

# Biophilic Strategies for Sustainable Resort Development in Ijede, Ikorodu, Nigeria

<sup>1</sup>Adekunle O. Ogunnaike, <sup>2</sup>Omozuawo Stanley. A, <sup>3</sup>Anjorin Godwin. O

*Department of architecture, College of environment, science and management, imota, lagos state nigeria.*

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## ABSTRACT

As sustainability in architecture gains global traction, there is increasing emphasis on designs that promote both ecological balance and human well-being. This article explores the integration of biophilic design principles into sustainable resort development in Ijede, a fast-growing waterfront community in Ikorodu, Lagos State. Set within a rich ecological and cultural context, Ijede offers an opportunity to rethink tourism architecture that harmonizes with, rather than disrupts, nature. Drawing from biophilia, environmental psychology, and place-based design, the study examines the socio-environmental impacts of resort development and the potential of strategies such as natural materials, ecosystem-inspired spatial patterns, and strong landscape connectivity. It highlights gaps in Nigerian tourism architecture, particularly the limited adoption of nature-integrated design. By grounding biophilic principles in Ijede's climate and cultural context, the article proposes a framework for environmentally conscious, experientially enriching resort architecture arguing for a shift beyond green technologies toward deeper connections between people, place, and nature.

**Keywords:** Biophilic Design, Sustainable Architecture, Resort Development, Nature-based Design, Eco-tourism, Environmental Psychology, Ecological Architecture

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## I. INTRODUCTION

The In an era where the pressure to balance development with environmental responsibility is more urgent than ever, resort architecture in Nigeria is gradually being re-examined through the lens of sustainability. Tourism, especially in semi-urban and coastal regions like Ijede in Ikorodu, has grown to become not only a source of leisure and recreation but also

a potential driver of economic development. However, the expansion of resort infrastructure often brings with it the unintended consequence of ecological disruption ranging from deforestation and pollution to the gradual erosion of local identity and environmental quality (Baloch, Q. B.2023). As these tensions continue to surface, there is an increasing need for design approaches that do more than serve commercial or aesthetic purposes. What is needed is a model of development that respects and responds to nature, one that places human well-being and environmental stewardship at the heart of the architectural process.

Biophilic design emerges as a compelling response to this challenge. Rooted in the idea that human health and happiness are closely tied to our relationship with nature, biophilic design encourages the integration of natural elements into the built environment in ways that are meaningful, functional, and restorative. Far beyond simply adding greenery or water features, this approach involves an intentional effort to create spaces that mimic the forms, patterns, and sensory experiences found in natural settings (Spence, C. (2020). For resort development, particularly in areas as ecologically and culturally rich as Ijede, this represents an opportunity to redefine what a sustainable leisure space can look like. Instead of isolating architecture from its surrounding landscape, biophilic strategies invite a seamless blend between structure and environment, fostering a sense of place and ecological harmony.

The town of Ijede, located along the lagoon in Lagos State, presents a unique canvas for exploring this approach. With its scenic coastal views, pockets of forested land, and a growing interest in tourism, the area holds untapped potential for environmentally conscious resort design. However, like many peri-urban communities in Nigeria, Ijede faces ongoing

challenges related to urban sprawl, lack of planning enforcement, and a limited adoption of green building practices. In this context, applying biophilic design is not just an architectural choice but a transformative strategy one that could guide how natural assets are preserved, how the local economy is supported, and how visitors experience space in a more immersive and mindful way (Andreucci, M. B., Loder, A., Brown, M., & Brajković, J. (2021).

This article aims to explore how biophilic strategies can be employed in the planning and design of resort facilities in Ijede, with a particular focus on creating spaces that are both ecologically sustainable and emotionally resonant (Abraham, A. O., 2023). By drawing on theoretical foundations, contextual analysis, and design best practices, the discussion contributes to the growing discourse on sustainable resort development in Nigeria. It also calls attention to the importance of aligning architectural innovation with ecological responsibility, especially in places where tourism intersects with community life and natural heritage (Lerario, A. (2022).

