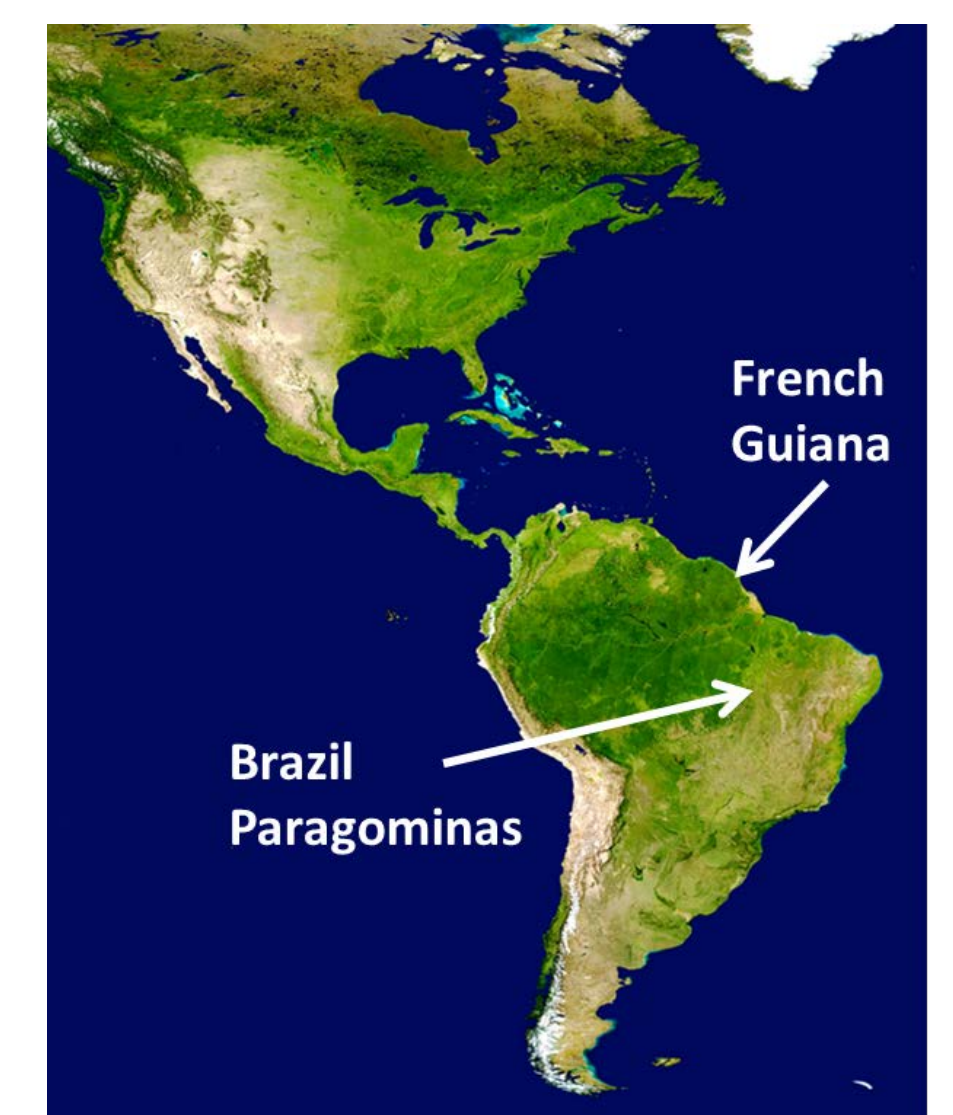


Amazonia and Sahel are subject to the controversy on the development of livestock. In these emblematic contexts, it is essential to promote livestock systems that can meet the challenges of climate change while continuing to contribute to food security.

