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REVIEWER'S REPORT

Manuscript No.:IJAR-55640

Title: ***Impact de l'Utilisation et l'Occupation des Sols sur la Gestion de l'Eau dans un Contexte de Changement Climatique : cas de la Zone de M'Béwani (Office du Niger, 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		Good		
Techn. Quality		Good		
Clarity		Good		
Significance		Good		

Reviewer Name**: Dr Thirunahari Ugandhar**

Detailed Reviewer's Report

1. Overall Evaluation

The manuscript entitled *"Impact de l'Utilisation et l'Occupation des Sols sur la Gestion de l'Eau dans un Contexte de Changement Climatique : cas de la Zone de M'Béwani (Office du Niger, Mali)"* presents a comprehensive assessment of land use and land cover (LULC) dynamics and their implications for water resource management under climate change conditions. Using a combination of **remote sensing, climatic analysis and field surveys**, the study provides a valuable case study of an irrigated Sahelian agricultural system.

The topic is **highly relevant**, particularly in the context of increasing climatic variability, agricultural intensification and pressure on water resources in West Africa. The manuscript demonstrates strong empirical foundations; however, **minor to moderate revisions** are required to improve clarity, structure, language quality and methodological transparency before publication.

2. Strengths of the Manuscript

- The study addresses a **critical environmental and socio-economic issue** relevant to climate adaptation and sustainable agriculture in the Sahel.
- Use of **multi-temporal Landsat imagery (1997, 2013, 2023)** enables a robust diachronic analysis of land use change.

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- Classification accuracy is well validated, with **high Kappa coefficients (92–97%)**, indicating reliable results.
- Integration of **long-term climatic data (1992–2023)**, including SPI and potential evapotranspiration, strengthens the analysis.
- The inclusion of **field surveys** provides an important governance and institutional perspective.
- Results are supported by **maps, tables and figures**, facilitating interpretation.
- The discussion is supported by **relevant regional and international literature**.

3. Major Comments

1. **Title**

The title is scientifically accurate but relatively long. A more concise formulation would improve readability and align better with international journal standards.

2. **Abstract (French and English)**

The French abstract is informative but contains long and complex sentences that could be simplified for clarity.

The English abstract requires **language editing**, including correction of grammatical errors, typographical issues (e.g. "aver<age"), and stylistic inconsistencies.

The methodological approach (supervised classification, SPI, ETP) should be more clearly summarised in both abstracts.

3. **Methodology**

The selection of land use/land cover classes should be more clearly justified, with references where possible.

Although Google Earth validation points are mentioned, the **total number of reference points per class** should be clearly stated.

The survey methodology would benefit from additional detail regarding **sample size, sampling strategy and respondent selection criteria**.

Some methodological descriptions are repeated (e.g. Landsat data acquisition) and could be streamlined.

4. **Results and Interpretation**

The results clearly demonstrate significant agricultural expansion and reduction of aquatic areas; however, some sections of the discussion largely restate the results rather than providing deeper interpretation.

A more explicit discussion of **study limitations**, including Landsat spatial resolution and uncertainties in climatic data, would strengthen the manuscript.

5. **Figures and Tables**

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Figure numbering should be carefully checked, as there appear to be inconsistencies (e.g. repeated figure numbers).

Captions should be fully self-explanatory and written in a consistent format.

4. Minor Comments

- Correct typographical and grammatical errors throughout the manuscript (spacing, accents, verb agreement).
- Ensure consistency in terminology and spelling (e.g. *M'Béwani / M'Bewani*, *SPI / ISP*).
- Standardise units and numerical formats (mm, %, ha).
- Improve the clarity of some graphs by ensuring axis labels and legends are clearly readable.
- Verify that all cited references appear in the reference list and are formatted consistently.

5. Discussion and Conclusion

The discussion appropriately situates the findings within the broader regional and international context. The links made with previous studies in Mali and West Africa are relevant and strengthen the scientific contribution. The conclusion effectively summarises the key findings and provides **practical recommendations**, particularly regarding irrigation management, governance and climate adaptation strategies.

6. Reviewer's Recommendation

This manuscript represents a **valuable contribution** to the understanding of land use dynamics and water resource management in irrigated Sahelian environments under climate change. Subject to **minor to moderate revisions**, particularly concerning language quality, methodological clarity and structural coherence, the manuscript is **recommended for publication**.