## II. LITERATURE REVIEW

The concept of biophilic design has evolved significantly over the past two decades, gaining prominence as a response to the growing detachment between humans and their natural environments (Ryan, C. O., & Browning, W. D. (2020). Scholars such as Kellert, Heerwagen, and Mador have long argued that the built environment should not merely shelter human activity but should also nurture the innate human affinity for nature. This affinity, often referred to as "biophilia," underscores the idea that people are not only healthier but also more cognitively and emotionally balanced when they inhabit spaces that reflect natural patterns, forms, and systems. As urbanization continues to alter landscapes and fragment ecosystems, biophilic design presents a restorative pathway one that reintegrates nature into everyday life through intentional architectural and planning choices (Hussein, W. A., & Al-Khafaji, A. S. (2023).

Within the broader discourse on sustainable architecture, biophilic design serves as a bridge between environmental ethics and practical design outcomes. It is no longer sufficient for buildings to aim solely for energy efficiency or material conservation; there is now an increasing expectation for spaces to also contribute to the emotional and psychological well-being of their users. This is particularly relevant in the hospitality

and resort sector, where the experience of relaxation, immersion, and escape is central to the purpose of the design. Research has shown that resorts which incorporate natural ventilation, daylighting, green walls, water features, and views of native vegetation tend to foster deeper levels of guest satisfaction and place attachment. These elements do not merely enhance aesthetics; they offer multisensory experiences that reconnect users with the rhythms and textures of the natural world.

In the context of resort development, especially in ecologically sensitive or semi-rural areas, biophilic design supports a vision of architecture that does not dominate the landscape but rather complements it. Beatley's work on biophilic cities expands on this by emphasizing the importance of nature integration at all scales from individual buildings to entire urban ecosystems. Although his studies often focus on large cities, the principles he outlines are easily adapted to smaller, tourism-focused locales such as Ijede. The emphasis on visual connections to nature, spatial openness, and material authenticity becomes even more critical in areas where environmental quality forms the basis of the visitor experience (Zhang, S., Xiong, K., Fei, G., Zhang, H., & Chen, Y. (2023).

Turning to the Nigerian context, resort development has often struggled to maintain a balance between economic ambitions and environmental responsibility. While several resorts across Lagos State and beyond have embraced elements of sustainable design, the integration of biophilic principles remains limited, often reduced to superficial landscaping or token green spaces. Local studies have highlighted the pressing need for more holistic and place-based design strategies that are responsive to both climate and culture (McCann, P., & Soete, L. (2020). Scholars such as Akinbileje and Ogunba have emphasized that any model of sustainable development in Nigeria must consider indigenous knowledge, material availability, and the socio-economic realities of surrounding communities. These concerns align well with the ethos of biophilic design, which encourages architects and planners to engage deeply with context rather than import generalized solutions (Tabassum, R. R., & Park, J. (2024).

In Ijede, the potential for biophilic resort development is especially promising given its lagoon setting, diverse vegetation, and relatively undeveloped terrain. However, the literature also points to several challenges, including weak planning frameworks, inadequate environmental regulation, and a lack of public awareness around sustainable building practices. Despite these

barriers, there are growing calls within academic and professional circles to rethink how resort spaces are imagined not only as sites of leisure but as models for sustainable living and ecological mindfulness. Studies from similar coastal and riverine communities in Africa suggest that resorts designed with nature at their core can play a critical role in biodiversity preservation, climate resilience, and the revitalization of local economies.

Ultimately, the literature makes a compelling case for the adoption of biophilic strategies in resort architecture, especially in regions like Ijeda where natural beauty and cultural heritage are closely intertwined. What emerges is a shared understanding that the future of tourism-based development lies in approaches that are both environmentally grounded and emotionally resonant. Rather than treating sustainability as a checklist, biophilic design calls for a deeper and more intuitive engagement with the landscapes we inhabit and the experiences we hope to create.

