

## Decision for round #2 : *Revision needed*

Dear Dr Caron,

Thank you for submitting a revised version of the paper. I acknowledge that the revision has greatly improved the paper, but there are some remaining issues to be addressed. Please see below the reviews.

I will do my best to ensure speedy handling of your submission.

Best regards,

Anna Olsson

**Comment from the Managing Board:** Authors should have the rights to display the names in their data following a General Data Protection Regulation (GDPR). If this is the case, information on the GDPR should be added in the manuscript. Otherwise, authors should anonymize the data and contact HAL to remove the file and add a new file without the names. Supp Mat 2 displays names.

by [Anna Olsson](#), 21 Nov 2024 11:05

Manuscript: <https://hal.science/hal-04060712>

version: 3

### Review by anonymous reviewer 2, 15 Nov 2024 17:04

The new version of the manuscript is improved and authors respond to each comment of the Two reviewers in a clearly manner.

I accept this version without more modifications

### Review by anonymous reviewer 1, 08 Nov 2024 10:49

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## Review for the Second Version of the Manuscript:

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

**General Comment:** This manuscript offers an insightful exploration of participatory approaches to improving livestock production systems (LPS) within the Great Limpopo Transfrontier Conservation Area (TFCA). The authors’ effort to engage stakeholders and tailor interventions to local contexts is commendable, and the revisions from the first version have enhanced the manuscript’s clarity and coherence. However, there are areas that need some clarification to ensure consistency and clarity. Suggestions include clarifying terminology, aligning the objectives with the findings, and expanding the discussion on practical implications. With these adjustments, the manuscript will better showcase the value of the participatory approach and its potential impact on LPS in the TFCA.

## Title and Abstract

### Does the title clearly reflect the content of the article?

Yes,  No,  Partially,  I don’t know

The title captures the essence of the study but could be clearer. Terms such as “**demand-driven**” and “**systemic approach**” should be explained in the manuscript, as their current usage may not be immediately clear to all readers. If the “systemic approach” is not a major theme, its inclusion in the title might be reconsidered.

**Response:** The term “systemic approach” has been removed from the title. The term “demand-driven” has been better defined in the abstract and introduction.

### Does the abstract present the main findings of the study?

Yes,  No,  Partially,  I don’t know

The abstract provides a general overview but does not fully highlight the participatory approach or the connections between proposed interventions and the “**Bye Bye Poverty**” scenario. Expanding the abstract to include more context on the aims of the interventions (e.g., improving household income, productivity, or sustainability) would help the reader better understand the study’s significance. Clear statement of the objective of the study should also be included in the abstract.

### Specific Comments:

- **L30:** The term “**demand-driven interventions**” might benefit from clarification.

Response: we modified the abstract to take into consideration the reviewer’s suggestion but within the word limit of the abstract which limited our capacity to add much more details.

### Introduction

#### Are the research questions/hypotheses/predictions clearly presented?

Yes,  No,  Partially,  I don’t know

The introduction has improved in terms of structure and focus. However, it still lacks a clearly stated research question and objective. This would help guide the reader and establish the manuscript’s focus early on.

- **LL111-115:** The use of “hypothesis” may be misleading, as it seems the study was based on an assumption rather than a testable hypothesis. Rephrasing this section for clarity would be helpful.

Response: Done

#### Does the introduction build on relevant research in the field?

Yes,  No,  Partially,  I don’t know

The introduction provides useful context about livestock production in sub-Saharan Africa (SSA) and the importance of community-based approaches. To make it more compelling:

- Avoid repetition (e.g., **LL61-63** repeats ideas from **LL55-57**).

Response: Done

- Establish clearer links between mixed and extensive farming systems.

Response: Done. “LPS are often associated with rainfed agriculture to produce mixed crop and livestock systems.”

- Introduce TFCAs earlier and explain their relevance to the study.

Response: We have added a small paragraph introducing TFCAs

### Specific Comments:

- **L51:** Clarify whether all mixed farming systems are extensive or if these are distinct categories.

