

Assessment of Green Building Practices among Built Environment Professionals in Nigeria: A Systematic Review of the Awareness-Practice Gap

Olutope Adeniyi Adewole, Solomom Emmanuel Etuk

Caleb University, Imota, Ikorodu, Lagos, Nigeria

DOI: <https://doi.org/10.47772/IJRISS.2026.100601436>

Received: 24 June 2026; Accepted: 30 June 2026; Published: 22 July 2026

ABSTRACT

Green building has moved from a niche environmental concern to a mainstream expectation in construction industries worldwide, yet its uptake across Nigeria's built environment professions remains poorly understood as a connected whole. This systematic review asks what Nigerian architects, engineers, quantity surveyors, builders, and estate surveyors actually know and do about green building, and why the two so often diverge. Following a structured search and screening process informed by PRISMA principles, seventy-one studies conducted in Nigeria between 2011-2026 were retained for thematic synthesis. The evidence shows that awareness of green building concepts is now moderate to high among Nigerian professionals, yet practical implementation lags well behind, a pattern this review terms the awareness-practice gap. The clearest single measure of this gap comes from a six-zone national survey in which 47.3% of professionals showed high awareness of sustainable construction materials, but only 11.4% showed correspondingly high adoption, a difference of almost 36% points, and at least ten further studies in this review's corpus report a similar pattern using different methods and samples. Five barrier clusters recur across the literature: the perception that green building costs more, weak regulatory enforcement, scarce locally available green materials, limited technical training, and the absence of a nationally recognised rating system. Awareness and adoption both vary by profession, firm characteristics, and region, with architects and quantity surveyors generally better informed than builders, and the evidence base itself heavily concentrated in Lagos and the South-West. Government policy support, client demand, and applied continuing professional development emerge as the most consistently cited levers for closing the gap. This review concludes that further progress in Nigeria depends less on convincing professionals that green building matters, since most already accept that it does, and more on removing the structural, financial, and institutional obstacles that currently keep knowledge from becoming practice.

Keywords: Green Building, Sustainable Construction, Built Environment Professionals, Awareness-Practice Gap, Nigeria

INTRODUCTION

Buildings are quietly responsible for a share of the world's environmental burden (United Nations Environment Programme, 2025). The construction and day-to-day running of buildings together account for a large portion of global energy use and greenhouse gas emissions, and in Nigeria the picture is sharp. Rapid urban growth, an expanding middle class, and chronic power shortages have pushed residential and commercial buildings to the centre of the country's energy story (Aliyu & Amadu, 2017; Akogun, 2026). Against this backdrop, green building, understood broadly as design, construction, and operating practice that reduces energy and water use, limits waste, and protects occupant health (Pavate et al., 2024), has shifted from a niche concern of a handful of enthusiastic architects to a question that touches every built environment professional in the country.

Nigeria's construction sector is not short of professionals who could carry this shift forward. Architects, civil and structural engineers, quantity surveyors, builders, and estate surveyors collectively shape almost every decision

that determines whether a new building in Lagos, Abuja, or Enugu performs efficiently or wastefully across its lifetime. Whether these professionals understand green building principles, and whether that understanding shows up in the buildings they design, cost, and construct, is therefore not an abstract academic question. It is the practical hinge on which Nigeria's prospects for a more sustainable built environment turn.

Research on this question has grown steadily, if unevenly, since the early 2010s. The earliest studies were mostly comparative and conceptual, asking which international rating system, LEED, BREEAM, Green Star, and others, might be adapted for Nigerian conditions, and concluding that the country needed a rating tool better suited to its own circumstances (Adegbile, 2013; Wahab & Taiwo, 2021). A second wave, running through the mid-2010s, turned to a more basic question: did Nigerian professionals know what green building was at all. These studies, often built on modest samples of fewer than 100 respondents, generally found that some awareness existed but that practice on the ground remained rare (Nduka & Ogunsanmi, 2015; Dahiru et al., 2024).

From around 2020 onward, the literature matured methodologically. Surveys grew larger, sampling hundreds rather than dozens of professionals, and researchers began reaching for more demanding statistical tools, structural equation modelling, partial least squares modelling, exploratory factor analysis, and Delphi consensus methods, to test not just whether professionals were aware of green building but why that awareness so often failed to convert into practice (Soji et al., 2024; Unegbu et al., 2025b). A particularly active strand of this newer work has begun to put a number on what earlier studies only described in passing. A 2026 national survey of 273 architecture, engineering, and construction professionals spanning all six geopolitical zones found that 47.3% demonstrated high awareness of sustainable construction materials, yet only 11.4% showed correspondingly high adoption, a difference of close to thirty-six percentage points (Osuolale & Felkner, 2026). This widening interest in the relationship between awareness and practice, rather than in awareness alone, marks one of the most important shifts the field has seen in the past five years.

Despite this growing volume of research, the field has a curious blind spot. Dozens of studies, conducted across Lagos, Abuja, Enugu, Kano, Jos, Benin City, and beyond, have each measured some slice of green building awareness, practice, drivers, or barriers among Nigerian professionals, yet almost none of them speak to one another. A barrier ranked first in a Lagos hotel study might be ranked fifth in an Abuja housing study, and a reader trying to make sense of the field as a whole is left piecing together fragments from dozens of separate, methodologically inconsistent surveys. Little to no published review has yet pulled this scattered evidence into one place, traced how the field's central questions have shifted over time, or asked what the accumulated weight of the evidence says about why green building knowledge in Nigeria so often fails to become green building practice.

This review addresses that gap directly. It systematically searches, screens, and synthesises the available Nigeria-focused literature on green building practice among built environment professionals, published between 2011 and mid-2026, to answer five linked questions: (1) how aware are Nigerian professionals of green building concepts, and does that awareness translate into practice; (2) what barriers most consistently constrain adoption; (3) what drivers and benefits motivate the professionals who do adopt green practices; (4) how does the picture vary across professional groups, firm types, and regions; and (5) what role do rating systems, certification, and policy play in shaping the overall picture. Seventy-one studies met this review's eligibility criteria and form the evidence base for the synthesis that follows. The remainder of this paper sets out how that evidence was located and appraised, presents the findings organised around six recurring themes, and discusses what the accumulated evidence means for researchers, professional bodies, and policymakers working to close Nigeria's green building gap.

METHODS

This review followed the PRISMA 2020 reporting guidelines, adapted for an applied, fast-moving professional-practice literature rather than a clinical evidence base. No formal protocol was pre-registered in advance; this limitation is acknowledged directly in the discussion.

Search Strategy

The search was conducted across the following databases and platforms: Google Scholar, Emerald Insight, MDPI, SpringerLink, IOPscience, ScienceDirect, AJOL, and ResearchGate. Search terms combined three concept blocks using Boolean operators: a green building block (“green building” OR “sustainable construction” OR “sustainable building” OR “green architecture” OR “eco-friendly construction”), a professional and stakeholder block (“built environment professional” OR architect OR “quantity surveyor” OR engineer OR builder* OR contractor* OR “construction professional*”), and a geographic block (Nigeria OR Lagos OR Abuja OR “Port Harcourt” OR Enugu OR Kano OR Kaduna). The three blocks were combined with AND. The search covered all years up to the point of writing in June 2026; no lower date boundary was imposed, given how young this evidence base is, and the earliest most eligible study identified was published in 2011.

Eligibility Criteria

Studies were eligible for inclusion if they met all of the following criteria: they reported primary empirical research or a structured secondary synthesis, such as a systematic review or Delphi study; they were set in Nigeria, with data collected from, or directly concerning, Nigerian built environment professionals, organisations, or buildings; they addressed green building, sustainable construction, or closely related practice, including energy efficiency, green materials, certification, and retrofitting, from the standpoint of professional awareness, adoption, drivers, barriers, or related outcomes; and they carried identifiable authorship together with a resolvable digital object identifier or stable publisher link.