## 2.1 CONCEPTUAL REVIEW

One of the ideas behind biophilic design is rooted in a fundamental understanding of how humans interact with their environment not merely in terms of physical comfort, but through deeper psychological and emotional connections (Barbiero, G., & Berto, R. (2021)). The concept, first brought to prominence by E.O. Wilson, proposes that human beings possess an innate desire to connect with the natural world. This instinct, though often subdued in modern urban contexts, remains vital to human well-being. Over time, this theory has evolved into a design philosophy that calls for the deliberate integration of natural systems, materials, patterns, and forms into the built environment. As such, biophilic design is more than an aesthetic choice; it is a strategic framework for shaping spaces that respond to the human need for nature, especially in increasingly artificial surroundings.

In architectural contexts, biophilic design has emerged as a response to the sterile, disconnected environments that have become commonplace in modern development. By seeking to repair the broken relationship between people and the ecosystems they inhabit, it extends the idea of sustainability from purely ecological terms into emotional and sensory dimensions (Mehraliyev, F., Kirilenko, A. P., & Choi, Y. (2020)). In the case of resorts, where leisure and comfort are central, the relevance of biophilic design becomes even more apparent. Resorts, by their very nature, promise escape, relaxation, and reconnection with oneself,

with others, and with the surroundings. The biophilic approach amplifies this experience, creating environments that invite not just physical rest but also a reconnection with the living world (Rai, S., Asim, F., & Shree, V. (2020)).

This reconnection is often facilitated through design strategies that prioritize openness, natural light, organic materials, flowing water, greenery, and spatial rhythms that mimic natural systems. But beyond these physical attributes lies a conceptual shift in how space is perceived and used. Biophilic design encourages a sense of place and an awareness that a particular location holds meaning not just through function but through sensory richness and ecological harmony. It insists that the built environment should not be an intrusion into nature but a respectful extension of it (Pham, T. D. M., & Lam, T. T. S. (2022)). This is particularly significant in the context of Ijeda, a coastal community where the surrounding landscape, local culture, and community rhythms offer abundant inspiration for a nature-based architectural language (Adedeji, J. A. (2023)).

In this light, sustainable resort development becomes more than the inclusion of solar panels or energy-efficient fixtures; it becomes a question of how design can foster a deeper respect for nature while supporting local livelihoods and protecting fragile ecosystems. The conceptual foundation of biophilic design provides a path forward, encouraging architects and planners to work with the land rather than against it (Marshall, A. J., & Williams, N. S. (2019)). This involves an understanding of place-specific ecological processes and cultural values, ensuring that each design is not only environmentally responsible but also socially meaningful. Such a framework demands sensitivity to climate, biodiversity, material sources, and human behavior, aligning architectural form with natural processes in ways that are contextually grounded.

The relevance of this conceptual lens to the Nigerian resort sector lies in its potential to recalibrate existing development models. Much of what currently passes for resort development in the region often overlooks the ecological and experiential richness of the local context. Many resorts are built with little consideration for their environmental footprint or their relationship with the communities they sit within. A biophilic conceptual approach disrupts this trend by foregrounding nature as the core design driver not an afterthought or decorative layer, but a guiding principle from conception to completion. In doing so, it reframes development as an act of ecological

stewardship and cultural continuity, rather than mere economic expansion.

As Nigeria continues to reckon with the dual imperatives of economic growth and environmental preservation, especially in fast-developing zones like Ikorodu, the conceptual grounding provided by biophilic design becomes increasingly valuable. It offers a human-centered, ecologically conscious vision for the future of resort architecture one where development is not measured solely by physical footprint or financial return, but by the quality of life it fosters and the integrity of the landscape it honors.

## 2.2 THEORETICAL REVIEW

The theoretical foundation of biophilic design stems from a deeper understanding of the intrinsic connection between humans and the natural environment. At its core, this theory draws from the concept of biophilia, popularized by Edward O. Wilson in the 1980s, which suggests that human beings have an inherent tendency to seek affiliation with nature and natural processes. This theory is rooted in evolutionary biology, proposing that because human life evolved in close interaction with natural environments, our physical, emotional, and cognitive systems are still finely attuned to nature's rhythms, patterns, and sensory cues. In built environments where this connection is diminished or absent, there is often a corresponding decline in psychological well-being, productivity, and even physical health.

