

REVIEWER'S REPORT

Manuscript No.: **IJAR-52371**

Date: June 19, 2025

Title: ESTIMATION DU STOCK DE CARBONE DES SYSTEMES AGROFORESTIERS DANS LA COMMUNE DE N'G'ALALI AU NORD-EST DU BENIN

Recommendation:

Accept as it is

Accept after minor revision

Accept after major revision

Do not accept (*Reasons below*)

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

Reviewer Name: Dr Lakhdar Guerine

Date: June 19, 2025

Reviewer's Comment for Publication.

(To be published with the manuscript in the journal)

The reviewer is requested to provide a brief comment (3-4 lines) highlighting the significance, strengths, or key insights of the manuscript. This comment will be Displayed in the journal publication alongside with the reviewers name.

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Detailed Reviewer's Report

REVIEWER'S REPORT

This study aims to estimate the carbon stock of various agroforestry systems (AFS) in the commune of N'Dali (Benin) as part of a broader effort to combat climate change. Using a floristic inventory across 150 plots and locally adapted allometric models, the study quantifies aboveground and belowground biomass to calculate total carbon stock, CO₂-equivalent emissions, and their monetary value.

Agroforestry parklands show the highest carbon stock (39.23 t/ha), followed by fallows (27.49 t/ha), plantations, home gardens, and hedgerows. A strong correlation ($R^2 > 0.79$) is demonstrated between the ecological importance of species and carbon storage, along with a clear influence of tree diameter on carbon accumulation. The study concludes that AFS are significant carbon sinks that should be prioritized in climate resilience policies.

Strengths

- Highly relevant topic addressing climate change.
- Robust methodology: botanical inventory, stratified AFS types, use of localized allometric equations.
- Comprehensive statistical analysis: ANOVA, Kruskal-Wallis, correlation, logarithmic transformation.
- Clear and actionable results: carbon values, CO₂-equivalents, and monetization.
- Well-integrated and pertinent comparison with existing literature.

Weaknesses

- Writing style is sometimes dense and redundant, affecting clarity.
- Lacks cartographic illustrations of AFS locations or sampling plots.
- Figures and tables occasionally lack clear legends or adequate interpretation.
- Methodological limitations (e.g., uncertainty in allometric models) are under-discussed.
- The discussion section could better articulate concrete policy or socio-economic implications.

Recommendations

A thorough linguistic and editorial revision is recommended to enhance clarity and readability. Better visual presentation of results (e.g., maps, infographics) would significantly improve the study's impact and accessibility to a wider audience.