CARBON STORAGE IN GRASSLAND IN HUMID TROPICS

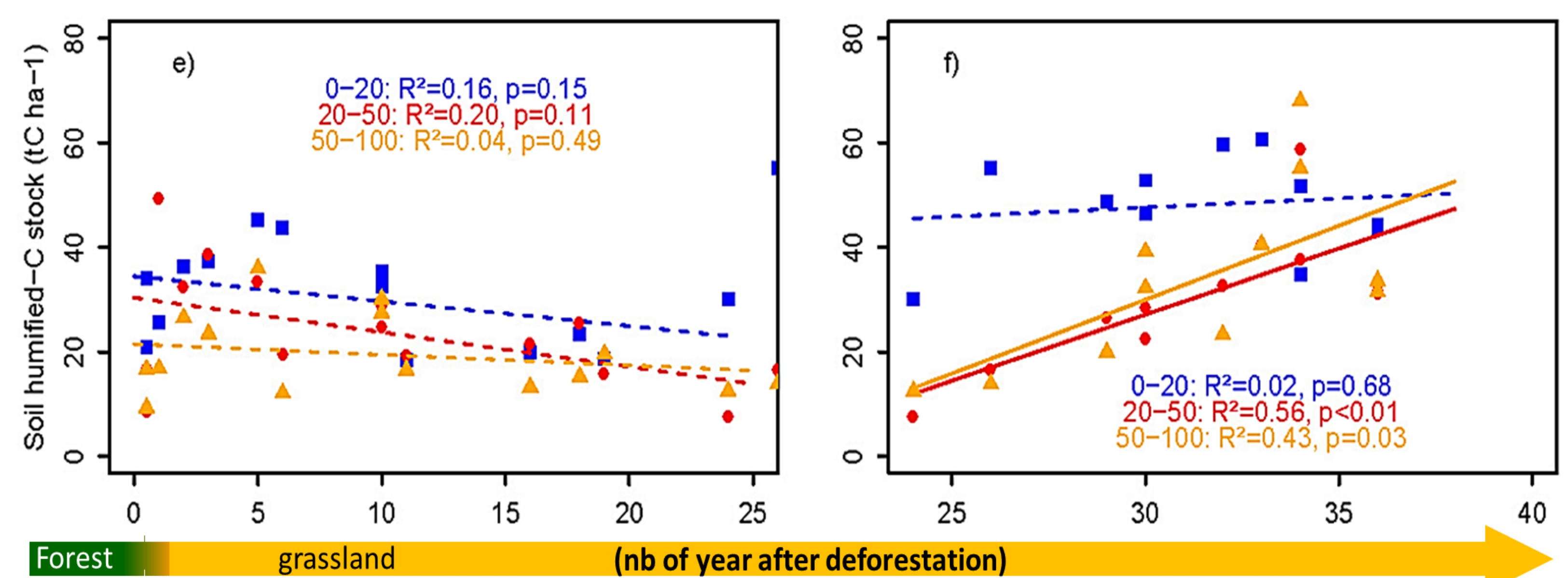
Curbing deforestation remain a priority in Amazonia, this also needs to be accompanied by sustainable management of deforested areas. In french Guiana, the C storage function can be re-established in grasslands two decades after deforestation (1.22 tCha⁻¹y⁻¹, 95% confidence interval), contributing to mitigate a part of the GHG emissions of these grazing farming systems. Results are currently being completed in an old deforestation area in Brasil.



Pasture carbone (C) sink was estimated by

- eddy covariance (flux tower), on CO₂ flux 2011-2016 and CH₄, N₂O emissions modelled (Site 1 source 0.8 tCha⁻¹ yr⁻¹ +/- 0.5), Site 2 C sink = -1.17)
- a chronosequence analyzing soil organic C (SOC) stock on 1m of 20 pastures

Old permanent tropical pastures (≥ 24- year-olds) can restore the C storage observed in native forest with appropriate practices (no fire and no overgrazing, but a mixture of grasses and legumes and a grazing rotation plan) (Stahl et al., 2017).



