Architecture for Climate and Inclusion: Evaluating Professional Practice Approaches in Nigeria

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Abstract- ***Balancing climate-responsive and inclusive design is an emerging challenge for architecture in Nigeria. This study evaluates how Nigerian architects integrate autism-friendly (inclusive) and passive climate-responsive strategies in practice. A qualitative review of literature and practice guidelines was conducted alongside interviews with practising architects and disability specialists. Findings show that architects are aware of sustainable design principles (e.g. passive cooling, solar access) but often implement them unevenly. Similarly, inclusive design (accessibility, autism-friendly features) is recognised in theory, but rarely mandated or detailed in practice; many public buildings lack basic accessibility for people with disabilities. Professional codes tend to emphasise client needs and safety, but rarely explicitly require climate or inclusion considerations. Regulatory gaps such as Nigeria's Building Code lacking energy or disability provisions further hinder implementation. We recommend stronger enforcement of sustainable and universal design standards, enhanced architect education on neurodiversity and climate resilience, and alignment of ethical guidelines to societal wellbeing. A holistic framework is needed so that Nigerian architecture can be both energy-efficient and accommodating to all users.***

I. INTRODUCTION

Climate change and social inclusion are twin imperatives shaping contemporary architecture. In Nigeria, rising temperatures, extreme weather and energy shortages underscore the need for climate-responsive buildings. Nigerian climate is diverse from hot, dry harmattan winds in the north to warm-humid rains in the south demanding contextual design solutions (e.g. insulation and ventilation in the south; shading and thermal mass in the north). Yet many existing buildings in Nigeria remain poorly adapted to their climate, causing high energy use for cooling and occupant discomfort. Globally, passive design strategies (orientation, natural ventilation, shading, insulation, thermal mass) are proven to reduce energy consumption. For example, careful use of thick walls, small windows and courtyards ,features of vernacular Nigerian architecture ,can stabilize indoor temperatures without air-conditioning.

At the same time, inclusive design ,especially for neurodiverse users such as those with autism ,is an ethical and social obligation. Autistic individuals often have sensory sensitivities and need predictable, low-stimulus environments. Reviews find that built environments can be adapted with neutral colours, controlled lighting, clear sightlines and quiet "retreat" spaces to reduce sensory overload. International guidance emphasises sensory quality, intelligibility and predictability of spaces. However, Nigeria has no specific autism design standards and its building regulations lack measurable accessibility requirements. In practice, many Nigerian public buildings have no ramps, lifts or sensory amenities for disabled users.

Architects in Nigeria thus face the dual challenge of designing for climate and inclusivity. This paper critically examines how these strategies are addressed in professional practice. We review the literature on passive climate design and autism-friendly architecture, and analyse Nigerian regulatory and ethical frameworks. Interviews with Nigerian architects and disability advocates further shed light on current attitudes. Our aim is to evaluate professional practice approaches to climate-responsive and inclusive design in Nigeria, identifying gaps in delivery processes, ethics and regulation, and to recommend pathways for improvement.

II. LITERATURE REVIEW

Inclusive (Autism-Friendly) Design: Recent studies highlight specific environmental features that benefit autistic users. A scoping review by Tola et al. (2021) identified sensory quality, intelligibility and predictability as key design factors. Practical recommendations include clear signage and wayfinding, low-stimulation colours and lighting, quiet zones and simple spatial layouts. For instance, Black et al. (2022) recommend compartmentalising spaces into activity zones, using dimmable lighting and soundproofing, and employing neutral colour palettes to help autistic individuals manage stimuli. These strategies align with the Universal Design principle of creating environments usable by everyone regardless of ability (by reducing sensory overload and enhancing flexibility).

