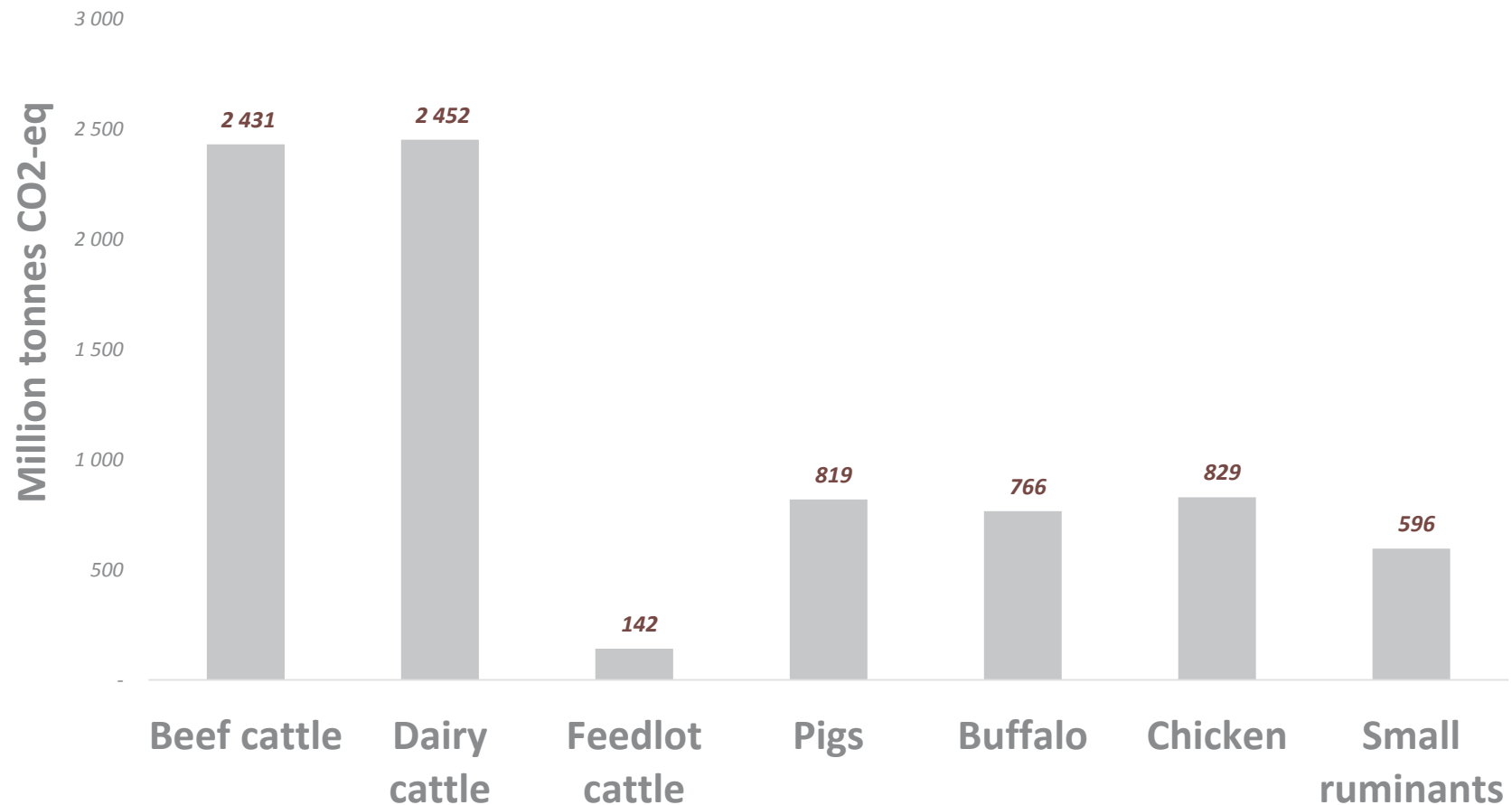
Livestock for food security & nutrition

- Livestock provide 18% of global kcal and 34% of global protein, beef provides 5% of global protein
- Beef is a source of essential micronutrients – vitamin B12, riboflavin, iron, zinc
- Ruminants transform grass and by-products into human edible food
- Livestock provide a range of services beyond food: manure, drought power, income & livelihood, economic & environmental
- Livestock are kept by 60% of rural household in developing countries, including 1 billion poor, 150 million pastoralists



