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## REVIEWER'S REPORT

**Manuscript No.: IJAR-59631**

**Title: Valorization of Road Construction Waste: Case of the Mboro Diogo Road Section (Senegal)**

**Recommendation:**
Accept

| Rating | Excel. | Good | Fair | Poor |
|---|---|---|---|---|
| Originality | Yes | | | |
| Techn. Quality | | Yes | | |
| Clarity | Yes | | | |
| Significance | | Yes | | |

**Reviewer's ID: JPR- 015**

## *Detailed Reviewer's Report*

**Reviewer's Comment for Publication.**
Acceptance Comment are mentioned below suitable for the paper titled "**Valorization of Road Construction Waste: Case of the Mboro Diogo Road Section (Senegal) " "**

**Reviewer Comments: Accept**

**Reviewer Comments –**

### 1. Introduction

The manuscript addresses an important challenge in sustainable road infrastructure development through the recycling and reuse of reclaimed pavement materials. The study focuses on the valorization of road construction waste from the Mboro–Diogo road section in Senegal. The research is particularly relevant in the context of increasing demand for quality construction materials, limited natural resources, and budgetary constraints. The objective of evaluating the suitability of recycled lateritic gravels for sub-base applications is clearly established. Overall, the study presents a practical and environmentally responsible approach to sustainable road construction.

### 2. Literature Review

The research focuses on an important area of sustainable pavement engineering, particularly the recycling of road demolition materials. The utilization of reclaimed lateritic gravels offers opportunities to reduce dependence on natural aggregates and minimize construction waste. The study highlights the importance of material characterization and performance evaluation before incorporating recycled materials into pavement layers. The consideration of particle-size distribution, plasticity, compaction, and bearing capacity provides a relevant technical foundation. The research contributes to the broader understanding of resource-efficient and sustainable road construction practices.

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**3. Solution Approach**

The adopted experimental methodology is appropriate for evaluating the feasibility of reusing reclaimed pavement materials. Samples collected from three boreholes (S1, S2, and S3) provide a comparative basis for material assessment. Blending the recovered lateritic gravels with raw materials from the Keur Samba Kane quarry at 30%, 50%, and 70% incorporation rates enables systematic performance evaluation. The use of particle-size distribution, Atterberg limits, Proctor, and CBR tests provides a comprehensive assessment of the physical and mechanical characteristics. This systematic experimental approach strengthens the reliability and practical relevance of the investigation.

**4. Results and Discussion**

The results demonstrate that incorporating raw lateritic gravels from the KSK quarry considerably improves the mechanical performance of reclaimed pavement materials. The progressive reduction in fines content and improvement in CBR values highlight the effectiveness of the proposed blending strategy. The maximum reported CBR value of 77 for sample S1 at 70% incorporation indicates significant improvement in bearing capacity. The identification of the 50% incorporation rate as the most suitable option demonstrates a balanced consideration of mechanical performance and plasticity stability. These findings provide useful guidance for selecting appropriate recycled material proportions in road sub-base construction.

**5. Conclusion**

The manuscript presents a valuable contribution to sustainable road construction through the effective reuse of reclaimed lateritic gravels. The proposed recycling strategy offers potential economic and environmental benefits by reducing the demand for virgin construction materials. The identification of the 50% KSK lateritic gravel incorporation rate as a suitable formulation provides a practical outcome for pavement rehabilitation projects. The study also demonstrates the importance of systematic material characterization before reusing road construction waste. Overall, the research is technically relevant, practically applicable, and suitable for acceptance.

Overall, the manuscript is relevant to sustainable construction research and is suitable for publication.