In the Nigerian context, inclusive design is legally recognised but poorly enforced. Nigeria ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) in 2007 and passed a Disability Act in 2018, mandating accessibility. Nonetheless, Nigeria's National Building Code (2006) contains no measurable provisions for persons with disabilities. Empirical studies confirm this gap: Aniekan (2021) found that 80% of Nigerian construction firms do not integrate accessibility planning, and most public buildings lack ramps, tactile flooring or Braille signs. Similarly, surveys of school buildings (Ahmed et al., 2024) revealed that inclusive design elements were absent in nearly all cases. Architects are aware of universal design ideas in theory, but often cite lack of client demand, cost concerns and low regulatory pressure as reasons for omission. This is consistent with Fraser et al.'s (2023) finding that professional codes tend to prioritise client obligations over broader social or environmental concerns.

Climate-Responsive (Passive) Design: Sustainable architectural practice in Nigeria is gaining attention in recent literature. Characteristically tropical, Nigerian climates call for passive cooling. For example, in Nigeria's coastal south the challenge is high humidity and rainfall, so cross-ventilation and moisture control are essential, whereas in the northern savanna intense heat and dust require shading and insulation. Studies note that traditional Nigerian housing used bioclimatic strategies (high ceilings, verandas, courtyards, thick walls) to maintain comfort. Modern practice, however, often overlooks these wisdoms: a 2020 review reports that "most buildings are characterized by poor design in relation to the climate, which requires a great deal of energy for cooling".

Architects globally advocate passive techniques: orienting buildings to prevailing breezes, installing overhangs and blinds for shade, and using high thermal mass materials. In Nigeria specifically, Ochedi & Taki (2022) emphasise the need for framework design focusing on envelope insulation, daylighting and ventilation. Laboratory simulation in one study showed that passive cooling and mechanical ventilation (4 air changes per hour) could keep indoor temperatures in Nigeria's hot-summer humid zone at a comfortable 24–27 °C. Moreover, Andikan et al. (2024) highlight that thick walls and narrow windows dramatically reduce heat gain in Nigeria's hot-dry regions. Passive daylighting and ventilation were found to significantly cut energy use in various zones.

In practice, however, adoption of these strategies is inconsistent. Many architects cite challenges such as unreliable electricity and client budget constraints. Achara & Igwe (2025) observe that although sustainable design is viable in Nigeria, actual use of renewables and efficiency measures is still low due to cost and low awareness. Similarly, Yusuf & Akande (2023) report that most residential designers in Abuja rely on air-conditioning rather than passive cooling, largely because designers lack familiarity with natural ventilation solutions. Government policy is beginning to respond ,for example, a new National Building Energy Efficiency Code is under development ,but existing regulations do not yet mandate energy efficiency. Tambaya (2023) notes that "energy efficiency measures are not found in the [Nigerian] building code".

Professional Practice, Ethics and Regulation: Architecture is a profession bound by ethics and regulations. Professional codes (e.g. those of the Architects Registration Council of Nigeria, ARCON) emphasise public safety and welfare. Globally, scholarship warns that many codes lack explicit

mention of sustainability or inclusion: for instance, Fraser et al. (2023) point out that New Zealand's architects' rules only ensure safety and legal compliance, with no rule on climate or wider social impact. Nigerian practice likewise tends to prioritize client briefs and economic feasibility. Okonta et al. (2025) note that licensure and ethics promote quality and accountability, but face obstacles: only a fraction of graduates pursue registration, and regulatory inefficiencies leave many practitioners unlicensed.

In Nigeria, regulatory frameworks for inclusive and climate design are fragmented. The 2018 Disability Act obliges barrier-free design, but enforcement is weak. Planning authorities rarely check for accessibility features. Similarly, there is no mandatory energy code; the proposed Building Energy Efficiency Code (BEEC) is still in draft form. Professional bodies have not yet codified climate resilience or autism-friendliness as obligations. This has ethical implications: authors argue that architects should embed "care ethics" ,attentiveness to occupants and the planet ,into practice. Rhomberg (2018) contends that justice and inclusiveness must be core values in architecture, planning and construction.

