

REVIEWER'S REPORT

Manuscript No.: **IJAR- 59523**

Title: Stratégies d'adaptation des populations face aux inondations en contexte de changement climatique à Missabougou dans la Commune VI du District de Bamako au Mali.

Recommendation:

Accept as it is

Accept after Minor revision.....

Accept after Major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: **Dr. ANAPANA GOPAL**

Reviewer's Comment for Publication.

1. General Comments

The manuscript examines household adaptation strategies and institutional responses to recurrent flooding in Missabougou, Bamako, Mali. The study combines a household survey of 50 respondents, interviews with five institutions, and field observations to investigate the perceived causes, impacts, and effectiveness of flood-adaptation measures.

The topic is relevant to climate-change adaptation, urban disaster-risk reduction, environmental management, and community resilience in rapidly urbanising African cities. The integration of quantitative household data with qualitative institutional perspectives is a strength of the study. The findings highlight the role of blocked drainage channels, inadequate drainage infrastructure, inadequate waste management, and settlement in low-lying areas in aggravating flood impacts. The manuscript also identifies the financial constraints faced by households and the perceived limitations of public-sector interventions.

However, several methodological and interpretative issues require attention. The household sample is relatively small and geographically concentrated, while the sampling procedure and the basis for selecting the five zones need further clarification. The study relies primarily on self-reported experiences and perceptions, with limited objective hydrological or meteorological measurements to establish the relative contribution of rainfall intensity, drainage conditions, and topography. Furthermore, the conclusion that the findings establish a systematic account of household adaptation strategies for the first time requires stronger justification through comparison with previous research.

The manuscript would benefit from clearer reporting of the sampling design, improved consistency in the presentation of numerical results, a more explicit discussion of limitations, and more cautious interpretation of the relationship between climate change and local flooding. Overall, the study addresses an important issue and offers

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potentially useful local evidence, but substantial revisions are needed to strengthen its scientific rigour and contribution.

2. Content and Originality

The manuscript investigates a relevant research gap concerning how households in Missabougou respond to recurrent flooding and how they evaluate the effectiveness of their adaptation strategies. The combination of household surveys, institutional interviews, and direct field observations offers a useful perspective on the interaction between community-level coping mechanisms and public disaster-management systems.

The results indicate that 86% of respondents identify waste-blocked drainage channels as a cause of flooding, 74% report raising household belongings, and 84% consider public action insufficient. These findings provide a useful foundation for understanding local vulnerability and the limitations of household-led adaptation.

Nevertheless, the following issues should be addressed:

- The authors should clearly distinguish the study's original contribution from previous research on flooding and flood vulnerability in Missabougou and other parts of Bamako.
- The relationship between climate change and the observed flooding should be discussed carefully. The household survey establishes perceptions of flood causes but does not independently demonstrate local climate-change trends.
- The manuscript should explain how the reported adaptation strategies compare with those documented in other West African urban communities.
- The discussion of maladaptation, particularly the possibility that individual protective structures redirect water towards neighbouring properties, is important but would benefit from more systematic evidence from the field observations or interviews.
- The recommendations concerning drainage redesign, relocation, early-warning communication, and institutional coordination should be linked more explicitly to the study's findings and the responsibilities of the institutions involved.

The manuscript has practical relevance, but its originality and broader scientific contribution should be stated more precisely.

3. Technical Quality

The technical quality of the manuscript requires improvement, particularly regarding sampling design, data analysis, methodological transparency, and the strength of the conclusions.

Minor technical concerns include:

1. Sampling design and representativeness: The survey includes 50 households divided equally among five zones, including one control zone located on sloping terrain. The authors should explain how households were selected within each zone and justify the sample size. The limitations of generalising these findings to the entire Missabougou population should be acknowledged.
2. Selection of the control zone: The manuscript reports that none of the households in the elevated zone experienced direct flooding, whereas flooding was common in other zones. This observation is relevant, but the study does not establish that topography alone explains the difference. The authors should discuss other possible differences in drainage, infrastructure, and settlement characteristics.
3. Statistical analysis: The analysis primarily uses frequencies and percentages. Although appropriate for descriptive reporting, the authors should explain how

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responses were coded and analysed. Where the data permit, comparisons between the flood-prone zones and the control zone could strengthen the analysis. Given the small sample, any inferential analysis should be selected cautiously and interpreted with appropriate limitations.

4. Consistency of numerical results: The abstract reports that 48% of respondents had never attended school, whereas Table 1 on page 5 reports 56%. The authors must verify the original dataset and correct the discrepancy. The conclusion also states that three out of four residents consider their strategies ineffective, although the results distinguish between strategies rated as having little effectiveness (50%) and those considered completely ineffective (26%). These categories should be reported consistently.

5. Measurement of flood exposure and impacts: The study relies mainly on respondents' reports of annual flooding and associated losses. The field observation of a water mark measuring approximately 60–90 cm is useful, but the authors should clarify how flood depth, frequency, and household damage were assessed. Independent records or measurements, where available, would strengthen the evidence.

6. Qualitative analysis: The manuscript reports interviews with five institutions and thematic analysis using four analytical categories. However, the coding procedure, treatment of differing institutional perspectives, and process used to derive the themes are insufficiently detailed. More explicit methodological information and carefully selected interview excerpts would improve transparency.

7. Assessment of adaptation effectiveness: The effectiveness of household strategies is measured through respondents' perceptions. These findings should be described as perceived effectiveness, rather than objective evidence that the strategies reduce or fail to reduce flood damage. A longitudinal assessment or comparison of losses before and after interventions would provide stronger evidence.