Over time, the biophilia hypothesis has evolved into a framework that influences architectural thinking, especially within the discourse of sustainable design. Theoretical contributions from researchers such as Stephen Kellert and Judith Heerwagen have helped translate biophilia from a biological premise into a design methodology. They argue that environments that incorporate natural features such as daylight, vegetation, organic forms, and materials can produce measurable improvements in human experience and performance. Within this theoretical landscape, biophilic design does not simply represent the use of green aesthetics or passive environmental strategies; it embodies a philosophical shift toward buildings and spaces that restore rather than deplete, that heal rather than exhaust.

From this standpoint, biophilic theory intersects meaningfully with broader theories of sustainable development. The emphasis moves away from technological fixes alone and toward more holistic, systems-based thinking. Theories of

regenerative design, ecological urbanism, and environmental psychology also reinforce the core principles of biophilic design (Toner, J., Desha, C., Reis, K., Hes, D., & Hayes, S. (2023)). They each suggest that human-centered sustainability must go beyond the reduction of carbon footprints or energy consumption it must reestablish lost relationships between people and the ecosystems they inhabit. In this way, biophilic theory can be understood as both a complement and a corrective to conventional models of sustainability, which often prioritize quantitative metrics over qualitative, experiential values.

Applying this theoretical lens to resort development, particularly in a place like Ijeda, reveals new ways of understanding space, place, and human interaction with nature. Resorts, by their function, are intended to offer retreat and renewal objectives that align perfectly with biophilic principles. Yet, without a theoretical commitment to these principles, resort design risks becoming environmentally exploitative or culturally disconnected. In contrast, when guided by biophilic theory, resort architecture is seen not just as a physical intervention but as a medium through which guests can engage deeply with local landscapes, biodiversity, and heritage.

## 2.3 EMPIRICAL REVIEW

A growing body of empirical research has demonstrated the measurable impact of biophilic design on user experience, environmental performance, and overall development outcomes across various spatial contexts, including hospitality architecture. Studies conducted in resort settings across different regions have shown that the integration of nature into design elements does more than enhance aesthetics it directly influences guest satisfaction, emotional well-being, and return visitation. For instance, investigations carried out in Southeast Asia and parts of the Caribbean have highlighted how biophilic elements such as natural ventilation, vegetated roofs, views of water bodies, and use of local materials contribute significantly to guests' perception of comfort, safety, and environmental harmony. These findings suggest that biophilic design is not only environmentally sound but also economically viable, as it often leads to higher occupancy rates and longer visitor stays.

### Environmental and Climatic Adaptability of Biophilic Design in Tropical Resort Architecture

Empirical studies conducted in various parts of Nigeria and other tropical regions have

shown that integrating natural elements such as vegetation, water bodies, and open-air circulation into building design significantly reduces thermal load and enhances user comfort. In Ijede, which has a coastal tropical climate, research on similar geographical areas like Lekki and Badagry demonstrates that resorts employing passive cooling through vegetation buffers, natural shading, and water-integrated courtyards experienced up to 30% lower indoor temperatures than conventional resort buildings. Data from thermal comfort studies conducted in Lagos suburbs indicate that natural ventilation achieved through strategic orientation and spatial openness key features in biophilic design reduces dependency on mechanical cooling systems. These findings support the idea that biophilic strategies can be climatically responsive and reduce environmental impact in resort development in Ijede.

### **Well-being and Psychological Response to Biophilic Features in Hospitality Environments**

Empirical research across African hospitality environments has measured the psychological and physiological responses of resort guests to natural environments. Studies from eco-resorts in Cross River State and Ogun State show a strong correlation between exposure to greenery, natural light, and organic materials with improved mood, reduced stress levels, and longer guest stays. In surveys conducted at Nigerian nature-based hospitality sites, over 70% of visitors reported a higher satisfaction level when surrounded by natural elements. Data from biometric readings, such as heart rate and skin conductance, further reveal that guests exposed to biophilic spaces experience calmer physiological states. These findings empirically validate the effectiveness of biophilic strategies in enhancing user well-being, which is critical for the success and sustainability of resorts in natural settings like Ijede.

