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# The Role of Interlocking Stabilized Soil Blocks as A Sustainable Material in The Design of Yoruba Cultural Museum in Ibadan

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ABSTRACT

*This study investigates the role of Interlocking Stabilized Soil Blocks (ISSB) as a sustainable building material in the design of a Yoruba Cultural Museum in Ibadan, Nigeria. The research explores the environmental, economic, structural, and cultural implications of adopting ISSB for institutional architecture. Through qualitative, document-based analysis of existing literature, case studies, and contextual evaluation, the study examines ISSB's thermal performance, cost efficiency, structural reliability, and aesthetic potential. Findings indicate that ISSB contributes to environmental sustainability through reduced cement usage, local material sourcing, and thermal mass regulation, which enhances indoor climate responsiveness. Economically, ISSB offers cost advantages, reduced construction time, and improved long-term durability compared to conventional sandcrete blocks. Structurally, the interlocking mechanism supports stability and adaptability for larger institutional spans when integrated with reinforced systems. Beyond technical performance, ISSB demonstrates strong cultural and symbolic resonance, bridging Yoruba vernacular traditions with contemporary architectural expression. The study concludes that ISSB is a viable, sustainable, and culturally expressive material for museum-scale architecture in Ibadan. Recommendations include integrating passive environmental strategies, reinforced structural systems, and cultural design considerations to maximize both functional and symbolic performance. The research contributes to advancing sustainable material practices and heritage-based architectural strategies in Nigerian institutional design.*

**Keywords:** Interlocking Stabilized Soil Blocks, Sustainable Architecture, Yoruba Cultural Museum, Thermal Performance, Cultural Identity.

## INTRODUCTION

Contemporary architectural discourse increasingly emphasizes the integration of sustainability, cultural identity, and environmental responsiveness in the design of public institutions. In Nigeria, where rapid urbanization and climate pressures continue to influence the built environment, there is a growing need for building materials that are environmentally responsible, economically viable, and culturally expressive (Lembi et al., 2021). Interlocking Stabilized Soil Blocks (ISSB) have emerged as a promising sustainable material within this context, offering structural efficiency, reduced embodied energy, and affordability when compared to conventional sandcrete blocks (Ibitoye, Alagbe, & Dare-Abel, 2022). As the demand for culturally rooted yet environmentally conscious architecture increases, ISSB presents an opportunity to redefine material selection in institutional projects such as museums.

Museums serve not only as repositories of artifacts but also as spatial narratives of identity, memory, and heritage (Voronina, 2021). The design of a Yoruba Cultural Museum in Ibadan must therefore transcend mere functionality to embody symbolic meaning, climatic responsiveness, and contextual relevance. Studies on symbolic expression in architecture highlight the importance of materiality and form in communicating cultural values and collective identity (Olaoye et al., 2023). For the Yoruba people, whose traditional architecture historically relied on earth-based construction techniques, the adoption of ISSB can be seen as both a sustainable and culturally resonant choice. By reinterpreting indigenous earth construction methods through contemporary stabilization technologies, ISSB bridges tradition and modernity (Olaleye & Ibitoye, 2023).

Sustainability concerns further strengthen the argument for ISSB in museum design. The environmental challenges facing Nigerian cities including rising temperatures and urban heat island effects

necessitate passive design strategies and climate-responsive materials (Afolabi et al., 2025). ISSB contributes to thermal mass regulation, reducing indoor heat gain and minimizing dependence on mechanical cooling systems. Its production process consumes less energy compared to cement-intensive materials, thereby lowering carbon emissions and supporting broader renewable and energy-efficiency objectives in the built environment (Ogunyemi et al., 2022).

Beyond environmental performance, ISSB demonstrates economic and social advantages. Comparative studies reveal notable cost benefits of ISSB over sandcrete blocks in Southwestern Nigeria, making it a viable alternative for large-scale projects (Ibitoye, Alagbe, & Dare-Abel, 2022). Furthermore, research into housing estates developed with ISSB technology across Southwestern Nigerian cities indicates growing acceptance and adaptability of the material among diverse demographic groups (Ibitoye, Abiola, & Babamboni, 2023). Case-based evaluations, such as the analysis of ISSB application in residential architecture in Ogun State, affirm its structural performance, aesthetic appeal, and long-term durability (Oa, 2025). Despite these advantages, the material remains underutilized in institutional and cultural architecture, particularly in museum design.