III. METHODOLOGY

This study used a qualitative mixed-methods approach. First, a narrative literature review surveyed 50 peer-reviewed publications on sustainable, passive and inclusive design in architecture, with a focus on sub-Saharan or developing contexts. Key journals included Building and Environment, Energy and Built Environment, Autism, and regional architectural journals. Search terms combined "passive design", "sustainable architecture", "universal design", "autism", "Nigeria", etc. Data from each source were extracted and thematically coded under categories of "design strategies", "implementation barriers", and "practice frameworks".

Second, to capture professional perspectives, we conducted semi-structured interviews with Nigerian architects and stakeholders. Twelve practising architects (registered with ARCON) were selected from various regions, along with five disability rights advocates and education planners. The interview guide probed understanding and application of inclusive and climate-responsive design in recent projects, ethical considerations, and regulatory challenges. Interviews were audio-recorded (with consent) and transcribed. Responses were analysed using thematic analysis to identify common barriers and enablers in practice. (This mixed approach is similar to that used in other Nigerian architecture studies, and allows triangulation of literature findings with on-the-ground experience.)

IV. RESULTS AND DISCUSSION

Awareness and attitudes: The literature and interviews reveal that Nigerian architects generally understand the importance of both passive strategies and inclusive design, but see them as secondary to cost and client demands. In surveys, architects report high conceptual awareness of sustainability, yet only a minority (roughly one-third) consistently integrate renewables or advanced passive features. Similarly, architects acknowledge the moral imperative of accessibility, but practical knowledge is limited. For instance, an architect interviewee noted: "I know we should be barrier-free for everyone, but the Building Code doesn't enforce it, so unless a client insists, it often gets overlooked." This reflects findings by Ahmed et al. (2024), who observed almost no autism-friendly elements in school designs.

Implementation barriers: Common barriers emerged for both climate and inclusive design. A chief issue is regulation: since Nigeria's codes do not require energy efficiency or accessibility features, architects face little formal pressure. Aniekan (2021) reports that "energy efficiency measures are not found in the building code", and 80% of firms in her survey admitted to omitting accessibility from project planning. Without regulatory incentive, such measures are often seen as optional. Interviewees also cited cost and resources: adding solar panels or specialized autism-friendly materials raises budgets, and under tight project financing, clients often prioritize basic structure over these enhancements (Achara & Igwe 2025). Power supply unreliability was cited as a paradox: without stable electricity, passive (off-grid) design should be valued more, but ironically many architects default to conventional air-

conditioning systems as the perceived quick fix (Yusuf & Akande 2023). In terms of expertise, few Nigerian architects have training in universal design or neurodiversity. Education curriculums still emphasize traditional planning; one architect lamented, "We had one lecture on disability design in school, mostly about wheelchair ramps. Autism or sensory issues were never mentioned." The human tendency to react to known issues means that much depends on client briefs: if a developer demands LEED certification or an inclusive school, architects will incorporate these features, but if not, such strategies may be omitted.

Private vs public sector: Public institutions (schools, hospitals, government buildings) theoretically should set the standard, but in reality are often worst offenders. Ahmed et al. found that public primary schools in Abuja had no inclusive design accommodations. Interviewees blamed bureaucratic inertia and lack of enforcement. In contrast, some private firms pursuing market advantages are starting to incorporate sustainable features to attain green building ratings. For example, architects involved in luxury housing projects noted the inclusion of solar PV and energy-efficient appliances, albeit mainly for marketing, not from regulation. This bifurcation suggests that professional practice is reactive rather than systematic: environmental and social design is implemented only when explicitly requested or incentivized (e.g. through client values or international grants).

Ethical obligations: The ethical dimension was highlighted by both literature and interviewees. Many architects expressed a belief that they have a duty to society and future generations, echoing Fraser et al.'s call to embed "care ethics" in design codes. However, actual practice shows a gap between ideals and deeds. Professional guidelines in Nigeria focus on "health, safety and welfare" but do not explicitly mention inclusion or climate. As one senior architect quipped, "The code says protect the public, but it's silent on which public. It never says anything like 'you must reduce carbon' or 'include people with autism.' That's all up to your conscience." Rhomberg (2018) argues that justice and inclusiveness must be proactively embedded in planning and construction, a sentiment shared by disability advocates interviewed. They stressed that architecture has consequences for society's most vulnerable, and that failing to design inclusively is an ethical failing. On climate ethics, some architects we spoke with were dismayed that environmental impact is not more central to practice: "I see so many buildings overheating; we simply can't pretend climate change isn't part of our job to address." However, they noted the absence of any local mandate or client requirement for carbon reduction, unlike in some Western contexts.

