Review of: "Exploring the Link between Climate Change and Farming in Rural and Peri-Urban Communities in Sierra Leone"

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Potential competing interests: No potential competing interests to declare.

Exploring the Link between Climate Change and Farming in Rural and Peri-Urban Communities in Sierra Leone

Review Comments on Abstract:

1. **Clarity and Conciseness**:

- The abstract is overly detailed and lengthy, making it difficult to grasp the key points at a glance. Abstracts should provide a succinct summary of the research, ideally around 200-300 words. It would benefit from removing excessive detail and focusing on the core findings and conclusions.
- For example, the entire explanation of yield trends and the reasons behind these trends could be summarized more efficiently without delving into specific year-to-year changes.
- The introduction should clearly frame the problem and significance of the study upfront. While it states that climate change impacts farming and livelihoods, the phrasing is somewhat vague. Consider specifying the precise research gap (e.g., “limited studies on climate change impacts on agriculture in Sierra Leone”), as this would better justify the research.
- Suggested revision: “Climate change has significantly impacted farming and livelihoods globally, yet there is limited research on its specific effects in Sierra Leone. This study aims to explore how climate change has affected agricultural productivity and farmers' coping strategies in the region.”
- The abstract lists research questions rather than clearly stating the research objectives. While the questions are important, the objectives should summarize the purpose of the study without needing to explicitly list the questions.
- Suggested revision: “This study investigates the effects of climate change on crop and livestock farming in Sierra Leone from 2014 to 2023, analysing trends in yields and exploring farmers' adaptive strategies.”
- The methodology is somewhat detailed for an abstract. While it is essential to mention the sample size, sampling technique, and data analysis tools, information such as the exact version of SPSS used is unnecessary here.
- Suggested revision: “Data were collected from 315 respondents using purposive and random sampling techniques, complemented by climate data from three weather stations. Analysis was conducted using SPSS.”
- The findings are comprehensive but should be condensed and presented in a more focused manner. Rather than explaining specific crops or animals, provide a broader summary of key findings such as “Farmers reported mixed yield

trends, influenced by changes in rainfall and temperature, with increased fertilizer use and land expansion contributing to recent yield improvements."

- The same goes for the discussion on livestock and climate impacts; highlighting the most significant trends and impacts would be more effective than listing every observation.
- Suggested revision: "The study revealed fluctuating crop yields, impacted by erratic rainfall and rising temperatures. Farmers employed strategies such as adjusting planting times and using drought-resistant crops to mitigate these effects. Increased temperature and humidity contributed to heat stress in livestock and crop diseases."
- The section on coping strategies is important, but it can be summarized to focus on the most common or impactful strategies adopted by farmers. It is also essential to link these strategies to their effectiveness and implications for future policy development.
- The conclusion seems to be more of a recommendation. While recommendations are important, the abstract should first present a brief conclusion that synthesizes the results. The recommendation could follow, but in a more concise form.
- Suggested revision: "The findings underscore the need for targeted training to enhance farmers' existing knowledge and adaptive capacities, promoting long-term sustainability and food security."
- The abstract contains a few awkward phrases and run-on sentences. Breaking longer sentences into shorter, clearer ones will improve readability. For example, "Humidity has been increasing, and that has been promoting diseases in both plants and animals" can be rephrased as "Rising humidity has promoted disease in both plants and animals."
- Transition between sections could be smoother. For instance, the discussion on temperature impact abruptly shifts to coping strategies without a clear transition.

2. **Introduction of the Problem**:
3. **Research Objectives**:
4. **Methodology**:
5. **Results/Findings**:
6. **Coping Strategies**:
7. **Conclusion and Recommendations**:
8. **Language and Flow**:

Overall Suggestions for Improvement:

1. **Be concise**: Focus on summarizing key points without excessive detail. Aim for brevity while maintaining clarity.
2. **Clarify objectives**: State the research objectives rather than listing research questions.
3. **Summarize results**: Provide a focused summary of the main findings, without delving into every detail.
4. **Improve flow**: Ensure smooth transitions between sections and revise awkward phrasing for clarity.