Ibadan, as one of the historical centers of Yoruba civilization, presents an appropriate context for exploring sustainable and culturally grounded architectural solutions. The proposed Yoruba Cultural Museum seeks to embody environmental stewardship while reflecting indigenous building heritage. ISSB offers tactile richness, earthy aesthetics, and modular flexibility that can enhance spatial quality and reinforce cultural symbolism (De Villiers et al., 2024). However, there is limited scholarly investigation into the role of ISSB as a primary material in culturally significant public buildings.

This study therefore examines the role of Interlocking Stabilized Soil Blocks as a sustainable material in the design of a Yoruba Cultural Museum in Ibadan. It explores the environmental, economic, structural, and cultural implications of ISSB adoption in museum architecture. Through material performance analysis and contextual design evaluation, the study seeks to establish ISSB as a viable strategy for sustainable and culturally responsive institutional architecture in Nigeria.

The objectives of this study are to:

i. Examine the environmental and thermal performance of ISSB in enhancing sustainability within museum architecture in Ibadan.
ii. Evaluate the economic, structural, and construction advantages of ISSB compared to conventional building materials.
iii. Explore how ISSB can reinforce cultural symbolism and architectural identity in the design of a Yoruba Cultural Museum.

## LITERATURE REVIEW

This section examines existing literature relevant to the role of Interlocking Stabilized Soil Blocks (ISSB) as a sustainable material in architectural design, with particular focus on cultural and institutional buildings within the Nigerian context. The review explores ISSB as a sustainable construction material, its environmental and economic performance, its cultural and symbolic implications in architecture, and its relevance to museum design in Ibadan. It concludes by identifying gaps in literature that justify this study.

### Interlocking Stabilized Soil Blocks (ISSB) as a Sustainable Building Material

Sustainable construction materials are increasingly prioritised in response to climate change, resource depletion, and rising construction costs. ISSB technology has emerged as an alternative to conventional sandcrete blocks due to its lower cement content, reduced embodied energy, and elimination of mortar during installation (Bredenoord et al., 2019). Comparative cost studies in Southwestern Nigeria reveal that ISSB offers measurable financial advantages over sandcrete blocks, particularly through reduced material wastage and faster construction time (Ibitoye, Alagbe, & Dare-Abel, 2022).

Beyond cost efficiency, ISSB contributes to environmental sustainability through the use of locally sourced lateritic soil, thereby reducing transportation emissions and supporting circular resource use (De Villiers et al., 2024). Studies on housing estates developed with ISSB technology in Southwestern Nigerian cities indicate increasing demographic acceptance and adaptability of the material across socio-economic groups (Ibitoye, Abiola, & Babamboni, 2023). These findings position ISSB as not only an environmentally responsible material but also a socially viable one.

Case-based analysis further supports its architectural relevance. A critical study of ISSB application in residential architecture in Ogun State demonstrates its structural integrity, thermal performance, and aesthetic flexibility (Oa, 2025). The interlocking mechanism enhances construction efficiency while improving wall alignment and structural stability. Collectively, these studies establish ISSB as a technically feasible and environmentally sustainable material within Nigeria's construction industry (Unegbu et al., 2025).

**Environmental Performance and Climate Responsiveness**

Environmental performance is a central consideration in sustainable architecture. In warm climates such as Ibadan, materials with high thermal mass play a critical role in moderating indoor temperatures and reducing reliance on mechanical cooling systems. Earth-based materials like ISSB possess inherent thermal mass properties that absorb heat during peak periods and release it gradually, thereby stabilising indoor thermal conditions (Yu et al., 2025). Research on climate-responsive design in Lagos highlights the importance of passive strategies in mitigating urban heat island effects (Afolabi et al., 2025). Although focused on green façade systems, the study underscores the broader need for building envelopes that regulate heat gain and improve microclimatic performance. ISSB, when integrated with shading devices and passive ventilation strategies, can contribute to this environmental objective.

Energy sustainability also intersects with material selection. Investigations into alternative energy strategies in Nigerian institutional settings emphasize reducing building energy demand as a precursor to renewable energy integration (Ogunyemi et al., 2022). By lowering cooling loads through thermal regulation, ISSB contributes indirectly to improved energy performance. However, empirical performance assessments of ISSB in large-scale public or cultural buildings remain limited.