Response: We clarified: “Extensive mixed farming (...) systems”

- **L58:** When introducing “**stocking capacity**,” define it and explain its relevance to livestock production challenges.

Response: we changed to “Carrying capacity” and provided a definition.

- **L64:** The mention of TFCAs is abrupt; introducing their role and importance earlier would improve the flow.

Response: We have added a small paragraph introducing TFCAs

- **L100:** Specify the reference year for the percentages and ensure the source is clear.

Response: Done: 2017.

- **LL101-103:** Including national-level data on agriculture’s contribution to GDP and livestock’s

role would provide helpful context before discussing cattle statistics.

Response: Done.

“In Zimbabwe, agriculture contributes 15-18% of Gross Domestic Products (GDP) and provides livelihoods to approximately 70% of the rural population. Livestock contributes to around 34% of the agricultural GDP (GoZ, 2018).”

- **L110-114:** A clear statement of the study’s objective is missing and an introduction to the specific TFCA under investigation would strengthen the introduction.

Response: We changed the last paragraph of the introduction and introduced a sentence “The objective was to co-design with local stakeholders a prioritization of livestock interventions adapted to the local context” to better clarify the study’s objective. The Great Limpopo TFCA is now introduced earlier in the introduction.

## **Materials and Methods**

**Are the methods and analyses sufficiently detailed to allow replication by other researchers?**

Yes,  No,  Partially,  I don’t know

**Are the methods and statistical analyses appropriate and well described?**

Yes,  No,  Partially,  I don’t know

The methods section has improved significantly, some areas need clarification to enhance transparency and replicability:

- **L149-152:** This content could be better placed in the introduction as part of the study context.

Response: this content has been added in a paragraph on the study site in the introduction, before the last paragraph.

- **LL153-159:** The discussion of infectious diseases is interesting but feels out of place in this section. Consider moving it to the introduction or clarifying its relevance to the methods.

Response: this content has been added in a paragraph on the study site in the introduction, before the last paragraph.

- **L232:** If this refers to a follow-up workshop, make this clear to avoid confusion.

Response: We clarified this paragraph. There was only 1 follow-up workshop organized.

- **LL239-241:** Explain how the survey was designed to consolidate workshop outputs and who was involved in its design.

Response: the design of the survey was done by the authors. We added the sentence: “Interventions collected through the questionnaire survey were then compared to the interventions identified through participatory approach.”

**Specific Comments:**

- **Figure 1:** Improve the quality and clarity of the figure. Ensure all symbols in the legend are visible and that any numbers on the map are explained. For instance, some symbols are not present in the map.

Response: we change the map.

## **Results**

### Are the results described and interpreted correctly?

Yes,  No,  Partially,  I don't know

The results provide valuable insights but require additional explanation to improve clarity and interpretation:

- **Table 2:** Enhance the table by using consistent formatting. Ensure definitions are complete and provide a key for empty cells.

Response: Done

- **L284:** Clarify the process used to select the five driving forces.

Response: Done. We added "Participants performed a collective mapping process to determine the influence between factors of a given dimension. After displaying the collective results, they voted for the five most influential drivers (i.e., driving forces) ensuring the representation of at least three of the five dimensions (social, technical, economic, environmental and political) (Bourgeois et al. 2023)."

- **L289:** Discuss the rationale for presenting mostly negative scenarios, as this may seem imbalanced.

Response: We don't think it is the place to discuss this. First because it is a result section. And second because this would be more a discussion for the Bourgeois et al; 2023 article. For the reviewer's information, there is no rationale here. These are the scenarios that the local stakeholders came out with when they projected themselves into the future. Most scenario ended up with a neutral (i.e., business as usual) or negative scenario. Finally, a scenario can be negative for some stakeholders and positive for others.

### Specific Comments:

- **L333:** Link the proposed interventions to the "Bye Bye Poverty" scenario or other future goals to clarify their purpose.

