

# Review of: "Quantifying the Environmental Impact: A Comparative Analysis of Consensus Algorithms in Blockchain for Carbon Footprint Reduction and Mitigating Climate Change"

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Potential competing interests: No potential competing interests to declare.

## Importance of the Problem:

The paper addresses an important problem—climate change—and explores the potential of blockchain consensus algorithms to contribute to mitigating its impacts. This is a relevant and timely topic given the increasing concerns about the environmental footprint of emerging technologies.

## Structure and Organization:

The paper is well-structured with a logical flow. Sections such as Introduction, Background, Literature Review, and Proposed Methodology are appropriately included and contribute to building a comprehensive understanding of the research topic.

## Methodological Rigor:

The proposed methodology appears sound and comprehensive, considering various dimensions of environmental impact. However, the actual execution of the methodology will determine its effectiveness.

Inclusion of critical and vital factor such as:

- “The lower limit” which is defined by a scenario in which all miners use the most efficient hardware, the energy efficiency of the most efficient hardware.
- “The upper limit” which is defined by the break-even point of revenues and electricity cost.

Can help in methodological strengthening.

## In-Depth Analysis of Results:

The results section does not provide an in-depth analysis of the findings. The discussion lacks any patterns, trends, or significant observations resulting from the evaluation of different consensus algorithms.

The paper could benefit from incorporating specific examples or case studies where this unique perspective on the relationship between blockchain consensus algorithms and environmental impact in real-world scenarios is explained.

This would enhance the practical relevance and applicability of the analysis.

Even though the examples are well defined but in place of hypothetical data any real data would strengthen the analysis.

**Contextualizing the Significance:**

The significance of the conclusions within the broader context of climate change mitigation and blockchain technology should be made more clear and precise. How do the findings advance our understanding of the environmental impact of consensus algorithms?

**Future Directions:**

Consider including a section on future directions or areas for further research. This can help situate the study within the ongoing discourse in the field and guide researchers toward potential avenues for exploration.