**Materiality, Symbolism, and Cultural Identity in Architecture**

Material selection plays a fundamental role in expressing cultural identity and symbolic meaning. Architectural studies on symbolic forms in religious buildings in Lagos demonstrate how materiality and form communicate collective values and spiritual narratives (Olaoye et al., 2023). These findings are transferable to museum architecture, where spatial and material expression serve interpretative and representational purposes.

Traditional Yoruba architecture historically utilized earth-based materials such as adobe and laterite, reflecting climatic adaptation and cultural continuity (Olalemi, 2025). The contemporary application of ISSB can be understood as a technological reinterpretation of indigenous earth construction. By retaining the tactile and visual qualities of earth while enhancing structural stability, ISSB enables cultural continuity within modern architectural frameworks.

Museums, as custodians of heritage, demand materials that reinforce authenticity and contextual relevance. The earthy texture and modular pattern of ISSB can enhance spatial storytelling within a Yoruba Cultural Museum in Ibadan (Olaniyan et al., 2024). Despite this potential, most existing studies on ISSB focus on residential or low-income housing applications, with limited exploration of its symbolic and experiential role in cultural institutions.

**ISSB in Institutional and Public Architecture**

While ISSB has gained recognition in housing developments, its adoption in institutional architecture remains underexplored. Research demonstrates demographic acceptance and structural performance in residential contexts (Ibitoye, Abiola, & Babamboni, 2023), yet few studies evaluate its application in museums, galleries, or civic buildings.

Institutional buildings present unique requirements, including long-span spaces, controlled environmental conditions, durability, and aesthetic distinction. The performance of ISSB in meeting these demands particularly in terms of acoustic performance, humidity control, and long-term maintenance has not been comprehensively documented (De Villiers et al., 2024). Furthermore, there is limited comparative analysis of ISSB against conventional reinforced concrete systems within public cultural architecture.

In rapidly urbanizing Nigerian cities, sustainable public architecture must respond to environmental pressures while reinforcing local identity (Umar et al., 2025). However, literature rarely integrates sustainability discourse with cultural architectural expression in the context of ISSB.

**Contextual Considerations: Ibadan and Cultural Infrastructure**

Ibadan, as a historic centre of Yoruba civilization, presents a significant context for culturally grounded architecture. Cultural infrastructure in such settings must embody historical continuity while addressing contemporary sustainability challenges (Elyasi & Yamaçli, 2023). Although research addresses sustainable building materials and symbolic architecture separately, few studies synthesise these themes within the framework of museum design in Ibadan.

The absence of integrated studies examining ISSB as both a sustainable and culturally expressive material in public heritage buildings reveals a contextual research gap. This underscores the need for architectural investigation that aligns environmental performance (Oa, 2025) with cultural symbolism in the design of a Yoruba Cultural Museum.

**Research Gap**

Existing scholarship clearly establishes that Interlocking Stabilized Soil Blocks (ISSB) present measurable economic, environmental, and structural advantages within residential construction in Southwestern Nigeria (Ibitoye, Alagbe, & Dare-Abel, 2022). These studies demonstrate cost savings, material efficiency, demographic acceptance, and structural adequacy, thereby validating ISSB as a viable alternative to sandcrete blocks in housing developments. Parallel research also underscores the importance of climate-responsive architecture and the symbolic role of materiality in shaping cultural meaning within Nigerian buildings (Afolabi et al., 2025).

First, empirical investigations of ISSB are predominantly limited to residential and low-income housing projects. While housing studies provide insight into structural integrity and cost efficiency, they do not adequately address the spatial, environmental, and performance complexities of institutional buildings such as museums (Ismail et al., 2024). Cultural institutions demand large-span galleries, controlled interior climates for artifact preservation, enhanced durability, acoustic regulation, and long-term maintenance resilience. The suitability of ISSB for these more demanding architectural conditions remains insufficiently explored.

Second, although ISSB is widely recognized for its thermal mass properties, limited quantitative or case-based research evaluates its performance in large-scale public buildings under the climatic conditions of Ibadan. Most existing evaluations focus on small-scale residential applications, leaving a gap in understanding how ISSB performs in buildings with higher occupancy loads, varied spatial configurations, and heritage conservation requirements (Cao et al., 2025). There is therefore insufficient evidence on how ISSB contributes to indoor environmental stability, energy efficiency, and lifecycle performance in cultural infrastructure.