Studies were excluded if they were set wholly outside Nigeria, addressed green building only incidentally with no professional-practice angle, lacked identifiable authorship in the available source record, were exact-duplicate records of an already-included study (most often multiple repository mirrors of the same paper deposited under different identifiers), or showed credible signs of compromised publication integrity, such as an implausible international co-authorship pattern combined with a single non-indexed outlet and no independent verification available. *Table 1* summarises these criteria in full.

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Reported primary empirical research or a structured secondary synthesis (systematic review, Delphi study)	Set wholly outside Nigeria
Set in Nigeria, with data from or directly concerning Nigerian built environment professionals, organisations, or buildings	Addressed green building only incidentally, with no professional-practice angle
Addressed green building, sustainable construction, or closely related practice (energy efficiency, green materials, certification, retrofitting) from the standpoint of awareness, adoption, drivers, or barriers	Lacked identifiable authorship in the available source record
Carried identifiable authorship and a resolvable DOI or stable publisher link	Exact-duplicate record of an already-included study (commonly a repository mirror)
Published in English	Showed credible signs of compromised publication integrity

Note: All five inclusion criteria had to be satisfied jointly; any single exclusion criterion was sufficient to remove a record.

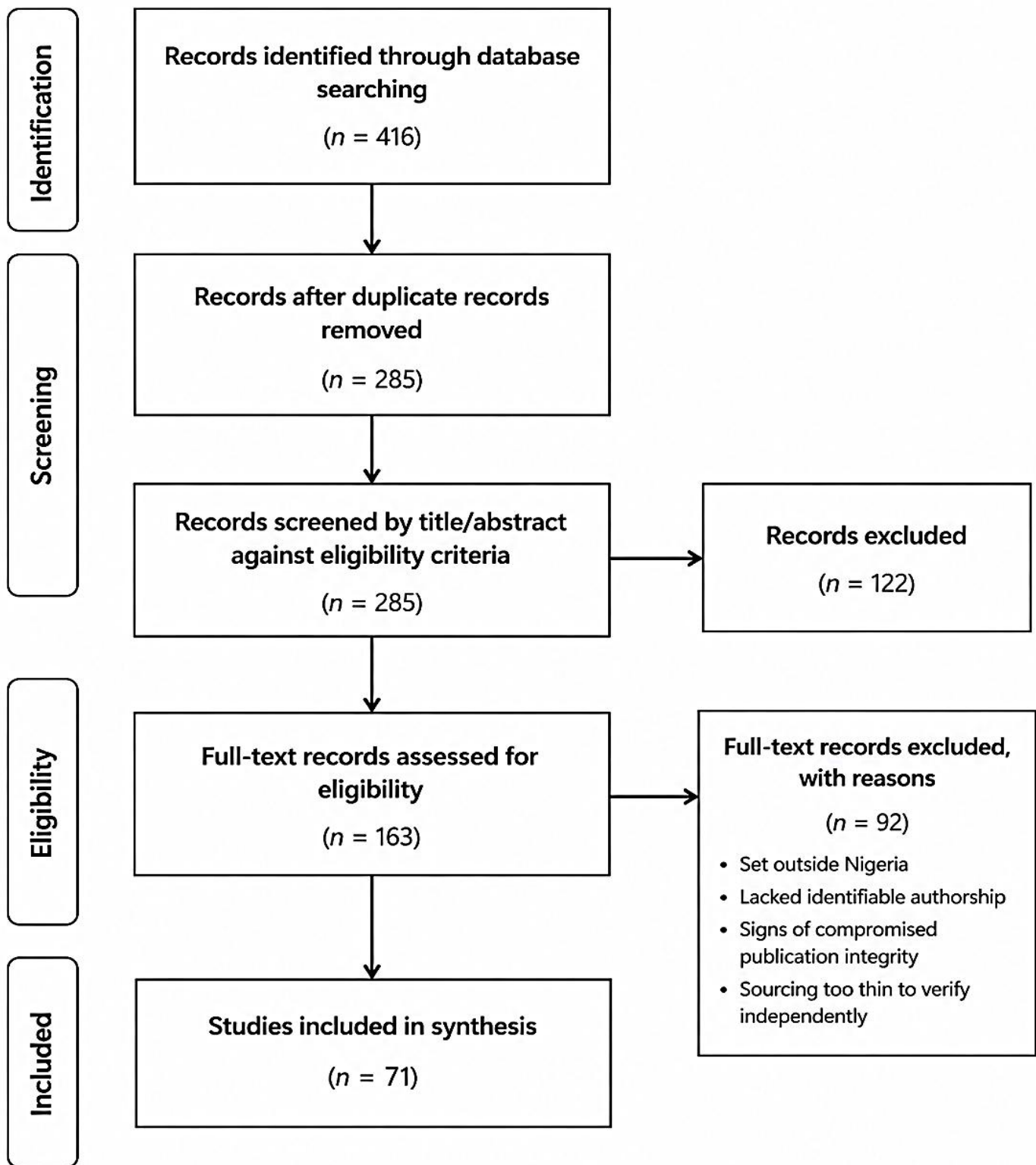


Figure 1: PRISMA Flow Chart

Study Selection

Searches across the databases identified 416 records in total. Removing 113 duplicate records, predominantly repository mirrors of the same study deposited under multiple DOIs, left 285 unique records. Title and abstract screening against the eligibility criteria removed a further 122 records, leaving 163 for closer eligibility assessment against the full available text or structured summary. At this final stage, 92 records were excluded: for example, for being set outside Nigeria, for lacking identifiable authorship, for showing signs of compromised publication integrity, or for sourcing too thin to verify independently. Seventy-one studies were retained for synthesis. *Table 2* sets out this selection flow in PRISMA-style summary form.

Table 2: PRISMA-Style Study Selection Flow

Stage	Description	n
Identification	Records identified	416
Deduplication	Records remaining after duplicate records removed	285
Title/abstract screening	Records remaining after excluded against eligibility criteria	163
Full-text/eligibility review	Studies included in synthesis after further exclusions	71

Note: Adapted from PRISMA 2020 reporting conventions (Page et al., 2021) for an applied professional-practice literature.

Quality Appraisal

Since the corpus spans cross-sectional surveys, mixed-methods studies, Delphi panels, case studies, and systematic reviews, a single rigid checklist designed for one design type would have fit poorly. Each study was instead appraised using a lightweight, design-appropriate adaptation of the Mixed Methods Appraisal Tool, checking for a clearly stated research question, a research design appropriate to that question, an adequately described and justified sample, and clear, internally consistent reporting of results. No study was excluded on quality grounds alone, since the purpose of this review is descriptive synthesis of an emerging field rather than effect-size pooling, but quality considerations are woven into the discussion where they affect how much weight a finding should carry.

Data Extraction and Synthesis

For every included study, the following information was extracted into a standardised matrix: author or authors and year, geographic setting, research design, sample size and composition, and the principal findings relevant to this review's research questions. This matrix forms the basis of Appendix B.

Findings were then analysed using thematic synthesis: each extracted finding was inductively coded, codes with shared meaning were grouped into descriptive categories, and these categories were refined through repeated comparison across studies into the six analytic themes presented in the Results section. Initial coding of the extracted findings produced a large set of open codes which were iteratively grouped into descriptive categories; through repeated comparison and refinement, these categories were collapsed to form the six analytic themes reported in the Results.

