

**Manuscript name:** *“Preferred livestock interventions for small-scale livestock farmers in the Great Limpopo Transfrontier Conservation Area: a demand-driven and systemic approach”*

### **Overall Assessment:**

The manuscript offers valuable insights into an engaging project with significant potential for advancing understanding in the field. However, in my opinion, for the manuscript to be viable for further publication, it necessitates comprehensive revisions to solidify its structure and to augment the clarity and impact of the results presentation. Currently, the manuscript is deficient in the requisite details and depth to accurately convey the undertaken work.

### **Specific Suggestions for Improvement:**

#### **Introduction**

- The introductory section should be reworded to better delineate the scope and context of the study, specifically clarifying the focus on small-scale livestock farmers.
- Definition of LPS:
  - the term "mixed crop and livestock systems" requires clearer definition and reference support. Sere & Steinfeld (1996) offers a robust classification system that could enhance understanding.
  - Definitions of terms like "extensive" and "landless" should be provided to avoid ambiguity.
- Expand on the challenges and operational constraints faced in sub-Saharan Africa, including the impacts of climate change and land degradation.

To improve the structure of the introduction I would suggest the following points:

1. Establish the general context and definitions pertinent to the study.
2. Discuss the sector's challenges, particularly the need to increase the supply of animal protein and the selection of suitable interventions.
3. Highlight the specific challenges inherent in TFCA, such as resource competition, wildlife interaction, and zoonotic diseases.
4. Advocate for the development of bespoke strategies that engage local communities and stakeholders through participatory methods, while noting the current shortfall in such inclusive approaches.
5. Conclude with a definitive statement of the research's objectives, underscoring how the work aims to address these identified needs and gaps.

**L43:** To enhance clarity and precision in your manuscript, it may be beneficial to define "mixed crop and livestock systems" explicitly. If the term "mixed crop" is intended to denote integrated crop and livestock farming, it would be advantageous to state this clearly. Additionally, contrasting this with "landless" systems could elucidate the distinction for readers.

Furthermore, it would be advantageous to cite a source for the classification system employed. For instance, you may reference the taxonomy proposed by Sere & Steinfeld (1996), which categorizes agricultural systems into three primary classes: (1) grassland-based, (2) landless, and (3) mixed farming systems. This citation not only lends credibility to your classification but also aids readers in understanding the broader context of agricultural systems.

**LL43-49:** The introductory segment should serve to immediately orient the reader within the study's framework, which is centered on small-scale livestock farmers. It is essential that these initial lines dispel any ambiguity by providing clear definitions and a concise overview of the study's focus, ensuring that the scope and relevance of the research are unmistakably communicated from the outset.

**L43-44:** if the data is available, information on the contribution of the sector to national GDP could be also relevant here

**LL44-46:** see comment above on LPS, it also applies to “extensive”. Please, if relevant provide a definition.

**LL47-49:** as the topics mentioned here are extremely relevant ((1) challenges for extensive LPS in sub-saharan Africa; (2) operational constrains of small-scale LPS), I would suggest to further expand this with additional information on the causes. Among the challenges I am surprised of not seeing mentioned related to climate change and land degradation.

**L52:** please, provide a brief explanation on the main aims of the early 2000s land reform. This would allow the reader to have a better understanding of the mechanism causing the livestock species population decline.

**LL60-61:** please, provide further details and data on the projections of increased output and productivity to meet the increased demand for animal protein in Zimbabwe (what is the expected increase in %, what is the projected gap...etc.). I would suggest moving this part in the beginning of the introduction.

L78: I would suggest replacing the first “and the” with a comma

LL80-83: I would suggest rephrasing with something like “..including livestock predation, competition for natural resources and increased risk of infectious disease spreading among wildlife, livestock and also human, if zoonotic.”

L90: include here the problem statement of lack of participatory approach

L93: Mention here the ProSuLi project (taken from M&M). For instance: “Given the agro-ecological, institutional and socioeconomic contextual issues described above, this study, taking place within the context of the ***Promoting Sustainable Livelihoods in TFCAs (ProSuLi) development t project***, used an inclusive and participatory.”