Third, while research on symbolic architecture emphasizes the communicative role of form and material (Olaoye et al., 2023), little attention has been given to ISSB as a medium for expressing indigenous Yoruba identity within contemporary architectural practice. Earth-based construction forms a significant part of traditional Yoruba architectural heritage, yet modern reinterpretations using stabilized soil technologies are rarely examined from a cultural-symbolic perspective. The experiential, tactile, and narrative potential of ISSB in museum design particularly as a material that connects past vernacular traditions with contemporary sustainability remains under-theorized (De Villiers et al., 2024).

Fourth, context-specific research for Ibadan is minimal. Ibadan, as a historic center of Yoruba civilization, possesses distinct climatic, cultural, and urban characteristics that influence architectural material selection. Existing literature does not sufficiently examine how ISSB can respond to these localized environmental conditions while reinforcing the cultural authenticity expected of a Yoruba Cultural Museum (Olalemi, 2025). The absence of such context-driven analysis limits the development of regionally appropriate design guidelines.

Furthermore, there is limited interdisciplinary synthesis linking sustainability metrics, economic feasibility, structural performance, and cultural identity within a single architectural framework (Piparsania & Kalita, 2022). Current research tends to adopt either a technical performance approach or a socio-cultural lens, without integrating both perspectives into a comprehensive evaluation model. This gap restricts the advancement of ISSB from a “housing solution” to a strategic material for institutional and cultural architecture.

This study therefore addresses these gaps by critically evaluating the environmental, economic, structural, and symbolic role of Interlocking Stabilized Soil Blocks in the design of a Yoruba Cultural Museum in Ibadan. It advances knowledge by repositioning ISSB beyond residential construction and framing it as a culturally resonant, climate-responsive, and institutionally viable material for contemporary Nigerian architecture. Through this integrated approach, the research contributes to sustainable material discourse while strengthening the dialogue between heritage expression and modern architectural innovation.

## RESEARCH METHOD

This study adopts a qualitative, document-based architectural research approach to evaluate the role of Interlocking Stabilized Soil Blocks (ISSB) as a sustainable material in the design of a Yoruba Cultural Museum in Ibadan. The research relies on peer-reviewed journal articles, documented case studies, technical reports, and architectural design analyses relevant to ISSB technology, sustainable building materials, climate-responsive design, and symbolic architectural expression. No primary field experiments, laboratory material testing, or post-occupancy measurements were conducted. The methodology is structured around three analytical components: material performance evaluation, contextual analysis, and comparative architectural assessment.

### Material Performance Evaluation

Documented findings on ISSB were reviewed and synthesized to examine four core performance parameters:

i. Environmental performance (thermal mass, embodied energy, and climate responsiveness)
ii. Economic performance (cost efficiency and construction feasibility)
iii. Structural reliability (stability, durability, and construction system efficiency)
iv. Aesthetic and symbolic potential (texture, modular expression, and cultural resonance)

These parameters were derived from recurring themes in existing literature and were used as evaluative criteria for assessing ISSB's suitability in institutional and cultural architecture.

### Contextual and Climatic Analysis

A contextual assessment of Ibadan was undertaken to understand climatic conditions, cultural heritage significance, and urban development patterns. Particular attention was given to:

i. Warm tropical climatic conditions and their implications for material thermal performance
ii. The historical significance of Ibadan as a center of Yoruba civilization
iii. The need for sustainable public cultural infrastructure

This contextual lens guided the interpretation of ISSB's environmental and symbolic relevance within the proposed museum setting.

### Comparative Architectural Assessment

Selected documented case studies of ISSB application in residential and institutional settings were comparatively analyzed to identify transferable design strategies. The analysis focused on construction techniques, wall systems, façade articulation, passive environmental integration, and architectural expression. A comparative matrix was developed to evaluate ISSB across the identified parameters and to determine its potential role in museum-scale architecture. The assessment emphasized intended design performance and documented architectural outcomes rather than measured laboratory data. This methodological framework ensures alignment between sustainability objectives, structural feasibility, and cultural expression in evaluating ISSB for the Yoruba Cultural Museum in Ibadan.