Response: we rephrased: "Each thematic group had to come up with activities related to their thematic in order to initiate the path towards the desired state of each driving force in the "Bye Bye Poverty" scenario in 20 years."

### Table 2:

I suggest improving the overall quality of the table for clarity and readability. Instead of using bold text to identify the driving forces, consider an alternative strategy, such as using an asterisk, creating a dedicated column, or applying a distinct symbol. This will make the table easier to interpret and less visually cluttered.

Response: done

In the "Link to LPS" column, there are several empty cells. The meaning of these blanks is unclear. A key should be included in the table caption to explain whether they indicate a lack of association or unavailable data. This will ensure that readers can accurately interpret the table.

Response: done

The "Definition" column requires further refinement to ensure precision and comprehensiveness. For example:

-The definition for "State of animal health" currently reads as "including domestic and wildlife", which is too vague. A more accurate definition might include metrics or indicators such as disease prevalence, vaccination rates, or health outcomes in domestic and wild animal populations.

-Similarly, the definition for "State of natural resources" could be expanded to include "quality and extent of vegetation cover, availability of water resources, and biodiversity."

Response: the definition as presented in table 2 have been agreed after a full session discussion of several hours by local stakeholders. We cannot change them. These are factors have changed “as perceived by local stakeholders”. We have added this in the legend.

The exclusion of “**quality of air**” and “**movement of people**” as factors influenced by LPS is worth addressing in the discussion section. It would be useful to explain why these aspects were not considered relevant or significant within the context of the study. For example, is the impact of livestock on air quality (e.g., methane emissions) negligible in this specific context? Similarly, are changes in human movement patterns unrelated to LPS in the TFCA? Providing a brief discussion or justification would enhance the reader’s understanding

Response: The links have been discussed and agreed on by local participants during the workshop. In extensive livestock production systems, the local quality of air is not influenced by LPS, nor by the presence of adjacent wildlife (high elephant density). Methane emissions can contribute to the global climate quality (but those emissions should be balanced by carbon capture in the rangeland used by the LPS with probably a positive balance for the climate). Regarding movement of people in the peripheral areas of Zimbabwe, there has been an influx of people in these areas for political reasons (rapid agricultural reform in 2001) and also since the socio-economic crisis in the country since 2001 with immigrants arriving on these peripheries to access free natural resources. So the fact that LPS are not linked to this factor of change is not a surprised.

### Table 3:

- In the “**Production**” sub-theme, the last bullet point appears to be incomplete. Please ensure that all points are fully articulated to avoid confusion or misinterpretation.

Response: thank you for noticing this. Completed.

- In the text (L332), it is stated that the discussion was divided into **thematic groups**, yet **sub-themes** are presented in Table 3. The relationship between these thematic groups and sub-themes is unclear. It would be helpful to explicitly describe how these sub-themes were derived from the thematic groups and whether they represent a refinement or categorization of the initial themes.

Response: As stated, four thematic groups were created (Governance and advocacy, Livestock production, Crop production and Ecotourism) following the future workshop. In this manuscript, we only report the outputs of the “Livestock production” thematic group. In this livestock thematic group, sub-themes and activities were detailed as presented in Table 3. The legend of Table 3 reads now: “Table 3: Sub-themes and activities as identified by the members of the livestock production system thematic group, one of the four thematic groups created following the future workshop.”

- There seems to be some overlap between concepts presented in the table. For example, “**supplementary feeding**” could be considered a specific action under the broader sub-theme of “**Production**” rather than a separate concept. Consider reorganizing the table to group related actions or strategies hierarchically, ensuring that sub-themes and their associated actions are clearly delineated

Response: We agree with the reviewer but these were the sub-themes and activities as presented by the members of the thematic group.

## Discussion

**Have the authors appropriately emphasized the strengths and limitations of their study/theory/methods/argument?**

Yes,  No,  Partially,  I don’t know

The discussion highlights the importance of participatory approaches but could benefit from a more balanced analysis:

- Expand on how the proposed interventions address challenges and align with the scenarios

presented in the results.

