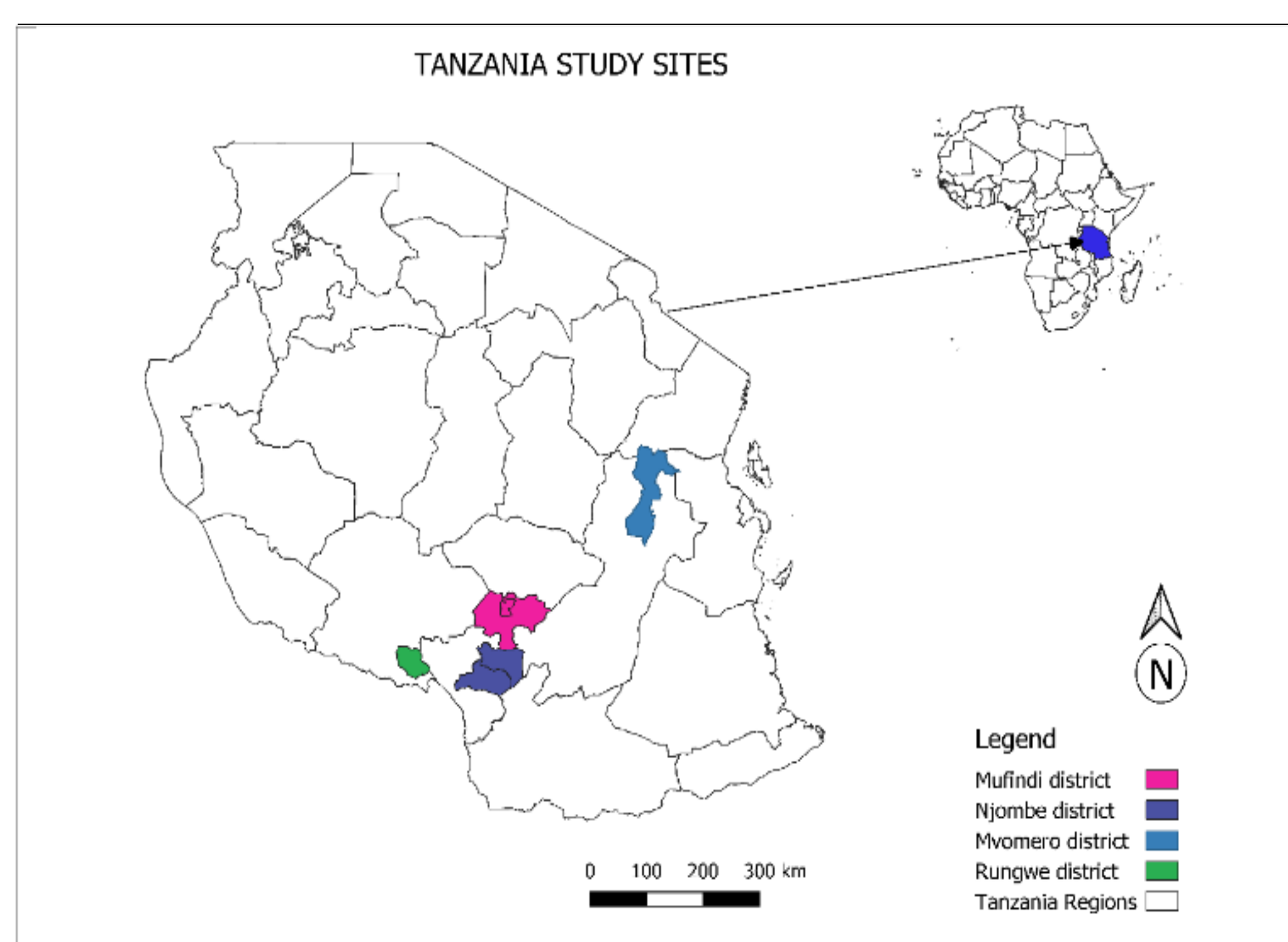


Introduction

- Reducing greenhouse gas (GHG) emissions from the agriculture sector – especially livestock – through low-emission development (LED) has attracted global attention due to their high emission potential.
- However, producers rarely prioritize emission reduction in their day-to-day practices, resulting in a **mismatch between global and national environmental policies and local development interests.**
- Most technocentric LED interventions take a “one-size-fits-all” approach and tend to be designed around the assumption that intensification and productivity gains produce socio-economic co-benefits for **all producers.**
- The objective of this study is to identify pathways for scaling LED that **better account for divergent smallholder capabilities, strategies, and interests.**



Methodology

- 1200 households were interviewed across 4 districts in Tanzania. Across extensive, semi-intensive and intensive production systems.
- Multivariate cluster analysis was employed using the DAISY package in R (3.5.1).

Pathways toward inclusive low-emission dairy development in Tanzania: Producer heterogeneity and implications for intervention design

[Esther Kihoro¹, Todd Crane¹, George Schoneveld²]