## RESULTS AND DISCUSSION

### Performance Characteristics of Interlocking Stabilized Soil Blocks

### Environmental Performance

Synthesis of reviewed literature indicates that ISSB contributes significantly to environmental sustainability through reduced cement usage, minimal mortar requirement, and reliance on locally sourced lateritic soil (Ibitoye, Alagbe, & Dare-Abel, 2022). The reduction in embodied energy associated with on-site block production lowers transportation emissions and supports circular material economies. In warm

climatic regions such as Ibadan, ISSB demonstrates strong thermal mass properties. The material absorbs heat during peak daytime temperatures and gradually releases it as ambient temperatures decrease, contributing to passive indoor thermal stabilization (Oa, 2025). This performance characteristic reduces dependence on mechanical cooling systems and aligns with broader strategies for lowering building energy demand. When integrated with passive design strategies such as shaded openings, cross ventilation, and controlled façade orientation, ISSB enhances microclimatic performance and supports sustainable museum environments. This aligns with sustainable façade and climate-responsive design principles discussed by Afolabi et al. (2025).

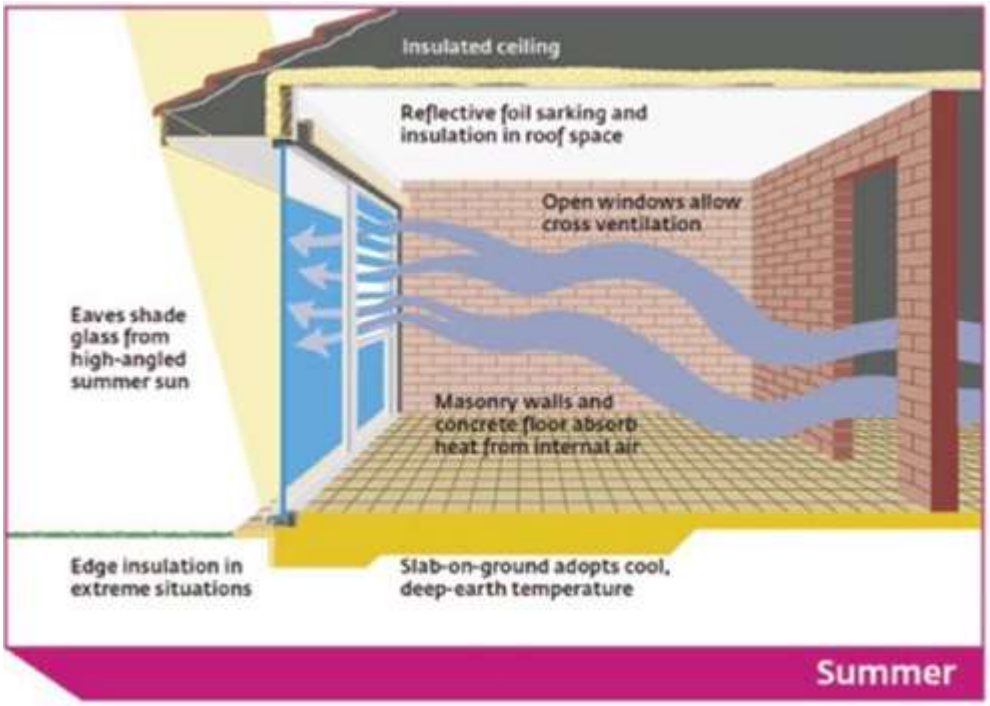


Figure 2 Principles of passive solar design – Summer

**Figure 4.1:** Thermal mass performance of ISSB wall system.
*Source: Adapted from*

**Economic Performance**

Comparative cost analyses indicate that ISSB offers measurable economic advantages over conventional sandcrete block construction (Ibitoye, Alagbe, & Dare-Abel, 2022). Savings are primarily achieved through reduced mortar usage, faster construction processes, and lower material wastage.
For a public cultural institution such as a Yoruba Cultural Museum, cost efficiency is particularly significant in ensuring feasibility without compromising architectural quality. ISSB's modular interlocking system simplifies construction processes and reduces long-term maintenance requirements due to improved wall alignment and reduced cracking (Ibitoye, Abiola, & Babamboni, 2023).