Overview of global beef emissions

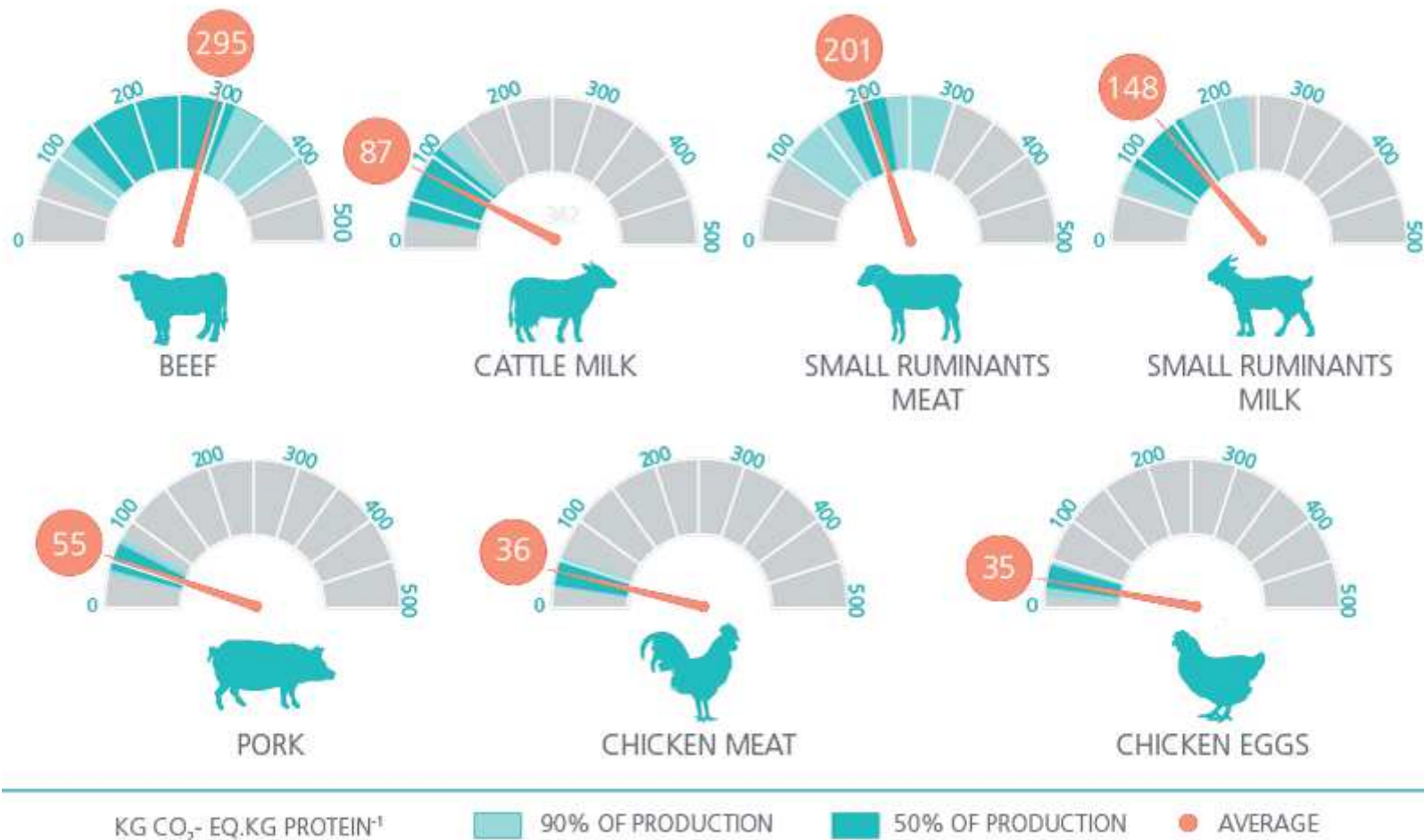
Compared to other species (total emissions)





Overview of global beef emissions

Compared to other species (emission intensity)