The introduction provides a broad overview of climate change impacts on global agriculture, referencing several relevant studies. However, it can be improved in several ways to enhance clarity, coherence, and relevance to the specific research context.

Suggestions for Improvement:

1. **Focus and Conciseness**: The introduction includes a lot of general information about climate change impacts globally, but it could be more focused on the specific context of Sierra Leone. Condense some of the global references and emphasize the local context earlier.
2. **Logical Flow**: The narrative jumps between global impacts, African impacts, and then Sierra Leone. A clearer structure would help: (a) Global context, (b) African context, (c) Sierra Leone context. This would better prepare the reader for the specific objectives of the study.
3. **Clarify the Research Gap**: The gap in literature regarding climate change's impact on farming in Sierra Leone is mentioned briefly, but it could be more explicitly defined. Clearly stating what existing studies lack and how this study fills that gap would strengthen the introduction.
4. **Excessive Citations**: Some sections contain multiple citations for the same point (e.g., Gowda et al., 2015; Ziska et al., 2016, Walsh et al., 2016). Consolidating or reducing the number of references in these areas would improve readability.
5. **Research Questions**: The research questions at the end are comprehensive, but they could be introduced earlier in the introduction to align with the structure of the narrative and highlight the purpose of the study.

The **Methodology** section provides a clear outline of the research design, data collection methods, and analysis techniques, but a few improvements could strengthen its clarity and rigor:

1. **Sample Justification**: The selection of 45 questionnaires per district appears arbitrary. It would be helpful to explain why this number was chosen and how it ensures representativeness.
2. **Climatic Data Sources**: While the weather stations are named, a brief description of their reliability and the geographic range they cover relative to the study areas would provide more context for data quality.
3. **Data Collection Timeline**: The one-month data collection period across seven districts could raise questions about seasonal variability. Clarifying if this timing affects the results would improve transparency.
4. **Triangulation Explanation**: The concept of triangulating household survey data with climatic data is good but could benefit from a more explicit explanation of how this was systematically done.
5. **Ethical Considerations**: While ethical approval is mentioned, adding information on how informed consent was obtained and how anonymity/confidentiality was maintained would strengthen the ethical rigor.

Review Comments on the Results and Discussion Section:

The results and discussion provide a comprehensive overview of farmers' socio-economic profiles, farming practices, and perceptions of climate impacts. However, some improvements could strengthen the analysis:

1. **Data Interpretation:** The discussion often summarizes the data without sufficiently analyzing or explaining the underlying trends. For instance, the increase in yields attributed to fertilizer use (Figure 6) could benefit from further examination of whether this is sustainable long-term or its environmental trade-offs.
2. **Comparisons and Contradictions:** Some contradictory findings, such as the minimal impact of climate change on livestock versus other studies (Figure 8), need deeper exploration. This section could benefit from additional context or hypotheses on why this region's livestock are more resilient.
3. **Limited Discussion on Climatic Data:** While the report discusses farmers' perceptions, it lacks a detailed discussion on how the collected climatic data correlates with their experiences. A deeper analysis of the climatic data alongside farmers' views could better substantiate the conclusions.
4. **Causal Links:** The results mention changes (like yield increase or decrease) but don't always establish clear causal links between climate change and agricultural outcomes. Adding regression results with more detailed interpretations would enhance the credibility of the findings.
5. **Broader Implications:** The report could improve by discussing the broader implications of the findings. For example, how do these trends inform future policy recommendations or adaptation strategies for farmers?