Where studies reported comparable quantitative findings, multiple awareness percentages or barrier rankings, for instance, these are reported side by side to give a sense of the overall pattern. Results are not statistically pooled, given the heterogeneity of measurement instruments used across the included studies.

RESULTS

Seventy-one studies met this review's eligibility criteria. *Table 3* summarises their distribution by year, design, and geographic setting; the full list, with author, year, design, setting, sample, and key finding for every included study, appears in Appendix B. The literature is markedly young: only five studies were published between 2011 and 2015, and a further seventeen between 2016 and 2023, but the field has expanded sharply since then, with seventeen studies appearing in 2024, twenty-nine in 2025, and three already in print for 2026 at the time of writing. In design terms, the corpus is dominated by quantitative cross-sectional surveys, thirty-six studies, just over half the total, followed by mixed-methods studies (14), conceptual or narrative reviews (7), systematic literature reviews (6), and a smaller number of Delphi surveys, qualitative interview studies, and case studies. Among the thirty-four primary studies that reported a clear, countable respondent sample, sample sizes ranged from 25 expert panellists in a Delphi study to 526 housing professionals in an Abuja-based survey, with a typical study surveying somewhere in the region of 150 to 200 respondents.

Geographically, the evidence base leans heavily toward Lagos and the wider South-West: thirteen studies were set specifically in Lagos State, and fifteen in the South-West region as a whole, more than the next most-studied zones combined. A further thirty-nine studies described their setting only in general national terms or drew on

multi-zone samples, while the North-Central, North-East, North-West, South-East, and South-South zones together accounted for just eleven studies between them. This concentration matters for how confidently the findings below can be generalised, and is returned to in the discussion.

Table 3: Characteristics of Included Studies (N = 71)

Category	Grouping	n
2011-2015	Year of publication	5
2016-2019	Year of publication	4
2020-2021	Year of publication	7
2022-2023	Year of publication	6
2024	Year of publication	17
2025	Year of publication	29
2026 (to date)	Year of publication	3
Quantitative cross-sectional survey	Research design	36
Mixed methods	Research design	14
Conceptual / narrative review	Research design	7
Systematic literature review	Research design	6
Delphi survey	Research design	2
Qualitative (interviews/case study)	Research design	2
Case study	Research design	1
Other	Research design	3
Lagos State	Geographic setting	13
Other South-West	Geographic setting	2
National / multi-zone (no single city specified)	Geographic setting	45
North-Central	Geographic setting	5
North-East	Geographic setting	1
North-West	Geographic setting	2
South-East	Geographic setting	2
South-South	Geographic setting	1

Awareness of Green Building Concepts among Nigerian Professionals

The most basic question in this literature, whether Nigerian built environment professionals know what green building is, has by now been asked often enough to support a reasonably confident answer: yes, and increasingly so.

Early studies found awareness to be patchy. Dahiru et al. (2024), surveying professionals nationally, concluded that green building was effectively unpractised in Nigeria and traced this back to a basic lack of awareness. Nduka & Ogunsanmi (2015), working with 91 usable responses from an original sample of 150, reached a similar verdict, though they found, notably, that awareness did not differ significantly across professional categories, a finding their 2016 companion paper extended by reporting that most respondents were broadly familiar with green building principles and largely agreed on how its benefits should be ranked (Nduka & Ogunsanmi, 2016).

More recent, larger-sample studies paint a considerably more confident picture. Among 344 Lagos-based architects, knowledge of green building design strategies scored a Relative Importance Index of between 0.70 and 0.74 across most categories, with sustainable-materials knowledge the strongest area and knowledge of technological systems the clear weak point (Adeogun et al., 2025a). In Jos, Plateau State, 80% of 120 surveyed construction workers demonstrated high theoretical knowledge of sustainable construction (Matthias et al., 2025). In Enugu, 200 architects and builders showed a high level of awareness of green and sustainable building practices, with 77.5% nonetheless rating insufficient knowledge as a continuing impediment to fuller adoption (Emeka et al., 2025), a detail that hints at the theme taken up next. Awareness of specific green technologies tells a similar story: among Lagos construction professionals surveyed about green wall systems, awareness was generally high even though only 8 of 18 identified systems were ever actually implemented (Oke et al., 2025b).

Taken together, the weight of recent evidence suggests that the Nigerian construction sector's challenge is no longer mainly an awareness problem. It has, instead, become a practice problem, which is the subject of the next theme.

Table 4: Studies Contributing to the Awareness of Green Building Concepts among Nigerian Professionals Theme

Study	Design	Setting & Sample	Contribution to This Theme
Nduka & Ogunsanmi (2015)	Cross-sectional survey	Nigeria, national; 91 of 150 respondents	Awareness of green building issues did not differ significantly across professional groups; lack of awareness and expertise was the leading barrier identified.
Nduka & Ogunsanmi (2016)	Cross-sectional survey	Nigeria, national; 91 of 150 respondents	Most professionals were broadly familiar with green building principles and largely agreed on benefit rankings, supporting calls for a Green Building Council of Nigeria.
Samson & Bernard (2018)	Cross-sectional survey	Lagos; 175 respondents (52 developers, 123 estate surveyors)	Stakeholder awareness of green building practice was found to be low overall, though orientation and energy-efficient lighting were features stakeholders said they would readily adopt.
Oladokun et al. (2021)	Mixed methods	Nigeria, national; Construction professionals	High overall awareness of sustainability practices was reported; resource-conscious construction-method choice and client satisfaction ranked as the most implemented practices.
Ade-Ojo (2022)	Cross-sectional survey	Nigeria, national; Built-environment professionals	Awareness of LEED requirements differed significantly by professional category, with land surveyors scoring highest and builders scoring lowest.
Dahiru et al. (2024)	Cross-sectional survey	Nigeria, national; 40 of 50 respondents	Green building was found to be effectively unpractised in Nigeria despite acknowledged need; lack of awareness was the most significant hindering factor.
Nwogu & Emedosi (2024)	Cross-sectional survey	Nigeria, selected firms; Construction professionals	High awareness of environmental, economic, and social benefits was found across participants, with government involvement seen as essential to wider promotion.
Soji et al. (2024)	Delphi survey	Nigeria, national; 30 experts	Consensus was reached on 26 of 38 proposed green-innovation competencies; the technical dimension showed the weakest agreement among panellists.
Unegbu et al. (2024b)	Quantitative survey	Nigeria, national; Construction professionals	A moderate level of green building awareness was found, with a strong positive correlation between awareness and the benefits professionals perceived.
Adeogun et al. (2025a)	Mixed methods	Lagos; 344 architects + 12 experts	Relative Importance Index values for architects' knowledge ranged from .70 to .74 across strategy categories, with technological systems consistently the weakest area.
Adeogun et al. (2025b)	Mixed methods	Lagos; 344 architects + 12 experts	Knowledge significantly predicts adoption (chi-square = 358.7, $p < .001$; $r = .71$); sustainable-materials adoption is highest at 92.7%, while advanced technological systems lag.
Emeka et al. (2025)	Cross-sectional survey	Enugu; 200 respondents (86.96% response rate)	66% of architects and builders consistently applied green architecture features; 77.5% rated insufficient knowledge and 74% rated weak government policy as major impediments.
Matthias et al. (2025)	Cross-sectional survey	Jos, Plateau State; 120 construction workers	80% of respondents showed high theoretical knowledge of sustainable construction, yet 71% still reported generating construction waste regularly, a clear knowledge-practice split.
Oke et al. (2025b)	Cross-sectional survey	Lagos; Construction professionals	Awareness of green wall systems was generally high, but only 8 of 18 identified systems were actively implemented (mean implementation score = 3.0).

