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REVIEWER'S REPORT

Manuscript No.: IJAR-57079

Title: Benchmarking Statistical, Machine Learning, Deep Learning, and Hybrid Forecasting Models for Global Renewable Energy Consumption: A Walk-Forward Cross-Validation Study with Structural Break Analysis.

Recommendation:

- Accept as it is
- Accept after minor revision YES**
- Accept after major revision
- Do not accept (*Reasons below*).....

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

Reviewer's Name – Dr. Bharti Bisht

Detailed Reviewer's Report

The research paper titled “Benchmarking Statistical, Machine Learning, Deep Learning, and Hybrid Forecasting Models for Global Renewable Energy Consumption: A Walk-Forward Cross-Validation Study with Structural Break Analysis” presents a highly rigorous and methodologically sophisticated examination of forecasting techniques in the context of renewable energy consumption. The abstract is comprehensive and clearly articulates the research problem, emphasizing the importance of accurate forecasting for energy transition planning and alignment with global sustainability goals such as SDG-7. The study demonstrates strong academic depth by incorporating a wide range of forecasting models, including classical statistical approaches, machine learning, deep learning, and a novel hybrid ETS–GRU model. The use of advanced validation techniques such as walk-forward cross-validation, nested hyperparameter tuning, Diebold–Mariano tests, Model Confidence Set analysis, and bootstrap inference significantly enhances the robustness and credibility of the findings. The identification of a structural break in 2014 using the Chow test adds valuable contextual insight linked to global policy shifts.

The results are particularly noteworthy, as they challenge the common assumption that complex deep learning models always outperform traditional methods, instead highlighting the superior performance of parsimonious models like Holt Linear Exponential Smoothing in small-sample contexts. The introduction of innovative analytical constructs such as the Transition Velocity Index, beta-convergence analysis, and SDG-7 gap assessment further strengthens the contribution of the study to the field of energy economics and policy analysis. However, the paper could be improved by providing more intuitive explanations of complex methodologies for broader accessibility and by discussing potential limitations related to data constraints and model generalizability. Overall, the study is a significant and original contribution, offering both theoretical and practical insights into renewable energy forecasting and evidence-based policy planning.