Project delivery processes: In terms of workflow, inclusive and climate strategies can be integrated at different stages. Literature suggests that best practice is early integration: passive measures should be considered in schematic design, while accessibility should be checked at design development and compliance stages. In practice, architects reported ad hoc processes. Some rely on checklists for accessibility (if they know them), but often these are added after the core design. One interviewee stated, "We usually finish the main design, then a compliance officer might tell us to add a ramp or railing. By then it's often awkward." Climate strategies, by contrast, tend to be thought of during concept planning (orientation, shading) and during mechanical design (choice of HVAC, insulation). However, due to poor policy drivers, architects noted that these considerations are often preliminary and not enforced; an energy modelling analysis is rarely required unless for a green certification. Tambaya (2023) suggests using building simulation and sensitivity analysis to embed passive approaches systematically, but such tools are not yet common in Nigerian small practices.

Overall, the evidence points to a disconnect between strategy and implementation. Passive and inclusive design are recognized in principle, but execution is inconsistent and often depends on individual commitment rather than industry standard. The Nigerian situation mirrors issues identified elsewhere: codes that emphasize client obligations can leave wider social responsibilities under-addressed. Here, regulatory frameworks and project incentives lag behind the ideals of inclusive, climate-resilient architecture, leading to ad hoc practice.

CONCLUSION AND RECOMMENDATION

This study finds that, in Nigeria, both climate-responsive design and inclusive (autism-friendly) design are acknowledged goals but have limited realization in practice. Architects possess awareness of passive strategies and of universal design concepts, yet barriers ,including regulatory gaps, cost constraints and limited training ,hinder their application. Professional codes and project processes do not systematically enforce these strategies; architects and stakeholders must often initiate them voluntarily.

Given these gaps, we recommend a multifaceted approach: Policy and Regulation: The Nigerian government should update building regulations to include clear energy-efficiency and accessibility standards. For example, requiring shading coefficients for windows or solar reflectance for roofs in hot regions, and mandating ramps, lifts and sensory-friendly features in public buildings. Aligning with international disability standards (as Agbo et al. 2023 suggest) would ensure autistic and disabled users are considered in all projects. Professional Practice: ARCON and the Nigerian Institute of Architects (NIA) should incorporate sustainability and universal design into codes of ethics and continuing education. Ethics training could emphasise "ethics of care" and social equity in design. Professional mentoring programs (as Okonta et al. 2025 propose) could foster a culture of licensed practice committed to public welfare. Education and Skills: Architectural curricula need to embed modules on climate-responsive design and neurodiversity. Workshops or guidelines on autism-friendly architecture (based on reviews by Tola 2021 and Black 2022) could equip architects with practical know-how. Project Delivery: Clients and public-sector agencies should be encouraged to commission demonstrator projects that showcase passive techniques and universal design together. For instance, designing schools that both capture daylight without glare and provide quiet sensory rooms would exemplify synergies. Stakeholder Engagement: Inclusive design requires involving end-users. Practitioners should consult disability advocates and autistic users during briefing, ensuring designs meet real needs. Community participation in planning ,advocated in sustainable design literature ,will help align projects with societal goals.

By integrating climate and inclusion strategies holistically, architecture in Nigeria can better serve its people and environment. Such integration not only improves occupant comfort and accessibility, but also contributes to energy resilience and social equity. Ultimately, embedding sustainability and universal design in professional practice aligns with global commitments (SDGs 10 and 13) and Nigeria's development goals. Architects, clients and regulators must collaborate to make "architecture for climate and inclusion" a lived reality.

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