8. Climate-change attribution: The manuscript discusses increasingly intense rainfall and climate-related risks, drawing on previous studies and institutional interviews. However, no local rainfall time series or hydrological modelling is presented. The authors should distinguish between established regional climate findings, institutional assessments, and conclusions directly supported by the household survey.

9. Ethical considerations: The manuscript states that participants provided oral consent and that household respondents remained anonymous. The authors should clarify whether institutional ethical approval or an exemption was obtained, where applicable, and explain how consent and confidentiality were managed.

These revisions would improve the reliability, reproducibility, and scientific credibility of the study.

4. Language and Presentation

The manuscript is generally readable and presents its findings in a logical sequence. The French text and English abstract communicate the principal objectives and results. Nevertheless, improvements in language, terminology, and formatting are necessary.

The following corrections are recommended:

- Correct grammatical errors, spacing problems, punctuation, and inconsistent formatting throughout the manuscript.
- Standardise technical terms relating to flooding, climate-change adaptation, vulnerability, resilience, and maladaptation.

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- Improve the consistency of terminology used for drainage channels, natural collectors, gutters, and flood-control structures.
- Ensure that all percentages reported in the abstract, tables, figures, discussion, and conclusion agree with the verified dataset.
- Improve the readability of figures and tables, particularly axis labels, captions, units, and source statements.
- Correct typographical inconsistencies in author names and citations, including missing spaces between names and expressions such as “et al.”
- Ensure that the English abstract accurately reflects the final French text after revisions.
- Avoid presenting household perceptions as definitive proof of hydrological or climatic causes.

A thorough language and formatting revision is recommended after the methodological issues have been resolved.

5. Structure and Organization

The manuscript follows a conventional research-paper structure, including an abstract, introduction, methodology, results, discussion, conclusion, and references. The overall organisation is appropriate, and the separation of household findings from institutional perspectives helps the reader understand the different dimensions of the problem.

However, several structural improvements are recommended:

- Abstract: Clearly state the study design, sampling approach, principal findings, and key limitations. Ensure that the reported percentages are consistent with the results section.
- Introduction: Strengthen the research gap and explain more explicitly how the study advances existing knowledge on flood adaptation in Bamako.
- Methodology: Provide additional details on household selection, sample-size justification, questionnaire design, qualitative coding, and ethical procedures.
- Results: Present the quantitative and qualitative findings clearly, avoiding repetition between the text, tables, and figures. Correct discrepancies in educational-attainment figures and other numerical results.
- Discussion: Distinguish findings directly established by the study from interpretations informed by previous literature. Discuss the implications of the small sample and the absence of detailed hydrological measurements.
- Recommendations: Prioritise the proposed interventions and identify the relevant institutions, implementation requirements, and expected outcomes where supported by the evidence.
- Conclusion: Summarise the major findings without overstating the confirmation of the research hypothesis or the originality of the study. Include the main limitations and directions for future research.

The existing structure is suitable, but improved consistency and a clearer distinction between results, interpretation, and recommendations would strengthen the manuscript.

6. References and Citations

The manuscript cites relevant literature on urban flooding, climate-change adaptation, vulnerability, resilience, and disaster-risk management. The references provide a useful theoretical foundation for interpreting the experiences of households in Missabougou.

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However, the reference list and in-text citations require careful verification.

The following points should be addressed:

1. Verify the bibliographic details of all cited works, including author names, publication years, journal titles, volume numbers, page ranges, and DOI information where available.
2. Ensure that every in-text citation appears in the reference list and that every listed reference is cited in the manuscript.
3. Standardise the reference style according to the journal's guidelines, including punctuation, italics, author formatting, and publisher details.
4. Verify the sources supporting claims about the tripling of extreme Sahelian storms, regional rainfall trends, and projected climate change.
5. Provide appropriate citations for statements concerning urbanisation, drainage infrastructure, informal settlements, and flood vulnerability in Bamako.
6. Ensure that references used to explain maladaptation and anticipatory learning directly support the interpretations made in the discussion.
7. Strengthen the use of recent, directly relevant studies on community-based flood adaptation and urban resilience in West Africa.

The authors should verify the references systematically rather than relying solely on their appearance in the bibliography.

7. Overall Recommendation

The manuscript addresses an important environmental and social challenge: recurrent urban flooding and the limited capacity of households and institutions to achieve sustainable adaptation. Its combination of household surveys, institutional interviews, and field observations provides useful descriptive evidence from Missabougou.

The findings highlight the importance of drainage infrastructure, waste management, household financial constraints, and institutional coordination. The discussion of temporary protective measures and the limitations of individual adaptation is particularly relevant to urban disaster-risk management.

However, inconsistencies in reported numerical results, limited methodological detail, the small and geographically restricted sample, and the reliance on perceived rather than objectively measured adaptation effectiveness weaken the current conclusions. The relationship between climate change and local flood patterns also requires more cautious treatment.

The authors should correct the data inconsistencies, clarify the sampling and analytical procedures, strengthen the qualitative methodology, and acknowledge the limitations of the evidence. The discussion and recommendations should be revised to ensure that all conclusions are directly supported by the study.

Recommendation: Minor revision. The manuscript has potential value, but its methodological transparency, numerical consistency, and interpretation of findings must be substantially improved before it can be considered for publication.

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8. Final Decision

Final Decision: **Minor Revision**

The manuscript should not be accepted in its current form. The authors must address the discrepancies in the reported data, provide clearer methodological information, strengthen the interpretation of household and institutional findings, and moderate claims concerning climate-change attribution and adaptation effectiveness. Following these revisions, the manuscript may be reconsidered for publication.