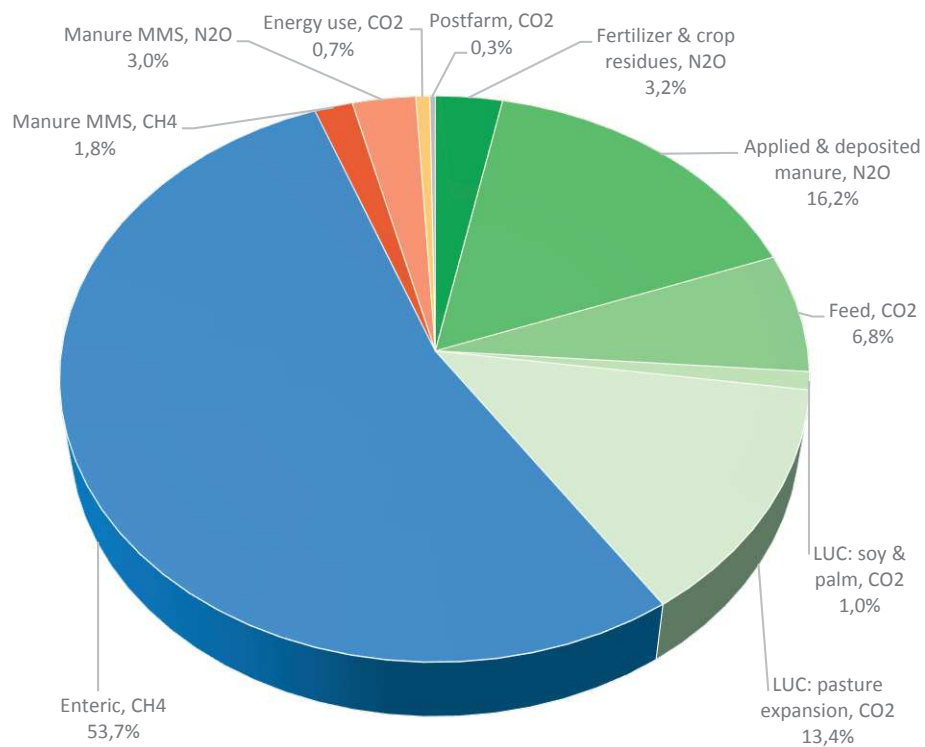




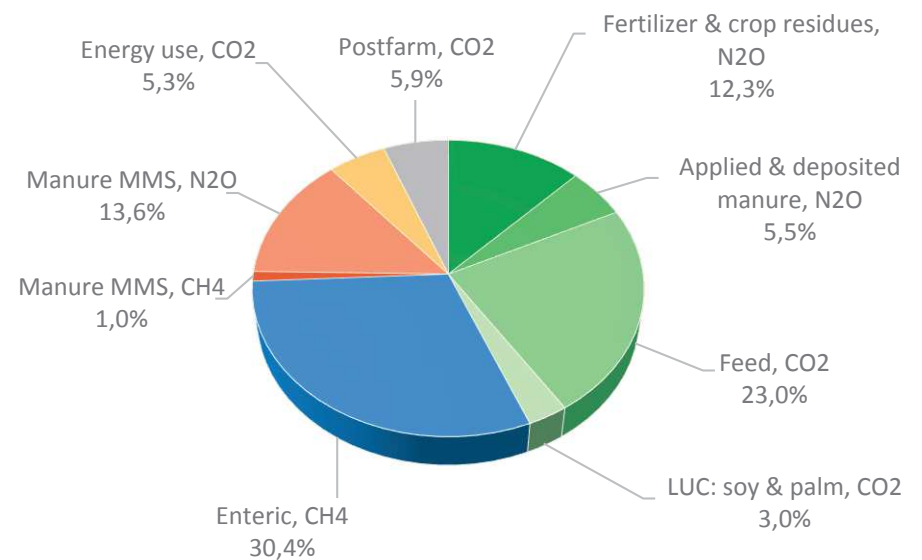
Overview of global beef emissions

Emissions by sources

All beef



Feedlot (finishing phase)