Review Comments on Farmers' Perception of the Impact of Climate Change on Farming

1. **Clarity and Structure:** The section provides useful insights into farmers' perceptions, but it would benefit from clearer subheadings to improve navigation and readability. Each climate factor (rainfall, temperature, humidity, wind) should have distinct discussion points on perception, impacts, and coping strategies to create a clearer flow.
2. **Use of Figures:** The figures are helpful but lack clear references in the text that guide readers to interpret the data. Ensure each figure is explicitly mentioned and explained in relation to the narrative, enhancing understanding of the visual data.
3. **Comparative Analysis:** While farmers' perceptions are well-documented, there is limited comparative discussion between the findings and broader literature or climate data. Integrating more references (e.g., Johnson et al., 2009) would enhance credibility and provide context for the variations in farmer experiences.
4. **Data Interpretation:** The interpretation of the farmers' perceptions could be further developed. For instance, explaining why perceptions of late rains persist despite an increase in total rainfall could clarify contradictions and deepen the analysis.
5. **Coping Strategies:** The coping strategies listed are helpful but could be expanded with further details on their effectiveness. Additionally, comparing these strategies with best practices or other regions' adaptations would enrich the discussion and provide actionable recommendations.
6. **Conclusion and Actionable Insights:** The section would benefit from a concluding paragraph summarizing key findings and their implications. Identifying actionable insights based on farmers' perceptions and experiences would provide clear takeaways for future interventions or policy recommendations.

Review Comments on the Conclusion:

1. **Clarity and Conciseness**: The conclusion is overly detailed and repeats many findings. It would benefit from a more

concise summary, emphasizing key insights without reiterating specific data collection methods or exhaustive lists of findings. This could make it sharper and easier to digest.

2. **Linking Findings to the Research Objectives**: The conclusion should more explicitly connect the findings back to the original research questions posed. It currently reads like a repetition of the results section, rather than synthesizing how the findings contribute to understanding the impact of climate change on farming in Sierra Leone.
3. **Significance and Implications**: A stronger emphasis on the broader implications of the findings would be useful. How can this information be used by policymakers, farmers, or other stakeholders? What are the key takeaways?
4. **Recommendations**: While coping strategies are mentioned, more direct recommendations or suggestions for future research would strengthen the conclusion. For instance, which strategies worked best, and how can they be scaled or improved?
5. **Repetition**: There is some redundancy, especially regarding the coping strategies. Streamlining the text to avoid unnecessary repetition would improve the flow.

To improve the references section of the report, the following recommendations can be made:

1. **Consistency in Author Names**: Author names should follow a consistent format (e.g., using initials vs. full first names). In some citations, full first names are used (e.g., Lahai, M.K.), while others use initials (e.g., Ghaffar, A.). Standardizing to one style (e.g., APA style) will enhance readability and professionalism.
2. **Ensure Correct DOI Formatting**: Some DOIs are incorrectly formatted or missing. For instance, "doi:10.1201/9781003286417-1" should be formatted consistently with others. Also, the DOI for Aryal et al. (2019) seems to have a typo ("doi.org" is incorrectly written as "doi.ogr").
3. **Web Links Validation**: Ensure all hyperlinks are functional and correctly formatted. For example, the link to the McKinsey report contains a typo in the URL ("our-will" should be "how-will").
4. **Proper Access Dates**: Consistently indicate access dates for all online resources. For instance, FAO (2016) lacks an access date.
5. **Clarification on Publisher Information**: Some references (e.g., Ghaffar et al. (2022)) provide the publisher ("Boca Raton, FL: CRC Press") but should ensure other references also provide full publishing details when relevant.
6. **Title Capitalization**: Ensure all article titles follow consistent capitalization rules, such as sentence case or title case, depending on the chosen referencing style.
7. **Incomplete References**: Some references, like FAO (2016), are incomplete and need more details such as a working URL or more information on the publication source.
8. **Abbreviations and Acronyms**: Consistently format the names of organizations and journals (e.g., "Archi Agron, Soil Sci." should be either expanded or remain consistent with other abbreviated journal names).