The Awareness-Practice Gap

If the first theme establishes that Nigerian professionals generally know what green building is, the second, and arguably more important, theme is that this knowledge consistently fails to convert fully into practice. This review's clearest single statistic on the point comes from Osuolale & Felkner (2026), who surveyed 273 architecture, engineering, and construction professionals across all six of Nigeria's geopolitical zones and found that 47.3% demonstrated high awareness of sustainable construction materials, but only 11.4% showed correspondingly high adoption, a gap of close to thirty-six percentage points. Critically, their regression analysis found awareness to be the only statistically significant predictor of adoption among the factors tested, while a large share of the variance in adoption remained unexplained by either awareness or professional affiliation, a pattern the authors read as evidence that institutional, not individual, barriers are the real constraint.

Other studies echo the same shape of finding using different methods and samples. A Lagos-based mixed-methods study of 196 professionals found relatively high awareness of strategies such as energy efficiency, passive design, and water conservation, alongside implementation that remained low and inconsistent (Adeogun, 2026). Among 344 Lagos architects, knowledge was found to significantly predict adoption statistically, yet even so, adoption of sustainable materials, at 92.7%, was the clear outlier against much lower adoption of more technologically demanding strategies (Adeogun et al., 2025b). Among 75 architects designing high-rise buildings in Lagos, conceptual knowledge of energy efficiency strategies was strong, but practical application lagged, with client budget constraints cited as the main obstacle (Ezema et al., 2024).

A study of compressed adobe bricks in Lagos found that 70% of professionals were aware of the material, yet only 11% had ever used it (Victor et al., 2025b). A systematic PRISMA review of biophilic and passive design strategies similarly noted that, while passive design can cut energy use by up to half, only 28.6% of the Lagos high-rise condominiums it examined had applied any passive cooling measures at all (Kalu et al., 2025). Even in the public sector, where procurement rules might be expected to enforce stricter standards, adoption of sustainable construction practice was found to be only moderate, and skewed toward the simplest, cheapest interventions rather than the more technically demanding ones (Selnan, 2025). The consistency of this pattern across cities, professions, building types, and survey methods is, in itself, one of the strongest findings to emerge from this review.

Table 5: Studies Contributing to the The Awareness-Practice Gap

Study	Design	Setting & Sample	Contribution to This Theme
Oke et al. (2023)	Quantitative survey	Nigeria, national; Construction professionals	Both awareness and implementation of environmental-economic practices were found to be limited, with targeted recommendations proposed for closing the gap.
Ezema et al. (2024)	Cross-sectional survey	Lagos; 75 architects	Architects held strong conceptual knowledge but applied techniques inconsistently; client budget constraints were the primary barrier, while passive cooling and solar strategies were most adopted.
Unegbu et al. (2024b)	Quantitative survey	Nigeria, national; Construction professionals	A moderate level of green building awareness was found, with a strong positive correlation between awareness and the benefits professionals perceived.
Adeogun et al. (2025b)	Mixed methods	Lagos; 344 architects + 12 experts	Knowledge significantly predicts adoption (chi-square = 358.7, $p < .001$; $r = .71$); sustainable-materials adoption is highest at 92.7%, while advanced technological systems lag.
Kalu et al. (2025)	Systematic review (PRISMA)	Nigeria, national; 30 studies, 2020-2025	Passive design strategies were found to cut energy use by up to 50%, yet only 28.6% of the Lagos high-rise condominiums examined elsewhere in the literature had applied passive cooling measures.
Matthias et al. (2025)	Cross-sectional survey	Jos, Plateau State; 120 construction workers	80% of respondents showed high theoretical knowledge of sustainable construction, yet 71% still reported generating

Study	Design	Setting & Sample	Contribution to This Theme
			construction waste regularly, a clear knowledge-practice split.
Oke et al. (2025a)	Quantitative survey	Nigeria, national; Construction practitioners	A significant disconnect was found between professionals' awareness of 20 identified green policies and programmes and their actual adoption of those policies.
Oke et al. (2025b)	Cross-sectional survey	Lagos; Construction professionals	Awareness of green wall systems was generally high, but only 8 of 18 identified systems were actively implemented (mean implementation score = 3.0).
Selman (2025)	Descriptive survey	Nigeria, geopolitical zones; 381 professionals	Public-sector sustainable construction practice adoption was moderate and economically pragmatic; high-adoption buildings showed over 30% greater energy efficiency and higher occupant satisfaction ($r = .81$ with performance index).
Victor et al. (2025b)	Mixed methods + laboratory testing	Lagos; 132 surveys + 15 interviews	70% of professionals were aware of compressed adobe bricks, but only 11% had used them; exclusion from regulation was the most cited barrier (84%).
Adeogun (2026)	Sequential explanatory mixed methods	Lagos; 196 professionals + 10 interviews	High awareness of green strategies coexists with low, inconsistent implementation; firm size, age, and project type significantly mediate the translation of knowledge into practice.
Osolale & Felkner (2026)	Cross-sectional survey	Nigeria, geopolitical zones; 273 AEC professionals	47.3% of respondents showed high awareness of sustainable construction materials, but only 11.4% showed high adoption, a gap of nearly 36 percentage points; awareness was the sole significant predictor of adoption, leaving most variance explained by unmeasured institutional barriers.

Barriers to Green Building Adoption

Barriers are the most heavily researched theme in this literature, appearing in some form in thirty-eight of the seventy-one included studies, and the same handful of obstacles recur with striking regularity regardless of city, profession, or year of publication.

Cost-related concerns dominate. In one of the field's most frequently echoed findings, the perception that green building is simply an expensive concept emerged as the leading hindrance among 302 professionals surveyed nationally (Dalibi et al., 2017), and high upfront cost was likewise the top-rated barrier, with a mean score of 4.49 out of 5, among 526 housing professionals in Abuja (Ashen et al., 2024). This cost concern shows up again and again regardless of building type or city, from public-sector projects (Selman, 2025) to private commercial developments (Ifeanyi et al., 2025), suggesting it is less a fixed, real price premium than a widely shared perception that has proven remarkably resistant to a decade of contrary evidence about green building's actual lifecycle economics.

Weak regulatory and institutional support forms a second recurring cluster. Among 137 Lagos stakeholders, comprising contractors, consultants, and clients, lack of government backing ranked as the second most significant barrier to green building practice, just behind expertise and cost concerns (Simon-Eigbe et al., 2022). A national survey of green building technology practitioners reached a parallel conclusion, identifying a lack of supporting institutions and policy as the single top-ranked barrier (Amuda-Yusuf et al., 2020), while a study spanning 213 respondents from both public and private sectors found that lack of government incentives and regulation, alongside the simple non-availability of visible green building examples, were among the five most significant constraints on uptake (Ifeanyi et al., 2025).

Materials, skills, and capacity gaps make up a third cluster. A nationwide survey of 255 professionals found that, while recycled materials and green concrete were already in some use, cost remained the binding constraint on

going further (Unegbu et al., 2024c). Compressed-block studies reinforce this point sharply: exclusion from formal building regulations, cited by 84% of respondents in one Lagos study, was found to be an even larger obstacle than the materials' technical performance, which was in fact superior to conventional concrete blocks on several measures (Victor et al., 2025b). A capacity-needs study among Enugu's building workforce found significant disagreement between educational-sector and industrial-sector employees about where the most pressing skills gaps actually lay (Chukwu et al., 2019), suggesting that even the diagnosis of the skills problem is not yet settled within the industry.

Finally, the absence of a locally recognised certification or rating benchmark surfaces repeatedly as a structural barrier in its own right, a theme developed more fully later in this section. Across these clusters, what stands out is how rarely any single barrier appears in isolation. Most studies that asked about barriers at all found a cost concern, a regulatory concern, and an awareness or skills concern bundled together, which is one reason this review treats green building adoption in Nigeria as a systems problem rather than a matter of any one constraint.