Low carbon livestock: growing recognition

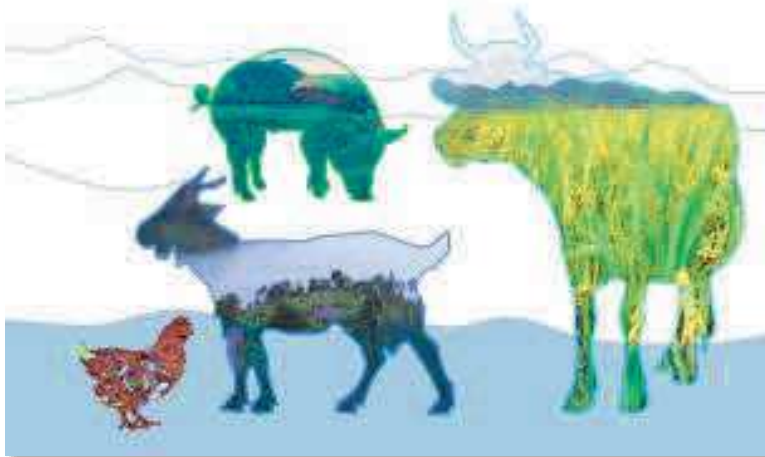
- Growing demand for livestock products, especially in developing countries (+200% by 2050 in Africa?)
- 92 developing countries have included livestock in their INDCs
- COP23 Bonn: agriculture now explicitly addressed in the negotiation process
- Countries to submit their views on improved livestock management, soil carbon and fertility in grassland, nutrient use and manure management



Low carbon livestock: growing recognition



Livestock solutions for climate change



- Productivity improvements to reduce emission intensity
- Carbon sequestration
- Livestock integration in the circular bio-economy



Reducing enteric methane emission intensity

Global project to identify high potential areas of intervention and cost-effective approaches