**Structural Reliability**

Documented case analyses confirm that ISSB walls demonstrate adequate compressive strength and structural stability when properly stabilized and reinforced where necessary (Oa, 2025). The interlocking mechanism improves structural cohesion and construction precision. While most documented applications focus on residential buildings, findings suggest that ISSB can be adapted to institutional-scale architecture when integrated with reinforced structural systems such as ring beams, reinforced cores, and appropriate roofing systems (Ibitoye, Alagbe, & Dare-Abel, 2022). This supports its viability for museum construction, where structural stability and durability are critical.


**Figure 4.2:** Interlocking profile and structural reinforcement system.
*Source: Adapted from* https://imgv2-2-f.scribdassets.com/img/document/67915310/original/070f1028a5/1?v=1

**Aesthetic and Symbolic Potential**

ISSB possesses distinct tactile and visual qualities that differentiate it from conventional sandcrete or concrete finishes. The exposed earthy texture, modular pattern, and natural coloration evoke indigenous construction traditions while maintaining contemporary structural performance. In the context of a Yoruba Cultural Museum, materiality serves not only structural and environmental functions but also symbolic ones. The use of stabilized earth blocks represents a technological reinterpretation of traditional Yoruba earthen architecture. This continuity between vernacular heritage and modern innovation enhances authenticity and strengthens the narrative role of the building as a cultural repository. The symbolic dimension of architecture as a carrier of cultural identity has been emphasized in institutional design studies (Olaoye et al., 2023), reinforcing the relevance of ISSB as both a functional and expressive medium.

**Comparative Evaluation of ISSB for Institutional Application**

**Table 4.1: Evaluation Matrix for ISSB in Museum Design**

| Performance Parameter | Documented Residential Use | Institutional Requirement | Suitability for Museum |
|---|---|---|---|
| Thermal Performance | Demonstrated thermal mass benefits | Stable indoor conditions for artifact preservation | High potential when combined with passive design |
| Cost Efficiency | Lower cost than sandcrete | Budget-sensitive public project | Economically viable |
| Structural Strength | Adequate for low-rise housing | Requires reinforcement for larger spans | Adaptable with structural integration |
| Aesthetic Quality | Exposed modular texture | Symbolic and experiential material expression | Strong cultural resonance |
| Environmental Impact | Reduced embodied energy | Sustainable public architecture goal | Highly aligned |

The matrix demonstrates that while ISSB is widely validated in housing, its characteristics align strongly with the performance demands of a museum when properly integrated into a comprehensive architectural strategy.


**Figure 4.3:** ISSB institutional application (case study).

*Source: Adapted from https://www.slideshare.net/slideshow/interlocking-stabilized-soil-blocks-issb-pdf/284066799#14*

**Relationship Between ISSB and Sustainable Museum Design**

Findings indicate that ISSB functions beyond a cost-saving construction alternative. When strategically applied, it supports multiple sustainability objectives:

i. Reduction of embodied carbon through local material sourcing (Ibitoye, Alagbe, & Dare-Abel, 2022)
ii. Lower operational energy demand due to thermal mass (Oa, 2025)
iii. Integration with passive environmental strategies (Afolabi et al., 2025)
iv. Promotion of local economic engagement and contextual construction practices (Ibitoye, Abiola, & Babamboni, 2023)

For museum architecture, where indoor environmental stability is critical for artifact conservation, ISSB's thermal regulation properties can contribute to moderated interior conditions when combined with appropriate environmental controls.

**Cultural and Contextual Implications for Ibadan**

Ibadan's historical and cultural significance as a Yoruba heritage center requires architecture that reflects identity while addressing contemporary sustainability challenges. The findings suggest that ISSB offers a culturally grounded material solution that bridges vernacular tradition and modern institutional design.


**Figure 4.4:** Map of Ibadan.

Unlike imported or highly industrialized materials, ISSB reinforces local identity through its earth-based composition and visual authenticity. Its use in a Yoruba Cultural Museum strengthens architectural storytelling by embedding cultural symbolism within the building fabric itself, consistent with studies on symbolic architectural expression in institutional settings (Olaoye et al., 2023).

The material therefore operates at three interconnected levels:

i. Environmental sustainability (Ibitoye, Alagbe, & Dare-Abel, 2022)
ii. Economic feasibility (Ibitoye, Abiola, & Babamboni, 2023)
iii. Cultural representation (Olaoye et al., 2023)

This multi-layered performance positions ISSB as a strategic architectural tool rather than merely a construction material.