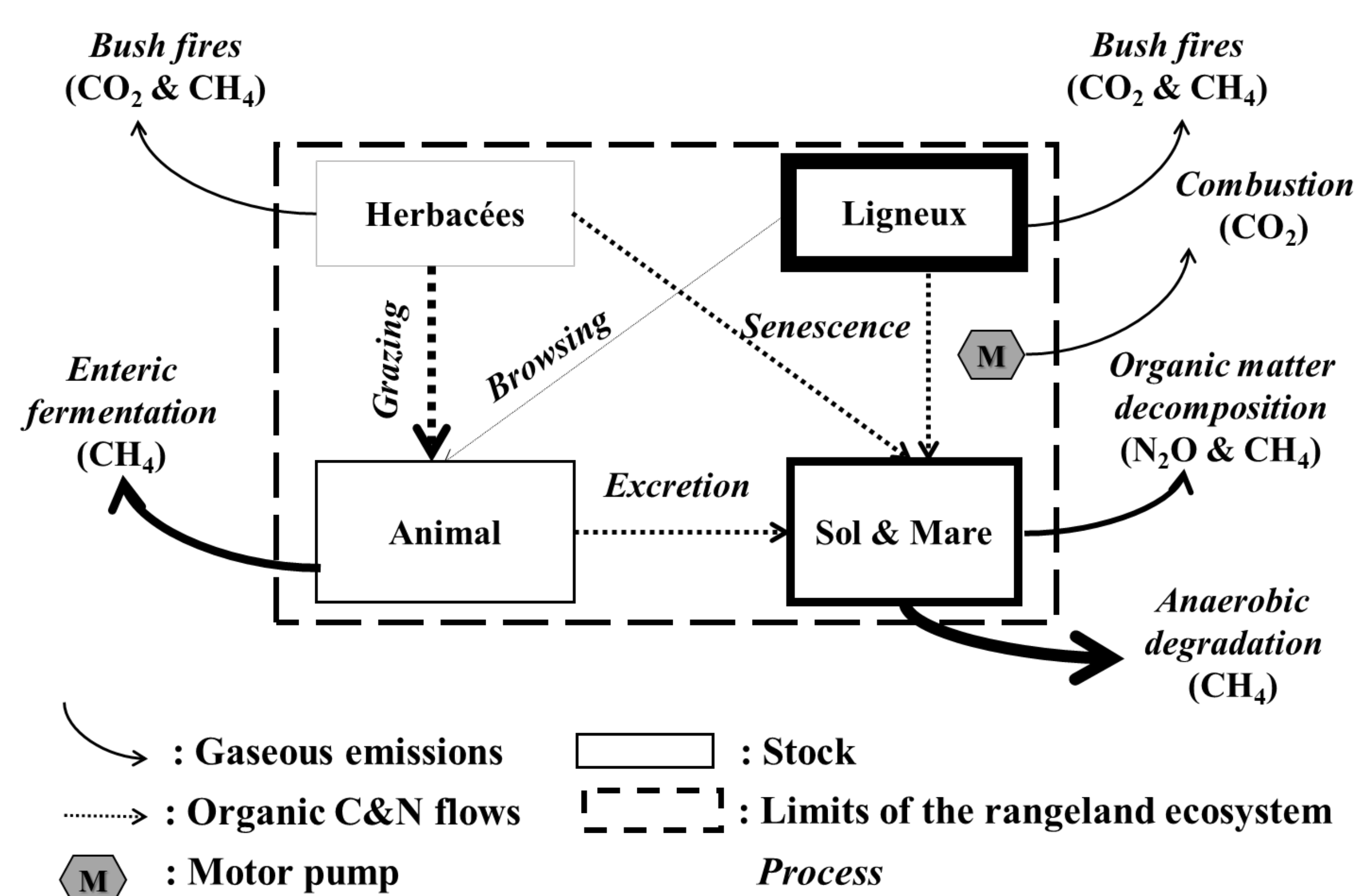
NEUTRAL CARBON BALANCE OF SAHELIAN PASTORAL ECOSYSTEM

In northern Senegal, C balance of a sahelian pastoral ecosystem assessed in accounting both direct and indirect, and both negative and positive, effects of livestock activities on climate change. **Ecosystem approach** takes all main sources of GHG emissions and C sinks of the ecosystem;

✓ Sahelian rangeland ecosystems have a **neutral** carbon balance (-0.04 ± 0.001 tCha⁻¹ yr⁻¹)

✓ GHG emissions were **mitigated** by C accumulation in soil, trees.

↪ This results **contrasts** with the traditional reputation of African livestock systems having a major impact on climate change



Conceptual model of a Sahelian pastoral ecosystem functioning in terms of N and C stocks-fluxes (Assouma et al, 2019)

Contact

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OUTCOMES

Livestock certainly is a major contributor of GHG emissions, but the links between livestock activities and CC are much more complex than just gas emission (enteric methane emissions). Achieving livestock systems with lower C footprint are therefore possible because of grassland and rangeland ability to offer mitigation potential through SOC sequestration. However, there is still scope for further improving to better taking account this potential through developing of contextualized measurements methods in tropical areas.