\*\*\*\*\*

## **Materials and methods**

In general:

- I would suggest to relocate the context of the ProSuLi project to the beginning of this section, before 2.1, for better flow (what is now in LL110-116)
- A map of the study site should be included to aid geographical context.
- Avoid repetitive information across sub-sections, consolidate content where possible.
- Ensure the methodology reflects an inclusive and participatory approach, particularly the representation and selection criteria for workshop participants.

### **Paragraph 2.1**

L107: what do you mean by “non-farm based” and “cattle-based”?

L110-113: I would suggest mentioning ProSuLi also in the last section of the introduction,

L98-108: I would suggest to also include a map of the study site

### **Paragraph 2.2**

LL110-116: I would suggest moving them before section 2.1

LL121-126: In my opinion, these lines are a repetition of what is already included in 2.3 and 2.4. I would suggest to merge them together.

### **Paragraph 2.3**

Sub- Paragraph 2.3.1 and 2.3.1: I would suggest reordering this, and classify them as sub-paragraphs of 2.2 (2.2.1 and 2.2.2)

L134: provide a brief definition of “Participatory Prospective Analysis”

L135: was “Futures” the name of the workshop? I would suggest to either remove it, or to put it at the end of the sentence in quotation marks.

L121: The selection process for participant representatives requires clarification. It is crucial to understand the methods used to accurately reflect the diversity of stakeholders involved. Additionally, the manuscript does not adequately address the measures taken to encourage participation among women and young people in the workshop. These details are significantly important and should be emphasized. A table delineating the participant counts from each stakeholder category would be a valuable addition for illustrating the representativeness of the workshop's demographic composition.

L141-142: How did the team ensure that the farmers were acting as representative of the community? Were they elected by the other community members?

L145-146: The description of the step involving 'connecting the future with the present' is ambiguous. Can you elaborate on what this entails? Additionally, it would be helpful to know what

specific information was shared with the participants. It's also worth considering whether this information could potentially influence the responses provided in the survey.

L148-156: The method by which these scenarios were developed and their intended significance remain unclear. It would be beneficial to include additional details to elucidate their formulation and purpose.

L155: which definition?

L156: factors of change to what?

L161: see comment above on selection criteria. Where were the same participants of phase 1?

In the results section "driving forces" are mentioned, please provide all the definitions and the detailed description of the approach here.

#### **Paragraph 2.4**

L169-170: How was the survey formulated? Where were there already proposed potential livestock interventions? In my opinion it would also be relevant to add the survey as an annex.

\*\*\*\*\*

#### **Results**

In general:

- Restructure subsections to eliminate unnecessary layers (e.g., I would suggest restructuring the paragraph levels and avoid a sub-sub-level if not necessary (e.g., avoid 3.1.1)).
- Remove duplicated information from the M&M section.
- Explain the criteria for defining "driving forces" and other key terms.
- Provide a more comprehensive analysis of the data, potentially through tables or visual aids.

L205-206: This information is repeating something already present in Materials and methods. Please, integrate and delete from results section.

L207-208: Please, see comment above in stakeholder participation and on the approach to ensure gender and youth inclusion. I think it would also be relevant to have information on the age classes of the respondents.

L209: The rationale behind choosing 2038 as the time horizon for projections is not immediately apparent, as the common practice is to set such forecasts around benchmark years like 2030 or 2050. The selection of 2038 could appear arbitrary without proper context. It would be beneficial to elaborate on the factors that influenced this particular choice of year in M&M.

LL209-2015: I think that most of this information should be moved to materials and methods section.

L210: were identified by whom? By the participants to the workshop?

L212: How were the driving forces selected? What was the criteria?

L212: What do you mean by “LPS was regrouped with farming production systems”?

Table 1: Tables should be self-explanatory and comprehensible independently of the text. It is advisable to define the abbreviation "ICT" within the table's footnote or legend for clarity. Additionally, the reasoning for the shading, such as the "type of livestock farming system" being highlighted in grey, should be clarified to avoid confusion for the reader.

LL222-224: please, include in M&M an explanation of the approach to define the direct or indirect link with LPS

L232-240: again, I think that details are missing to be able to capture how the future states proposed were selected. Based on what? Please, provide background. I think that all of these should still go in M&M.

L275: I would suggest the use of world that connect with a personal perception, such as “vibrant”

L275: the preference was based on what? What was the criteria to decide?