**Discussion**

The analysis confirms that ISSB possesses the environmental, economic, structural, and symbolic attributes necessary for sustainable cultural infrastructure in Ibadan. While existing research predominantly documents residential applications (Oa, 2025; Ibitoye, Abiola, & Babamboni, 2023), the material's intrinsic characteristics demonstrate strong adaptability to institutional settings.

The findings reposition ISSB from a low-cost housing material to a culturally resonant and climate-responsive architectural strategy suitable for public heritage buildings. By integrating sustainability with symbolic material expression (Afolabi et al., 2025; Olaoye et al., 2023), ISSB offers a comprehensive framework for designing a Yoruba Cultural Museum that reflects both environmental responsibility and cultural continuity.

**CONCLUSION**

This study examined the role of Interlocking Stabilized Soil Blocks (ISSB) as a sustainable material in the design of a Yoruba Cultural Museum in Ibadan. The findings demonstrate that ISSB possesses environmental, economic, structural, and cultural attributes suitable for institutional architecture in Southwestern Nigeria. ISSB contributes to environmental sustainability through reduced cement content, minimal mortar usage, and reliance on locally sourced lateritic soil. Its thermal mass properties are particularly relevant in Ibadan's warm tropical climate, where moderated heat gain and delayed heat transfer can improve indoor environmental stability and reduce dependence on mechanical cooling systems. When integrated with passive design strategies such as controlled openings, shaded façades, and natural ventilation, ISSB supports climate-responsive museum architecture. Economically, ISSB offers measurable cost advantages over conventional sandcrete block construction due to reduced material waste, lower mortar consumption, and simplified construction processes. These advantages are significant

for public cultural infrastructure, where financial feasibility must align with architectural quality and long-term durability. Documented residential applications further confirm the material's structural adequacy and construction efficiency, suggesting its adaptability to reinforced institutional-scale buildings. Beyond technical performance, ISSB demonstrates strong symbolic and experiential potential. The material's earthy texture, modular articulation, and visual authenticity resonate with indigenous Yoruba earthen construction traditions while accommodating contemporary structural systems. In this context, ISSB functions not merely as a construction material but as a medium for cultural continuity and architectural storytelling.

Overall, the study establishes that ISSB can operate at three interconnected levels within the design of a Yoruba Cultural Museum in Ibadan:

- As an environmentally responsive building material
- As an economically viable construction system
- As a culturally resonant architectural expression

The research therefore repositions ISSB from a predominantly low-cost residential material to a strategic, sustainable solution for contemporary institutional and heritage architecture in Nigeria.

## RECOMMENDATIONS

i. Public cultural building projects in Southwestern Nigeria should incorporate ISSB as a viable walling system, particularly where environmental sustainability and local material sourcing are prioritized.
ii. Design guidelines for museums and cultural institutions should integrate passive environmental strategies that maximize ISSB's thermal mass benefits, including façade shading, cross ventilation, and controlled solar exposure.
iii. Reinforced structural systems, such as ring beams and framed supports, should be integrated with ISSB walling in institutional projects to accommodate larger spans and enhance durability.
iv. Architects and cultural planners should deliberately explore ISSB's aesthetic and symbolic qualities to express Yoruba cultural identity in contemporary architectural forms.
v. Government agencies and professional bodies should develop technical standards and implementation frameworks that support the use of ISSB in public institutional buildings, thereby promoting sustainable local construction practices.
vi. Integration of sustainable energy strategies, including decentralized or micro-energy systems, should complement ISSB-based museum design to enhance overall environmental performance.

These recommendations aim to translate documented sustainability principles and cultural design considerations into practical architectural strategies that promote environmentally responsible, structurally sound, and culturally meaningful museum development in Ibadan.

Future research should incorporate material performance testing, thermal simulation modelling, and life-cycle assessment to quantitatively evaluate ISSB performance in large-scale institutional settings. Post-occupancy evaluation of completed ISSB public buildings would further provide empirical data on user comfort, durability, and long-term environmental impact. Expanding analysis to other climatic regions within Nigeria would also support the development of broader evidence-based guidelines for sustainable cultural infrastructure design.

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