Key questions to be addressed might be:

How will the proposed interventions contribute to the future scenarios?

Which resources will be needed to implement these? What are the challenges for implementation?

What are the potential trade-offs?

In what way is the ProSuLi project aiming to implement these strategies?

How do these interventions differ from the “top-down” approaches mentioned several times in the paper?

Response: We added a full paragraph to respond to the reviewer’s comment. We could not address it in a shorter way. “One of the interventions that local stakeholders identified within the framework of the ProSuLi project and towards the achievement of the selected narrative, Bye Poverty !, was the installation of a solar-panel borehole linked to a new irrigated garden. The location and use of the borehole was collectively decided, including members of the four thematic groups. The design and location of this infrastructure was linked to the location of the diptank and the primary school, which were directly connected to this water source in addition to the irrigated garden. This made it possible to alleviate the task reserved for the women of each family with livestock of filling the diptank with water before each dipping session. This task was a source of labour (depending on the distance between the diptank and the family household’s location), a source of fine for women when they failed to comply with it and a hard and time-consuming burden for women who had to bring six buckets of 20 litres for each dipping session. This exemplifies how the participatory process and the empowerment of local stakeholders could lead to the appropriation of a demand-driven innovation (i.e., the borehole and the irrigated garden) and made it possible, based on local knowledge, experience and the inclusiveness of the process, to connect it to other aspects of local livelihoods directly linked to other thematic (e.g., LPS). A standard innovation transfer would have focused on the building of an irrigated garden with a borehole as per the project predefined activities and budget”.

- Acknowledge the study’s limitations, such as the scope of stakeholder engagement or potential biases in participatory processes.

Response: we added this paragraph and a few words in the conclusion: “The approach presented here has limitations. It is time-consuming compared to an intervention with pre-defined activities. Here the process lasted more than one year between the future workshop and the questionnaire survey. In other sites of the ProSuLi project, some stakeholders expressed “workshop fatigue” and wanted more concrete outputs which only came later (pers. comm.). The approach is also resource consuming (human and material resources for workshops). This is a trade-off between the ratio of resource used and the probability of sustainability of the intervention that the authors decided to test in the long-term. Finally, we took into consideration the question of influence and power relations during the implementation of the participatory process but, as external stakeholders, the authors could never be sure that they were not manipulated and entangled within local hidden power relationships. This is a risk common to all participatory approaches undertaken by external stakeholders.”

## **Conclusion**

**Are the conclusions adequately supported by the results (without overstating the implications of the findings)?**

Yes,  No,  Partially,  I don’t know

The conclusion should be revised, as it currently includes some overstatements. For instance, in **LL548-549**, the statement “**This process ensured that LPS interventions were not repeating previous mistakes**” is quite strong and should be contextualized and moderated. The study, as presented, primarily reports the results of a workshop and questionnaire, with no validation of the effectiveness of the proposed interventions. Therefore, the authors cannot confidently claim that the process has avoided past mistakes. This statement should be rephrased to reflect the exploratory and preliminary nature of the findings.

Response: agreed. We have modified the sentence: “This process could ensure that LPS

interventions are demand-driven and locally relevant”.

Furthermore, the potential limitations of the approach or study should also be addressed in the conclusion. Highlighting these would provide a balanced and realistic perspective on the research and its implications.

Response: agreed. Done: “This process has limitations in the sense that it requires time and resources to be developed in comparison to top-down implementation of interventions with or without consultation”.

Additionally, the authors mention that stakeholders “**are now prepared... to negotiate with these stakeholders the terms of any LPS intervention in the area.**” The term “**negotiate**” is unclear in this context. If negotiation was indeed part of the project, details should be included in the **Materials and Methods, Results, and Discussion** sections to explain how this aspect was integrated. If it was not, this statement should be revised to clarify the intended meaning.

Response: this reference to “negotiation” has been removed.