Harnessing livestock for climate and food security: A strategic opportunity for Africa and the global south

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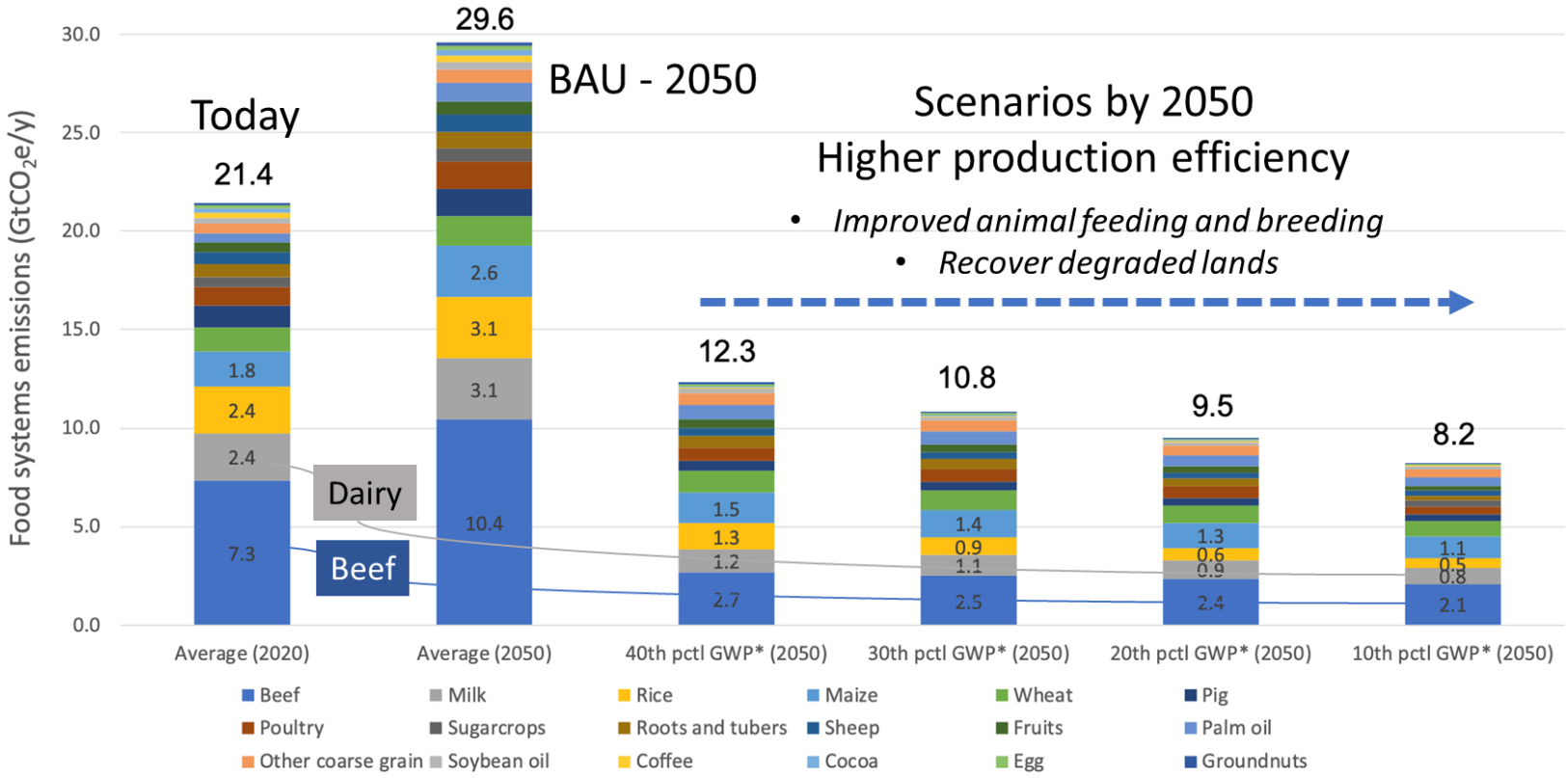
The Livestock–Climate Nexus in Africa