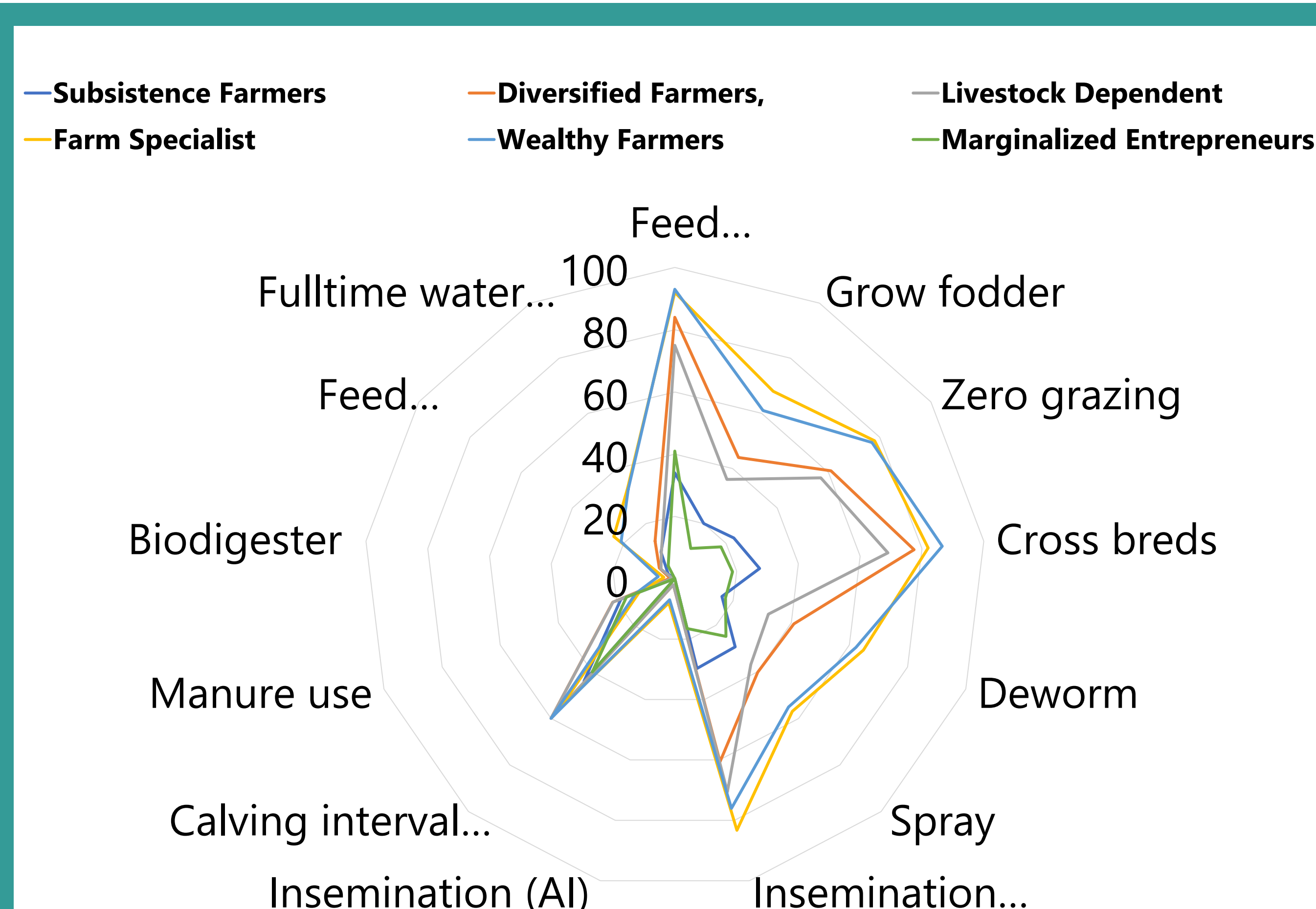
[¹ International Livestock research Institute]

[² Center for International Forestry Research]

Results

Our analysis reveals six distinct farmer types as shown below.

Wealthy	Farm specialist	Diversified	Livestock dependent	Marginalised entrepreneurs	Subsistent farmers
<ul style="list-style-type: none"> Engage in milk sales mostly through formal channels Score highest on income and assets Low TLUS Multiple income sources including off farm income 	<ul style="list-style-type: none"> Most farmers sell milk through formal channels Score moderately on assets income Low TLUS Mainly depend on farm income 	<ul style="list-style-type: none"> Sell milk mainly through informal channels Average income and assets Diversified income sources Not in farmer groups 	<ul style="list-style-type: none"> Sell milk through formal and informal channels Score high on TLUs Depend more on livestock income None have off-farm income 	<ul style="list-style-type: none"> Do not sell milk Score moderate low on assets but have high TLUs All respondents derive income from off-farm business 	<ul style="list-style-type: none"> Do not sell milk Score lowest on incomes and assets comparatively poor and vulnerable Livestock sales mostly meeting the consumption.



The six farm typologies displayed three levels of uptake of LED practices (low, medium and high uptake).

- Wealthy and Farm specialist farmers scored **highest** on uptake of LED practices.
- Diversified and Livestock-dependent households scored **moderately** in uptake of LED.
- While the Subsistence farmers and Marginalized Entrepreneurs farmers scored **lowest** in the uptake of LED practices.

Discussion

First variants of technological packages plus market-based interventions will appeal to Wealthy and Farm specialist groups. While this group represents a “quick-wins” group, GHG reductions from targeting this group are likely to be **modest.**

Second, a mix of both market incentives, value chain development, and (concessionary) access to better quality inputs and extension services could serve to catalyze the adoption of LED practices for Diversified and Livestock dependent groups. These groups will deliver **greater benefits** with respect to GHG reductions and inclusive development.

Finally, a conceptualization of pathways that are grounded within a **food system approach** rather than as a technological package would be required for households that keep more indigenous breeds and are currently not adopting (many) LED practices.

Using a **bottom-up approach accounting** for the real needs of dairy farmers would lead to more inclusive rural development.

Conclusion

- Results point to the need to conceptualize LED not only as a **top-down technological** package but to also allow bottom-up approaches.
- A **food-systems perspective** allows for bottom-up approaches which can more explicitly account for local needs and interests in intervention design for LED.

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