Table 6: Studies Contributing to the Barriers to Green Building Adoption Theme

Study	Design	Setting & Sample	Contribution to This Theme
Nwokoro & Onukwube (2011)	Mixed methods + focus groups	Lagos; 85 professionals, 3 sites	Working-condition quality and legal enforcement scored highest among sustainability indicators; integrated design processes were rarely practised on the sites studied.
Oni (2015)	Conceptual review	Nigeria, national	Proposes a Professionals Integrating Sustainable Construction framework, arguing that weak synergy among construction professionals is itself a barrier to adoption.
Waziri & Yusof (2015)	Conceptual review	Nigeria, national	An early review tracking the implementation of green construction practice, flagging regulatory gaps and insufficient training as recurring constraints.
Dalibi et al. (2017)	Cross-sectional survey	Nigeria, multi-zone; 302 project professionals	The perception of green building as an expensive concept emerged as the leading hindrance, ahead of material unavailability and weak professional capacity.
Chukwu et al. (2019)	Cross-sectional survey + t-test	Enugu; 135 of 159 building workers (85%)	Capacity-building needs were identified across five green building domains; educational-sector and industry-sector workers significantly disagreed on which needs mattered most.
Aghimien et al. (2020)	Quantitative survey	Nigeria, national; Construction professionals	Drivers and barriers to sustainable construction were identified and ranked, providing one of the field's most widely cited evidence baselines.
Amuda-Yusuf et al. (2020)	Cross-sectional survey + discriminant analysis	Nigeria, national; Practitioners in green building development	Lack of institutional and policy support was the top-ranked barrier; discriminant analysis showed organisation type significantly differentiates how barriers are perceived.
Koko & Bello (2020)	Cross-sectional survey	Nigeria, national; Built-environment professionals	Insufficient government support ranked as the second most significant hindrance to green architecture, after limited awareness of its economic benefits.
Alohan & Oyetunji (2021)	Cross-sectional survey	Benin City; 5 professional groups	43.5% of respondents actively advocated for green building development; benefits and hindrances were ranked by relative importance.
Simon-Eigbe et al. (2022)	Cross-sectional survey	Lagos; 137 (58 contractors, 41 consultants, 38 clients)	Expertise and higher cost ranked as the top barrier to green building practice, followed by lack of government backing and limited awareness or acceptability of green technology.
Akindele et al. (2023)	Mixed methods	Nigeria, multi-city; Construction professionals	Barriers cluster around education and training deficits; strategies for improvement are ranked, with capacity building rated most impactful.

Study	Design	Setting & Sample	Contribution to This Theme
Abdulsalam et al. (2024)	Cross-sectional survey + interviews	North-East Nigeria; 122 professionals	Resource conservation and reduced maintenance ranked as the leading benefits; economic and governance issues, including the absence of a standard assessment system, were the leading challenges.
Akande & Olagunju (2024)	Conceptual review	Nigeria, national	Retrofitting low-income housing for energy conservation could ease the disproportionate share of income low-income households spend on energy; calls for supportive retrofit policy.
Ashen et al. (2024)	Cross-sectional survey	Abuja; 526 of 560 housing professionals	Improved health and well-being was the top-rated driver (M = 4.33); high upfront cost was the top-rated barrier (M = 4.49).
Babayo (2024)	Conceptual review	Nigeria, national	Green technologies such as solar integration and rainwater harvesting are effective for efficiency gains, but cost, awareness, and regulatory inconsistency remain obstacles.
Dahiru et al. (2024)	Cross-sectional survey	Nigeria, national; 40 of 50 respondents	Green building was found to be effectively unpractised in Nigeria despite acknowledged need; lack of awareness was the most significant hindering factor.
Ezema et al. (2024)	Cross-sectional survey	Lagos; 75 architects	Architects held strong conceptual knowledge but applied techniques inconsistently; client budget constraints were the primary barrier, while passive cooling and solar strategies were most adopted.
Garba et al. (2024)	Qualitative case study	Nigeria, national; Multiple case studies	Locally sourced stabilised-earth materials and solar power were found to reduce construction and running costs, though shortage of technical expertise limits wider uptake.
Ogunyemi (2024)	Conceptual review	Nigeria, national	Identifies recurring barriers to energy efficiency in the built environment and draws on case studies to argue for stronger policy frameworks and incentives.
Oke et al. (2024)	Systematic review + exploratory factor analysis	Nigeria, national; Building professionals	Financial constraints, inadequate policy, and weak technological infrastructure were the dominant hindrances to embracing energy-economics principles.
Unegbu et al. (2024a)	Systematic literature review	Nigeria, national; 50 studies, 2000-2023	Flood barriers, green roofs, and sustainable materials were identified as effective climate-resilience strategies, benchmarked against international practice.
Unegbu et al. (2024c)	Mixed methods	Nigeria, national; 255 professionals	Recycled materials and green concrete were already in active use among respondents, but cost remained the binding constraint on wider adoption.
Abdulkareem & Al-Maiyah (2025)	Quantitative simulation	Abuja; 6 housing prototypes	Passive design solutions cut thermal discomfort by up to 20% during peak heat; national codes lack low-cost passive guidance for low-income housing.
Adeniyi et al. (2025)	Cross-sectional survey	South-West Nigeria; 300 professionals	Twelve distinct barriers to green building technology adoption were identified; reduced energy costs and occupant comfort were the most valued benefits.
Alaka et al. (2025)	Mixed methods	South-West Nigeria; University buildings, multiple institutions	Critical design deficiencies were found across campuses; awareness of sustainable design varied widely among stakeholders, and adoption of passive and solar strategies was inconsistent.
Ayodele et al. (2025)	Cross-sectional survey	Nasarawa; 256 of 384 (Yamane formula)	Compact development and reduced urban sprawl were the most significant outcomes linked to green building practice; adoption skewed toward simpler, lower-cost interventions.

Study	Design	Setting & Sample	Contribution to This Theme
Emeka et al. (2025)	Cross-sectional survey	Enugu; 200 respondents (86.96% response rate)	66% of architects and builders consistently applied green architecture features; 77.5% rated insufficient knowledge and 74% rated weak government policy as major impediments.
Erifeta (2025)	Systematic literature review	Nigeria, national; 80 sources, 2014-2025	High initial cost, weak building-code enforcement, and limited public awareness were the critical barriers to construction-sector decarbonisation; cross-country lessons were drawn from Ghana and South Africa.
Ifeanyi et al. (2025)	Survey + Mann-Whitney U + SEM	Nigeria, public & private sectors; 199 of 213 respondents	Five constraints, led by lack of government incentives and high construction cost, were found to significantly impede green building uptake; public and private respondents agreed closely on severity.
Ikudayisi & Adegun (2025)	Policy analysis + systematic review + case study	Nigeria, national; 7 policy documents + 35 studies + 16 cases	Acceleration pathways for green building are proposed, with policy fragmentation and weak enforcement implicated repeatedly across the policy review, literature review, and case analysis.
Kalu et al. (2025)	Systematic review (PRISMA)	Nigeria, national; 30 studies, 2020-2025	Passive design strategies were found to cut energy use by up to 50%, yet only 28.6% of the Lagos high-rise condominiums examined elsewhere in the literature had applied passive cooling measures.
Unegbu et al. (2025a)	Mixed methods + case studies	Nigeria, national; Professionals and stakeholders	Energy-efficient technologies delivered measurable economic, environmental, and social value, but high upfront cost and a shortage of technical expertise constrained wider adoption.
Unegbu et al. (2025c)	Systematic literature review	Nigeria, national; Literature, 2015-2023	Uptake of LEED, EDGE, and BREEAM certification is rising but remains well below global norms; cost and a shortage of trained assessors were the leading barriers identified.
Unegbu et al. (2025d)	Mixed methods + energy simulation	3 major Nigerian cities; Stakeholders, renewable-energy projects	Solar photovoltaic systems were the most efficient option, cutting energy use by 25 to 35% with a 6 to 8 year payback period; high starting cost and weak policy enforcement remained binding.
Unegbu et al. (2025e)	Mixed methods (SPSS + LISREL)	Nigeria, national; 237 professionals	Weak regulatory frameworks and high upfront cost were the dominant barriers; organisational culture was found to moderate how readily firms adopted sustainable practice.
Victor et al. (2025a)	Multi-criteria experimental evaluation	Nigeria, national; Laboratory + field testing	Compressed earth blocks cost roughly half as much as concrete blocks per square metre and emit over 90% less carbon, but public perception and building-code integration limit scale-up.
Victor et al. (2025b)	Mixed methods + laboratory testing	Lagos; 132 surveys + 15 interviews	70% of professionals were aware of compressed adobe bricks, but only 11% had used them; exclusion from regulation was the most cited barrier (84%).
Onyia et al. (2026)	Cross-sectional survey + Kruskal-Wallis test	Nigeria, national; Engineers, architects, construction managers	Improved indoor air quality and renewable-energy promotion were the most highly rated implications of energy-efficient buildings; limited access to financing was the most significant barrier.