- Livestock contributes up to **40% of agricultural GDP** in some African countries and is a **key livelihood source**.
- Globally, the sector accounts for **12–20% of agricultural GHG emissions**, particularly methane, depending on production systems.
- It is **highly vulnerable to climate change**, especially in the global South, facing risks like drought, disease, and feed shortages.
- **Smart investments in animal health and feeding** offer **win-win-win** opportunities for climate resilience, reduced emissions, improved livelihoods & better nutrition
- **…** but the cost of better practices is a hurdle to adoption, requiring greater **access to finance** for livestock producers

Livestock has the **highest mitigation potential** across food systems - essential to meet global climate targets



Costa Jr et al., 2022

BAU = Business-As-Usual scenario
GWP = Global Warming Potential of GHG emissions

Beef in LATAM: By improving pastures, producers can make beef systems more resilient to climate stress, increase output by 40% by 2050, and, as a co-benefit, halve current emissions

Extensive production
(56 tCO2e/t beef)

Today: 40 tCO2e / t beef

Pasture-based intensification
(15 tCO2e/t beef)

Beef demand (Latam)

+40%

by 2050

FAO (2018)

Today = 640 $MtCO_2e$
(16 Mt beef)

BAU 2050 = 880 $MtCO_2e$
(22 Mt beef)

Pasture-based intensification
- 50% emissions by 2050
(330 MtCO2e)

Costa Jr et al., 2025 in public.

Beef in Africa: Scaling up forage innovations offers a pathway to stronger, more adaptive beef systems, enabling production to more than double (+130%) by 2050 while cutting emissions by 60% compared to today

Extensive production
(93.2 tCO2e/t beef)

Today: 69.7 tCO2e / t beef
(FAOSTAT)

Forage-based intensification
(12.2 tCO2e/t beef)

Beef demand (SSA)

+130%

by 2050

FAO (2018)

Today = 500 $MtCO_2e$
(7.2 Mt beef)

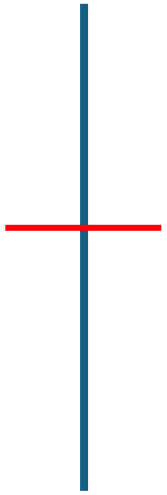
BAU 2050 = 1200 $MtCO_2e$
(16.3 Mt beef)

Forage-based intensification
- 60% emissions by 2050
(200 MtCO2e)

Quintero et al., submitted

Milk in Africa: Forage intensification in dairy provides greater resilience for farmers, drives a 140% rise in milk supply by 2050, and delivers a 20% reduction in present-day emissions as an additional benefit.

Extensive production
(~5.0 tCO2e/ t Milk)



Today: ~7.9 tCO2e / t milk
(FAOSTAT)

Forage-based intensification
(~2.5 tCO2e/ t Milk)

Milk demand (SSA)

+140%

by 2050

FAO (2018)

Today = 355 $MtCO_2e$
(44.2 Mt milk)

BAU 2050 = 900 $MtCO_2e$
(111.9 Mt milk)

Forage-based intensification
-20% emissions by 2050
(280 MtCO2e)

Quintero et al., submitted

From evidence to impact: Proven implementation pathways

Research shows that the high-impact, feasible interventions for immediate implementation in Global-South countries include:

- Improved grazing and feeding and pasture practices to enhance grassland health and increase soil carbon
- Animal health and disease prevention systems to control outbreaks and improve productivity
- Market systems optimization to maximize animal productivity and income

However:

- Switching from extensive to intensive input use has upfront investment costs forming a hurdle to adoption

Africa is well-positioned to lead on livestock-climate integration—if we close the readiness gap

Three enablers:

- **Mobilize climate finance for resilient, low-emission livestock** – Channel climate finance to livestock programs that strengthen **resilience and adaptation** (drought-tolerant forages, animal health, diversified incomes) while delivering **mitigation co-benefits** through measurable GHG reductions.

- **Invest in robust MRV and context-specific factors** – Develop **MRV systems** that track both **adaptation outcomes** (productivity, soil health, water use) and mitigation results. This requires **system-specific emission factors** that reflect diverse livestock systems, especially in tropical regions.

- **Strengthen international cooperation**– Promote cooperation across G20 and developing countries to **share and scale innovations** in climate-resilient, low-emission livestock. By putting resilience first and mitigation as a co-benefit, these partnerships accelerate adoption and reduce costs.

Thank you!

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