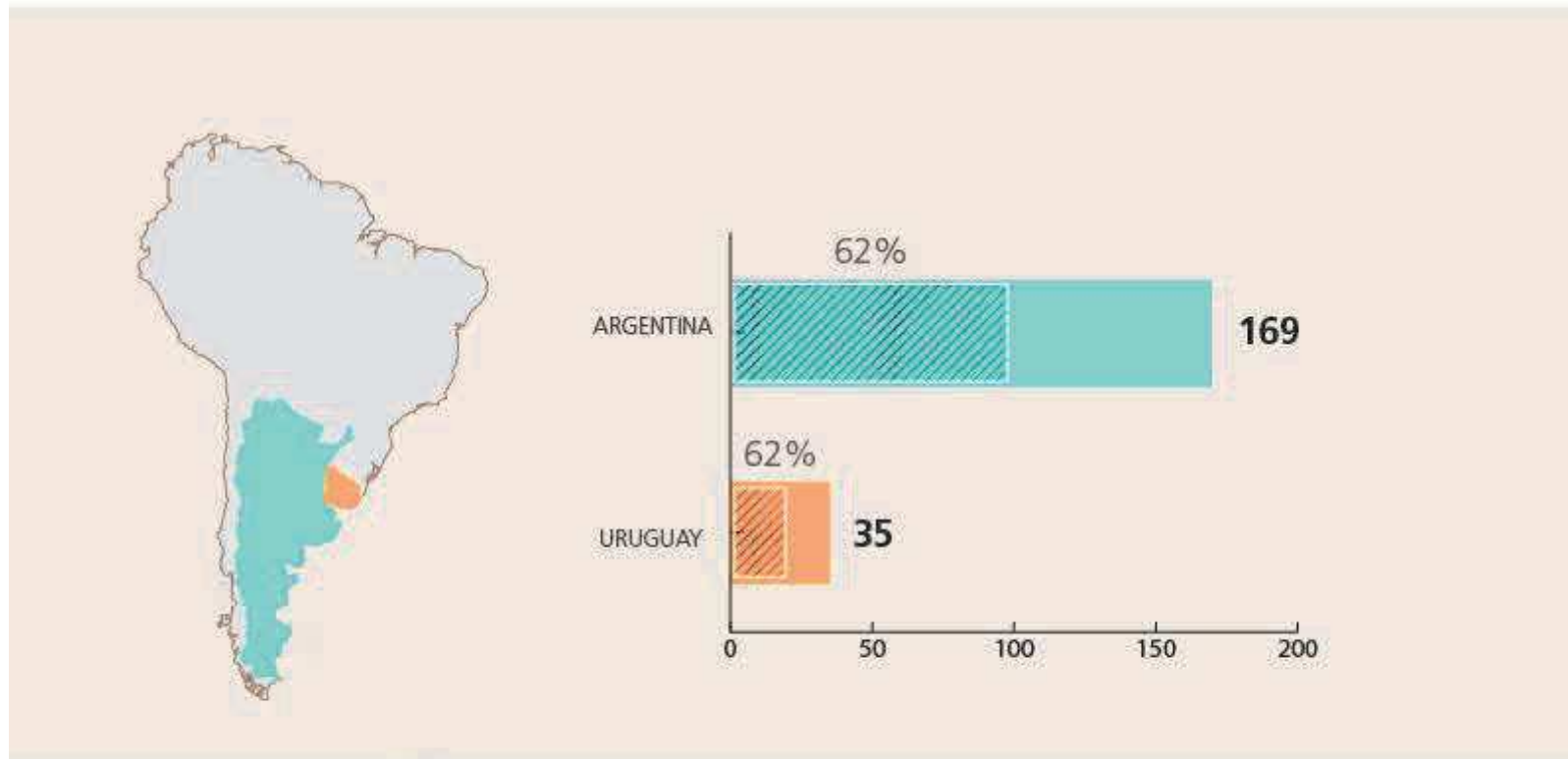




Reducing enteric methane emission intensity

GHG EMISSIONS FROM BEEF PRODUCTION

million tonnes CO₂ eq.

