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REVIEWER'S REPORT

Manuscript No.: IJAR-59774

Title: Reconciling energy, comfort, cost and carbon in a tropical dwelling: a many-objective study for Benin

Recommendation:

Accept as it is .....

Accept after minor revision.....X.....

Accept after major revision ....

Do not accept (*Reasons below*) .....

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

Reviewer Name: Dr.Edmond Zeneli

Detailed Reviewer's Report

This manuscript presents a relevant and potentially valuable study of residential building design in a hot-humid tropical climate. Its main contribution is the integration of five objectives—electricity consumption, thermal comfort, construction and maintenance cost, embodied carbon, and overheating during power outages—within a multi-objective optimization framework. The use of EnergyPlus simulations, surrogate modelling, NSGA-III, and repeated optimization searches is an ambitious methodological approach. The paper addresses several important issues, particularly the energy contribution of ceiling fans, the selection of locally available construction materials, and the trade-offs between energy performance, comfort, cost, and environmental impact. The attempt to validate surrogate-model predictions through full EnergyPlus simulations is also a positive aspect.

Originality requires clarification since the authors state that the present manuscript extends an earlier study entitled *"Multi-objective optimization of the energy performance of a BIM model of a residential building"*, which had already been accepted for publication in another journal. The current paper uses the same building and extends the optimization from 11 variables and three objectives to 16 variables and five objectives. Although this extension may represent a legitimate scientific contribution, the authors should clearly distinguish the new work from the previously accepted publication. They should:

- Explain which modelling components, simulation results, figures, tables, and datasets are reused.
- Identify the methodological and scientific contributions that are genuinely new.
- Demonstrate that the present manuscript does not reproduce substantial material or results from the earlier publication without appropriate disclosure.

I believe the manuscript has publication potential, but the issues identified above require substantial clarification and, in some cases, additional analysis. I therefore recommend Minor Revision.