Drivers, Benefits and Motivators

Where barriers explain why green building adoption stalls, the drivers explains why it happens at all, and several economic, health, and environmental motivators recur clearly across the evidence. In a study, properties with green building features in Ikeja, Lagos commanded measurably higher rental premiums than otherwise comparable conventional properties, alongside tenant interviews suggesting a genuine and growing preference for sustainable living spaces (Taiwo & Rahman, 2025). This speaks to financial drivers. At a project level, sustainable construction practice was estimated to save approximately 18% of total project cost among 216 Lagos-based respondents (Adejumo et al., 2024), while a national structural equation model found that environmental factors, climate-change awareness, and policy regulation all significantly predicted sustainability adoption, with stakeholder collaboration helping translate policy into practice (Unegbu et al., 2025b).

Health, comfort, and wellbeing motivators feature almost as prominently. Improved health and wellbeing was the single highest-rated driver, ahead of environmental sustainability itself, among 526 Abuja housing professionals (Ashen et al., 2024), and resource-conscious construction-method choice alongside client satisfaction were the most consistently implemented sustainability practices identified in a Lagos-wide study (Oladokun et al., 2021). Several studies also point to government and institutional drivers as decisive: across 370 professionals nationally, sustainable construction practice correlated positively with job creation, broader economic growth, and rising property values (Unegbu et al., 2024d), while qualitative interviews with construction practitioners identified five major drivers of sustainable construction and found that government involvement was consistently seen as essential to scaling these drivers beyond individual, motivated firms (Tunji-Olayeni et al., 2020; Nwogu & Emedosi, 2024).

Material-level innovation offers a further, more concrete kind of evidence for what a driver can look like in practice. Compressed earth blocks were found to cost roughly half as much per square metre as concrete blocks, while emitting over 90% less embodied carbon, a striking economic and environmental case for substitution that has not yet translated into widespread uptake, for reasons returned to under barriers (Victor et al., 2025a). Solar photovoltaic systems, similarly, were found to be the most efficient renewable option studied across three major Nigerian cities, cutting energy use by 25 to 35% with a payback period of just six to eight years (Unegbu et al., 2025d). Read together, these findings suggest that Nigeria's professionals are not short of reasons to adopt green building practice; cost savings, health benefits, market premiums, and measurable environmental gains are all already documented in the local evidence base. What the next theme shows is that these drivers play out very differently depending on who is asked.

Table 7: Studies Contributing to the Drivers, Benefits and Motivators Theme

Study	Design	Setting & Sample	Contribution to This Theme
Aghimien et al. (2020)	Quantitative survey	Nigeria, national; Construction professionals	Drivers and barriers to sustainable construction were identified and ranked, providing one of the field's most widely cited evidence baselines.
Tunji-Olayeni et al. (2020)	Qualitative interviews	Nigeria, national; Construction practitioners	Five major drivers of sustainable construction practice were identified through interviews, alongside commonly used practices and the policy support practitioners said they needed.
Alohan & Oyetunji (2021)	Cross-sectional survey	Benin City; 5 professional groups	43.5% of respondents actively advocated for green building development; benefits and hindrances were ranked by relative importance.
Oladokun et al. (2021)	Mixed methods	Nigeria, national; Construction professionals	High overall awareness of sustainability practices was reported; resource-conscious construction-method choice and client satisfaction ranked as the most implemented practices.
Majid et al. (2023)	Cross-sectional survey + factor analysis	Kano; Residents/professionals, Kano metropolis	Social attributes, more than technical or economic ones, were found to most strongly influence the successful uptake of green residential building attributes.

Study	Design	Setting & Sample	Contribution to This Theme
Abdulsalam et al. (2024)	Cross-sectional survey + interviews	North-East Nigeria; 122 professionals	Resource conservation and reduced maintenance ranked as the leading benefits; economic and governance issues, including the absence of a standard assessment system, were the leading challenges.
Adejumo et al. (2024)	Cross-sectional survey	Lagos; 216 professionals	Sustainable construction was estimated to save about 18% of total project cost; twenty-six distinct benefits were catalogued from the literature and validated by respondents.
Ashen et al. (2024)	Cross-sectional survey	Abuja; 526 of 560 housing professionals	Improved health and well-being was the top-rated driver ($M = 4.33$); high upfront cost was the top-rated barrier ($M = 4.49$).
Garba et al. (2024)	Qualitative case study	Nigeria, national; Multiple case studies	Locally sourced stabilised-earth materials and solar power were found to reduce construction and running costs, though shortage of technical expertise limits wider uptake.
Nwogu & Emedosi (2024)	Cross-sectional survey	Nigeria, selected firms; Construction professionals	High awareness of environmental, economic, and social benefits was found across participants, with government involvement seen as essential to wider promotion.
Unegbu et al. (2024d)	Quantitative survey	Nigeria, national; 370 professionals	Sustainable construction practice correlated positively with job creation, broader economic growth, and rising property values.
Abdullahi (2025)	Cross-sectional survey + PLS-SEM	Nigeria, national; 263 professionals	Economic, social, and technical dimensions of green innovation competency each predicted sustainable construction practice, while the environmental dimension showed a weaker direct effect.
Adeniyi et al. (2025)	Cross-sectional survey	South-West Nigeria; 300 professionals	Twelve distinct barriers to green building technology adoption were identified; reduced energy costs and occupant comfort were the most valued benefits.
Ayodele et al. (2025)	Cross-sectional survey	Nasarawa; 256 of 384 (Yamane formula)	Compact development and reduced urban sprawl were the most significant outcomes linked to green building practice; adoption skewed toward simpler, lower-cost interventions.
Chima (2025)	Case-based review	Abuja Municipal Area Council	Combining local materials with modern technology was found to lower both construction cost and environmental harm in a municipal case study.
Onyegiri & Onyegiri (2025)	Conceptual review	Nigeria, national	Positions green building as a pivotal mechanism for sustainable urban transformation and outlines civil-engineering proposals for wider uptake.
Selnan (2025)	Descriptive survey	Nigeria, geopolitical zones; 381 professionals	Public-sector sustainable construction practice adoption was moderate and economically pragmatic; high-adoption buildings showed over 30% greater energy efficiency and higher occupant satisfaction ($r = .81$ with performance index).
Taiwo & Rahman (2025)	Mixed methods	Ikeja, Lagos; 100 residential properties	Properties with green features commanded measurably higher rental premiums than comparable conventional properties, alongside a stated tenant preference for sustainable living spaces.
Unegbu et al. (2025a)	Mixed methods + case studies	Nigeria, national; Professionals and stakeholders	Energy-efficient technologies delivered measurable economic, environmental, and social value, but high upfront cost and a shortage of technical expertise constrained wider adoption.