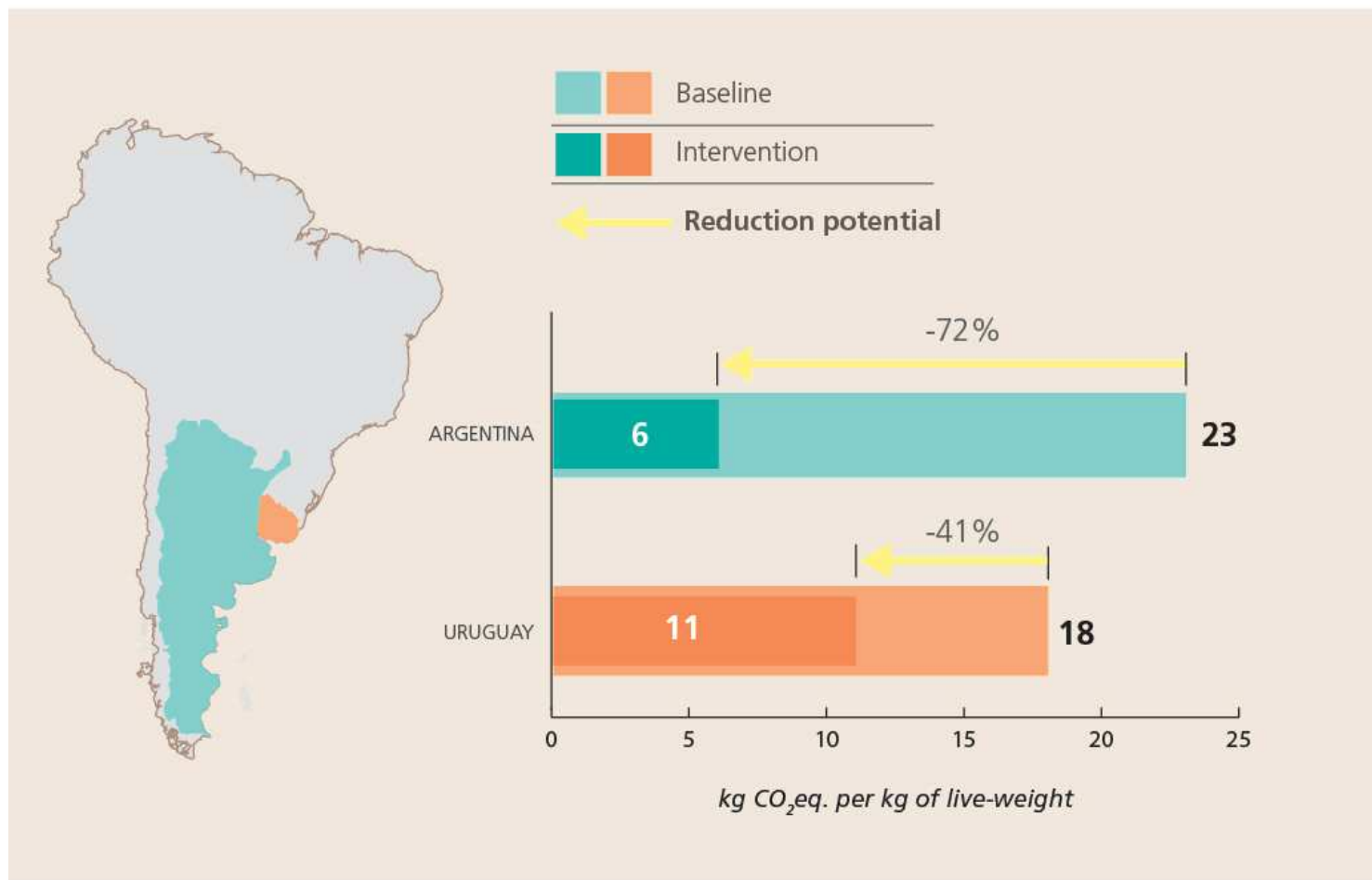


 Share of enteric CH₄ emissions



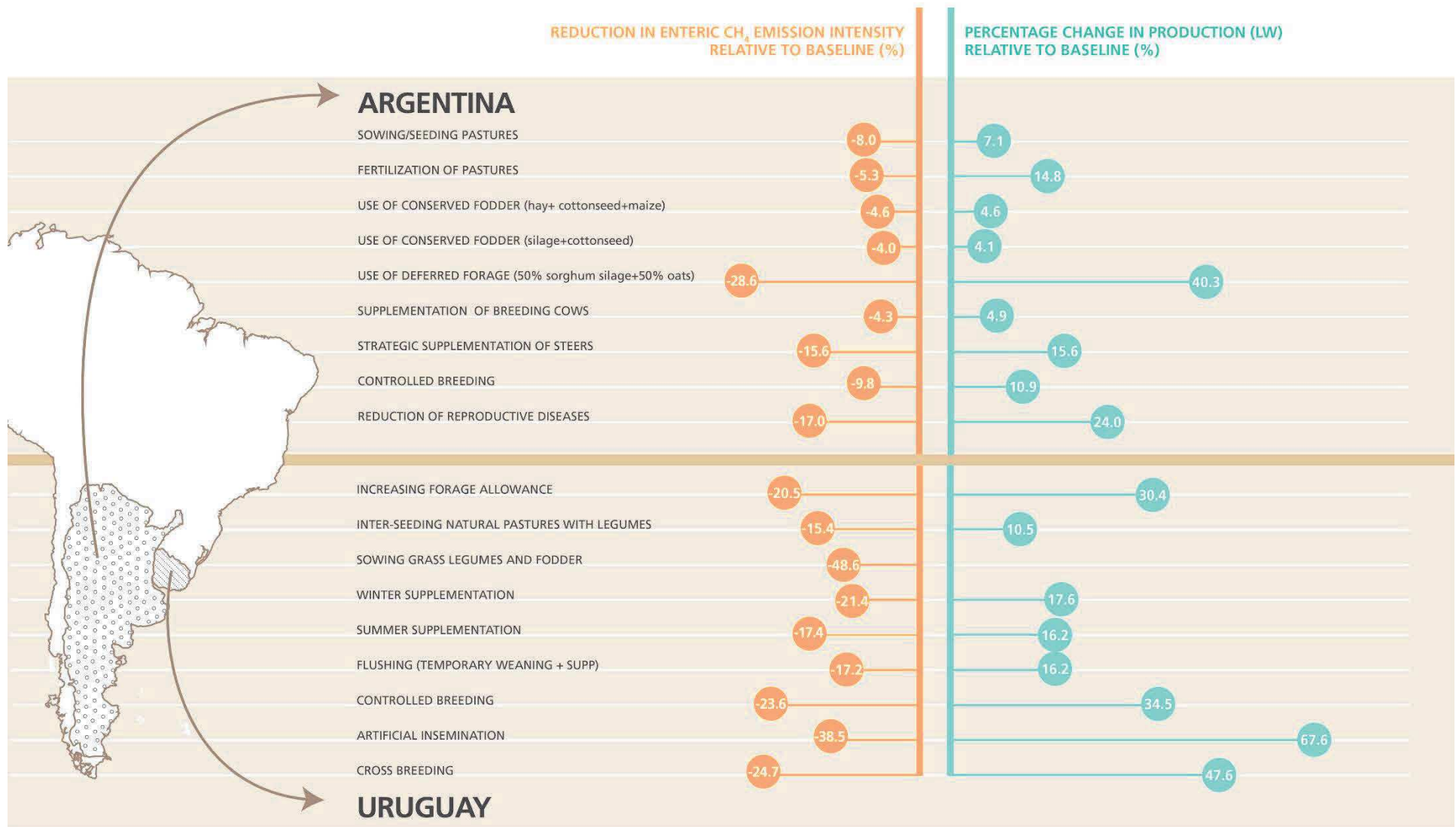
Reducing enteric methane emission intensity