L286-300: I think that most of this section should be moved to M&M

L306: The notable discrepancy in gender representation among respondents, with females constituting 57.9%, juxtaposed against the predominantly male participation (80%) in the collaborative scenario-building workshop, merits discussion. This contrast raises questions about the underlying causes, such as whether women are more likely to respond to surveys or if there is a distinct gender distribution among farmers compared to the broader community's social structure. Delving into these specifics could shed light on societal dynamics and ensure a more nuanced understanding of the data. Providing detailed information, possibly in a tabular format, about the participants at each project phase would significantly enhance this analysis.

Furthermore, it would be pertinent to ascertain whether the farmers who were surveyed include those who participated in the workshops, as this could have implications for the representativeness and interpretation of the findings.

L312-316: I would suggest summarizing this in a table

L320: what do you mean by “requiring interventions”?

Figure 1: I recommend implementing a hierarchical structure for presenting data, beginning with overarching themes such as health or nutrition, followed by their respective sub-categories, for instance, within health, including specifics like drugs and vaccines or dipping and dosing procedures.

The rationale for categorizing data by livestock species warrants clarification. It seems this categorization could indicate the farming focus of respondents, allowing for an analysis of whether the type of livestock raised—cattle versus chickens, for example—influences a farmer's perspective.

However, this assumption needs confirmation. Further explanation is necessary, particularly regarding how responses were categorized for farmers who raise multiple species.

It would be beneficial to detail whether farmers were prompted to provide feedback exclusively on the species they raise or on all species mentioned in the study. Additionally, supplying the number of respondents corresponding to each livestock category would greatly enhance the transparency and interpretability of the data.

\*\*\*\*\*

## **Discussion**

The discussion section currently lacks a cohesive structure and falls short in offering a comparative analysis with existing literature, particularly evident in paragraph 4.1. Instead of delivering a comparative synthesis, it seems to summarize the methodology. I recommend restructuring this section to incorporate a comprehensive review of relevant studies, which would provide readers with a broader contextual understanding and facilitate critical comparisons with the findings of this research.

I would suggest to (1) refine the discussion to establish a coherent structure and provide a comparative analysis with existing literature and (2) Ensure all claims are substantiated with references.

L339: what do you mean by “research-action”? I would suggest using another term, as the present project did not implement actions, but rather provides information about the possible interventions to be implemented.

L339-341: this is a repetition of the scope, I would suggest rephrasing it, summarizing the main findings of the work

L390-392: I think that some additional discussion should be provided around this “dipping livestock in diptanks”, as, although might be effective on the short period, it does not allow to perform selective treatments, enhancing the risk of anthelmintic resistance

LL392-400: Missing references to support the information provided

L405: “lack of funds to purchase dosing chemicals” has never been mentioned in the results section, please, integrate this if relevant

L422: Drought (as well as lack of access to fundings) could be seen as limitations to the implementations of the proposed intervention. I would suggest integrating some consideration about that in the dicussion

L433: The assertion that restocking is the preferred intervention for poultry, possibly due to a higher proportion of women respondents who typically manage chickens, while men manage cattle, requires further clarification. It is not immediately clear why a higher representation of women would

correlate with a preference for restocking. Could you provide more insight or evidence to support this claim and explain the underlying reasons why women might favor this particular intervention?

L451: “some would say they find their own means of survival somehow.” I would suggest rephrasing.

\*\*\*\*\*

### **Conclusion**

The conclusion should synthesize the main findings and their scientific relevance succinctly, outlining possible next steps for the project.

I would suggest rephrasing the also to specify how the results of the work could be relevant for the scientific community and from a policy-making and societal perspective.

\*\*\*\*\*

### **Annexes:**

In general, provide a brief introduction to each annex to contextualize its content (and a reference in the manuscript, when possible)

Annex 1: An introduction to what the annex presents should be included

Annex 2: While the provision of the database is appreciated, it appears to necessitate refinement and the inclusion of comprehensive details that elucidate the meaning of the data and codes for the user. As it stands, the database seems to be not readily accessible in its utility and interpretation.

Annex 3: I recommend the authors reassess the inclusion of this particular annex, as it comprises the project report which may contain sensitive personal details of workshop participants, such as names, ID numbers, and signatures. It would be prudent to consider the privacy implications and potentially remove this annex from the document.