Study	Design	Setting & Sample	Contribution to This Theme
Unegbu et al. (2025b)	Quantitative survey + structural equation modelling	Nigeria, national; 400 professionals	Environmental factors ($\beta = .42$), climate-change awareness ($\beta = .38$), and policy regulation ($\beta = .37$) all significantly predicted sustainability adoption; stakeholder collaboration mediated the policy-adoption relationship.
Unegbu et al. (2025d)	Mixed methods + energy simulation	3 major Nigerian cities; Stakeholders, renewable-energy projects	Solar photovoltaic systems were the most efficient option, cutting energy use by 25 to 35% with a 6 to 8 year payback period; high starting cost and weak policy enforcement remained binding.
Victor et al. (2025a)	Multi-criteria experimental evaluation	Nigeria, national; Laboratory + field testing	Compressed earth blocks cost roughly half as much as concrete blocks per square metre and emit over 90% less carbon, but public perception and building-code integration limit scale-up.
Onyia et al. (2026)	Cross-sectional survey + Kruskal-Wallis test	Nigeria, national; Engineers, architects, construction managers	Improved indoor air quality and renewable-energy promotion were the most highly rated implications of energy-efficient buildings; limited access to financing was the most significant barrier.

Variations Across Professionals, Firms and Regions

Awareness, practice, and barrier perception are not evenly distributed across Nigeria's built environment professions, firm types, or regions, and this variation is itself one of the more practically useful findings to emerge from the literature.

By profession, the clearest pattern concerns architects and quantity surveyors on one side and builders on the other. A study of LEED awareness found that land surveyors scored highest and builders scored lowest among the professional categories compared (Ade-Ojo, 2022), a pattern broadly consistent with a Lagos builders' study that found the average competence score for sustainable building practice to be only moderate, at 4.32, with builders' involvement at the crucial early design stage still under-used (Akinfolarin, 2023). Quantity surveyors emerge from the literature as a particularly under-leveraged profession: despite being well placed to specify sustainable materials at the costing and procurement stage, a South-West Nigeria study found their role in promoting sustainable construction materials remained largely passive rather than driving adoption (Olatunde et al., 2025).

Firm characteristics also matter as much as professional title. A Lagos-wide mixed-methods study found that firm size, years of establishment, and project typology each significantly mediated how readily professional knowledge translated into actual implementation, with smaller and younger firms generally lagging behind larger, more established ones (Adeogun, 2026). Organisation type also shaped how barriers were perceived: a national discriminant analysis found that practitioners in different types of organisations significantly disagreed about which barriers mattered most (Amuda-Yusuf et al., 2020), and a separate national study found that urban firms adopted sustainable construction practice considerably faster than their rural counterparts (Unegbu & Yawas, 2025).

Regional and climatic variation adds a further layer. A Delphi panel of experts working in north-western Nigeria's hot, dry climate identified nineteen locally suitable green materials, several of them, such as straw bales and adobe bricks, quite different from the materials favoured in Lagos-based studies, reflecting genuine climatic rather than merely attitudinal differences in what green construction looks like across the country (Yakub et al., 2024). A Kano-based study of residential buildings, meanwhile, found that social attributes, not technical or economic ones, most strongly predicted whether green residential features were successfully adopted, a result that sits somewhat apart from the cost-dominated barrier rankings found in most Lagos-based studies (Majid et al., 2023). Given that thirteen of the seventy-one included studies were set specifically in Lagos and a further two in the South-West more broadly, fifteen in total, against only eleven studies spread across the North-Central, North-East, North-West, South-East, and South-South zones combined, it remains an open question how far Lagos-derived findings can be assumed to hold elsewhere in the country.

Table 8: Studies Contributing to the Variations Across Professionals, Firms and Regions Theme

Study	Design	Setting & Sample	Contribution to This Theme
Nwokoro & Onukwube (2011)	Mixed methods + focus groups	Lagos; 85 professionals, 3 sites	Working-condition quality and legal enforcement scored highest among sustainability indicators; integrated design processes were rarely practised on the sites studied.
Nduka & Ogunsanmi (2015)	Cross-sectional survey	Nigeria, national; 91 of 150 respondents	Awareness of green building issues did not differ significantly across professional groups; lack of awareness and expertise was the leading barrier identified.
Samson & Bernard (2018)	Cross-sectional survey	Lagos; 175 respondents (52 developers, 123 estate surveyors)	Stakeholder awareness of green building practice was found to be low overall, though orientation and energy-efficient lighting were features stakeholders said they would readily adopt.
Chukwu et al. (2019)	Cross-sectional survey + t-test	Enugu; 135 of 159 building workers (85%)	Capacity-building needs were identified across five green building domains; educational-sector and industry-sector workers significantly disagreed on which needs mattered most.
Amuda-Yusuf et al. (2020)	Cross-sectional survey + discriminant analysis	Nigeria, national; Practitioners in green building development	Lack of institutional and policy support was the top-ranked barrier; discriminant analysis showed organisation type significantly differentiates how barriers are perceived.
Ade-Ojo (2022)	Cross-sectional survey	Nigeria, national; Built-environment professionals	Awareness of LEED requirements differed significantly by professional category, with land surveyors scoring highest and builders scoring lowest.
Akinfolarin (2023)	Cross-sectional survey	Lagos; 63 of 90 builders	Builders' average competence score for sustainable practice was moderate (4.32 of a possible higher scale); involvement at the design stage remains under-used.
Majid et al. (2023)	Cross-sectional survey + factor analysis	Kano; Residents/professionals, Kano metropolis	Social attributes, more than technical or economic ones, were found to most strongly influence the successful uptake of green residential building attributes.
Soji et al. (2024)	Delphi survey	Nigeria, national; 30 experts	Consensus was reached on 26 of 38 proposed green-innovation competencies; the technical dimension showed the weakest agreement among panellists.
Unegbu et al. (2024c)	Mixed methods	Nigeria, national; 255 professionals	Recycled materials and green concrete were already in active use among respondents, but cost remained the binding constraint on wider adoption.
Yakub et al. (2024)	Delphi survey	North-West Nigeria; 25 experts	Nineteen of thirty-three candidate green materials were agreed by experts to be suitable and readily available for the region's hot, dry climate.
Abdullahi et al. (2025)	Comparative case study	Lagos & Abuja; 4 hotels	Transcorp Hilton scored highest on a LEED-based checklist (63 of 85); none of the four hotels had adopted renewable energy systems.
Abdullahi (2025)	Cross-sectional survey + PLS-SEM	Nigeria, national; 263 professionals	Economic, social, and technical dimensions of green innovation competency each predicted sustainable construction practice, while the environmental dimension showed a weaker direct effect.