### **2.4 RESEARCH GAPS**

A review of existing literature on sustainable architecture and biophilic design reveals a growing global interest in integrating nature into the built environment, yet significant gaps remain especially within the Nigerian context. Most documented studies focus on the benefits of biophilic principles in general architecture, drawing heavily from Western or urbanized case studies where environmental conditions, infrastructure, and cultural settings differ markedly from those in semi-rural regions like Ijede.

In Nigeria, biophilic design is often referenced in relation to residential or institutional buildings, with little to no direct engagement with resort architecture or tourism-driven developments. Existing sustainability discourse in the country primarily emphasizes technical efficiency such as energy performance, thermal regulation, and green certifications—while neglecting the emotional, experiential, and psychological dimensions that are central to biophilic theory.

Furthermore, the literature on sustainable tourism architecture in Nigeria tends to focus on policy and environmental management, overlooking how spatial design can enhance user experience, promote environmental consciousness, or foster deeper guest–nature interaction. Studies that combine insights from environmental psychology, cultural context, and spatial design in a cohesive manner are scarce. This creates a conceptual and practical gap: how can biophilic strategies be effectively localized to address not only ecological and technical demands but also emotional and cultural resonance in resort environments like Ijede? This study seeks to fill that void by grounding biophilic design within the specific climatic, ecological, and socio-cultural realities of the region, while also advancing a more holistic and place-based approach to sustainable resort development.

## **III. RECOMMENDATIONS AND CONCLUSION**

### **3.1. Conclusion.**

- I. Biophilic design offers a powerful, context-sensitive approach to sustainable resort development in Ijede, enhancing both environmental performance and guest well-being through deeper integration with the local landscape.
- II. The lack of localized research and application in Nigeria highlights the need to adapt global biophilic strategies to suit the climatic, cultural, and ecological conditions specific to semi-rural settings like Ikorodu.
- III. Incorporating biophilic principles into resort architecture not only supports ecological preservation but also fosters emotional and sensory connections that elevate the tourism experience and promote long-term sustainability.

Together, these conclusions reinforce the urgency of adopting a more holistic, place-based architectural approach—one that goes beyond technical sustainability to embrace the full

emotional, ecological, and cultural potential of design in shaping Nigeria's future resort landscapes.

### 3.2. Recommendations.

The following recommendations are suggested as a result of this critical review and study:

- I. **Integrate Indigenous Vegetation and Landscape Features**  
Resort developments in Ijeda should prioritize the use of native plant species and natural landscape elements such as wetlands, local trees, and existing topography. These features not only enhance ecological resilience but also reduce maintenance costs and water usage, while reinforcing the site's identity and guests' sense of place.
- II. **Promote Open-Air and Naturally Ventilated Spatial Layouts**  
Design strategies should favor open, breathable layouts that maximize airflow, daylight, and visual access to nature. This reduces reliance on artificial cooling systems and creates immersive, comfortable environments that connect guests with the outdoors, aligning with both biophilic and climate-responsive principles.
- III. **Use Locally Sourced, Natural Materials**  
Architects and developers should prioritize materials like adobe, bamboo, clay, and reclaimed timber that are readily available in the region. These materials not only reduce carbon footprints but also contribute to the sensory and tactile qualities of biophilic design by creating warm, organic, and place-rooted spatial experiences.
- IV. **Incorporate Water and Multi-Sensory Elements into Design**  
Biophilic resorts should engage all the senses by introducing water features such as ponds, fountains, or reflective pools, alongside elements like textured surfaces, aromatic plants, and varied lighting. These enhance the emotional and psychological experience of guests, fostering a calming and memorable atmosphere.
- V. **Develop Policy and Educational Frameworks for Biophilic Design**  
Government bodies, academic institutions, and tourism stakeholders should collaborate to create guidelines, training programs, and awareness campaigns that encourage the

adoption of biophilic design. Doing so will build capacity among local professionals and ensure long-term commitment to environmentally and culturally responsive resort architecture.

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