Reduction potential of intervention packages





Reducing enteric methane emission intensity





Reducing enteric methane emission intensity

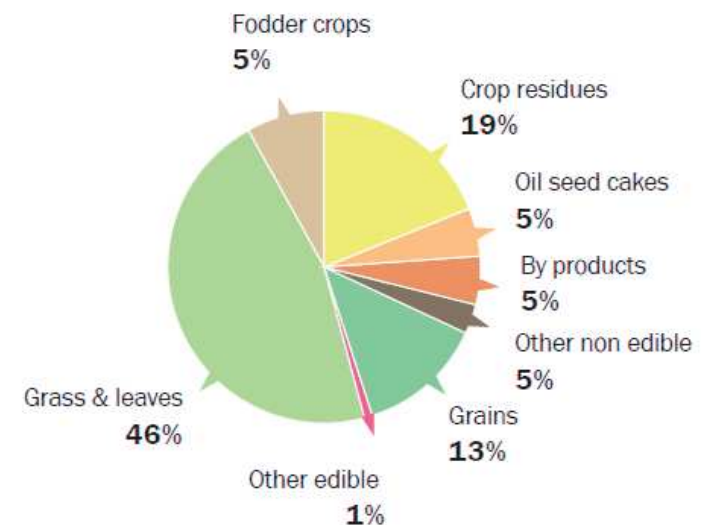
- Large potential for mitigation of methane emissions and productivity increase
- Interventions are prioritized according to improvement potential (mitigation and productivity) and feasibility
- Interventions involve no major changes but reducing efficiency gap and adopting best technologies/practices between producers in the same production system
- Numerous interventions have positive economic returns: incentive for adoption because benefits exceed costs in the short to medium term
- Adoption requires aligning investment and spending decisions with financing sources, and short term growth promotion with long term strategic decisions regarding sector development
- Local experimentations is needed for technology targeting and better understanding the role of policy and new investment mechanisms



Soil carbon sequestration – potential & challenges

- Permanent pastures and meadows cover about 3.3 billion ha, one quarter of the Earth's land area and 68% of the agricultural area
- Grasslands are estimated to contain 343 billion tonnes of carbon and could potentially stock more
- About 20% of grasslands are degraded
- Synergies between carbon sequestration, land restoration, vegetation productivity and biodiversity
- Knowledge gaps on how management practices can increase soil carbon: adapted timing and intensity of grazing, pasture improvement (fertilization, seeding), improved mobility, sylvopastoralism
- Challenges: high spatial variability, diversity and history of management practices, threshold, reversibility

Global livestock feed rations



Source: Mottet et al. (2017). In: *Global Food Security*



Soil carbon sequestration – initiatives

- LEAP Technical Advisory Group (TAG) on soil carbon stock changes to overcome lack of consensus on reference method and data
- Soil carbon sequestration assessment within GLEAM (Global Livestock Environmental Assessment Model)
- Global Soil Partnership, Intergovernmental Technical Panel on Soils
- Global Agenda for Sustainable Livestock, Restore value to grasslands action network
- 4 per 1000 initiative



LIVESTOCK ENVIRONMENTAL ASSESSMENT AND PERFORMANCE PARTNERSHIP





Conclusions

- Livestock are important in context of climate change, as a source of livelihood and resilience for hundreds of millions of vulnerable people and as significant contributors to GHG emissions
- Options exist for low carbon livestock, with co-benefits for productivity and adaptation
- The evidence base is being strengthened, with tools and methods to measure emissions
- Investment in low carbon livestock is growing (e.g., GEF, GCF and World Bank projects)
- Concerted action and multi-stakeholder engagement is necessary: coordinating investment, research, interventions, voluntary commitments and policy frameworks
- Synergies between SDGs are possible



Food and Agriculture Organization
of the United Nations

Thank you

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