Study	Design	Setting & Sample	Contribution to This Theme
Adeogun et al. (2025a)	Mixed methods	Lagos; 344 architects + 12 experts	Relative Importance Index values for architects' knowledge ranged from .70 to .74 across strategy categories, with technological systems consistently the weakest area.
Alaka et al. (2025)	Mixed methods	South-West Nigeria; University buildings, multiple institutions	Critical design deficiencies were found across campuses; awareness of sustainable design varied widely among stakeholders, and adoption of passive and solar strategies was inconsistent.
Chima (2025)	Case-based review	Abuja Municipal Area Council	Combining local materials with modern technology was found to lower both construction cost and environmental harm in a municipal case study.
Unegbu & Yawas (2025)	Structural equation modelling + geospatial analysis	Nigeria, national; High response rate (94.6%)	Urban areas were found to adopt sustainable construction practices more rapidly than rural areas, with sustainable practice positively associated with market value.
Olatunde et al. (2025)	Mixed methods	South-West Nigeria; Quantity surveying professionals	Quantity surveyors were found to play a pivotal but currently under-used role in specifying sustainable construction materials on Nigerian projects.
Adeogun (2026)	Sequential explanatory mixed methods	Lagos; 196 professionals + 10 interviews	High awareness of green strategies coexists with low, inconsistent implementation; firm size, age, and project type significantly mediate the translation of knowledge into practice.
Osolale & Felkner (2026)	Cross-sectional survey	Nigeria, geopolitical zones; 273 AEC professionals	47.3% of respondents showed high awareness of sustainable construction materials, but only 11.4% showed high adoption, a gap of nearly 36 percentage points; awareness was the sole significant predictor of adoption, leaving most variance explained by unmeasured institutional barriers.

Rating Systems, Certification and the Policy Environment

Nigeria's relationship with formal green building rating systems and certification frameworks is, in a sense, where this literature began, and it remains an active and somewhat unsettled theme. For instance, early comparative work assessed seven international rating tools against Nigerian conditions and found LEED to score highest overall, 80 of 100 points, ahead of BREEAM, CASBEE, Green Star, and others, but flagged LEED's basis in American standards, its costly certification process, and its demanding documentation requirements as poor fits for the Nigerian context, recommending instead that the country work toward a rating system of its own (Adegbile, 2013; Wahab & Taiwo, 2021). More than a decade later, that recommendation has been only partially realised. A systematic review of the 2015 to 2023 literature found that uptake of LEED, EDGE, and BREEAM certification in Nigeria is rising, but remains well below global norms, held back chiefly by high initial investment costs and a shortage of professionals trained to manage certification processes (Unegbu et al., 2025c). A comparative case study of four major Nigerian hotels applying LEED-style criteria found a similar story at the building level: even the best-performing hotel scored only 63 of a possible 85 points, and none of the four hotels studied had adopted any renewable energy system, relying instead on diesel generators that work directly against the certification's underlying goals (Abdullahi et al., 2025).

Policy and regulatory findings tell a closely related story. The most comprehensive recent treatment combined a review of seven national policy documents with a systematic review of thirty-five studies and an exploratory case study of sixteen actual green buildings, and found policy fragmentation and weak enforcement implicated repeatedly across all three strands of evidence (Ikudayisi & Adegun, 2025). At the level of individual

professionals, a national survey of practitioners' awareness and adoption of twenty identified green building policies and programmes found a significant disconnect between the two: professionals broadly knew the policies existed, but had not meaningfully adopted them in practice (Oke et al., 2025a), a finding that closely mirrors the awareness-practice gap documented under the second theme above.

Several barrier-focused studies independently arrived at the same conclusion about regulation from different angles: a mixed-methods study of 237 professionals found weak regulatory frameworks to be among the most binding constraints on sustainability adoption (Unegbu et al., 2025e), and an early review of green construction practice implementation likewise flagged regulatory gaps as a persistent constraint nearly a decade earlier (Waziri & Yusof, 2015). This theme suggests that the absence of a single, authoritative, Nigeria-specific rating and enforcement framework is not simply one barrier among many, but a structural gap that helps explain why so many of the other barriers identified throughout this review, cost uncertainty, inconsistent material standards, and patchy enforcement, are able to persist unchecked.

Table 9: Studies Contributing to the Rating Systems, Certification and the Policy Environment Theme

Study	Design	Setting & Sample	Contribution to This Theme
Wahab & Taiwo (2021)	Comparative conceptual review	Nigeria, national	Reviews international green building rating tools and argues that Nigeria needs a domestically tailored rating system rather than relying solely on imported standards.
Adegbile (2013)	Comparative scoring survey	Nigeria, national; 232 of 280 questionnaires	LEED scored highest among seven international rating systems reviewed (80 of 100 points); the study recommends a dedicated West African green building council.
Nduka & Ogunsanmi (2016)	Cross-sectional survey	Nigeria, national; 91 of 150 respondents	Most professionals were broadly familiar with green building principles and largely agreed on benefit rankings, supporting calls for a Green Building Council of Nigeria.
Abdullahi et al. (2025)	Comparative case study	Lagos & Abuja; 4 hotels	Transcorp Hilton scored highest on a LEED-based checklist (63 of 85); none of the four hotels had adopted renewable energy systems.
Unegbu et al. (2025c)	Systematic literature review	Nigeria, national; Literature, 2015-2023	Uptake of LEED, EDGE, and BREEAM certification is rising but remains well below global norms; cost and a shortage of trained assessors were the leading barriers identified.

Table 10: Research Questions and Summary Answers from Thematic Synthesis

Research Question	Answer from the Synthesis
How aware are Nigerian built environment professionals of green building concepts, and does awareness translate into practice?	Awareness is now moderate to high and has risen steadily. However, it consistently fails to translate into practice; a national survey found only 11.4% high adoption despite 47.3% high awareness. Over ten studies document this awareness-practice gap.
What barriers most consistently constrain adoption?	Five barrier clusters recur: perceived high cost, weak regulatory enforcement, scarce locally available green materials, limited technical training, and the absence of a nationally recognised rating system. Cost perception is the most frequently cited, but regulatory and institutional weaknesses are the structurally deeper obstacles.
What drivers and benefits motivate professionals who do adopt green practices?	Key motivators include lifecycle cost savings (e.g., 18% project cost reduction, rental premiums), improved occupant health and wellbeing, environmental benefits, and government or client demand. Cost savings and health are the highest-rated drivers across multiple studies.

Research Question	Answer from the Synthesis
How does the picture vary across professional groups, firm types, and regions?	Architects and quantity surveyors generally show higher awareness and adoption than builders. Larger, more established firms adopt more readily. Adoption is faster in urban areas, and the evidence base is heavily concentrated in Lagos/South-West, making national generalisation tentative.
What role do rating systems, certification, and policy play?	International systems (LEED, BREEAM, EDGE) are being adopted only slowly and partially due to cost and lack of trained assessors. Policy fragmentation and weak enforcement are persistent structural gaps. A nationally tailored rating system and stronger public procurement mandates are widely recommended.

DISCUSSION

Pulling these six themes together, a fairly coherent and somewhat counter-intuitive picture of Nigeria's green building landscape emerges. The story this review's evidence tells is not the one most outsiders might expect, that Nigerian construction professionals are simply unaware of, or indifferent to, sustainable building. On the contrary, awareness across the seventy-one studies reviewed here is generally moderate to high and has risen steadily over the period covered, particularly among architects and quantity surveyors in the country's larger cities. The real story is that this awareness has not, for the most part, been allowed to become practice. The clearest single piece of evidence for this is the near thirty-six percentage point gap between high awareness (47.3%) and high adoption (11.4%) documented by Osulale and Felkner (2026), but it is corroborated, in less precise but equally consistent terms, by more than ten other studies in this review's corpus, spanning green wall systems, compressed adobe bricks, passive design, high-rise energy efficiency, and public-sector construction generally. If a single sentence had to summarise seventy-one studies and fifteen years of Nigerian green building research, it would be this: "the country's built environment professionals have largely been convinced of the case for green building; what remains unresolved is how to let that conviction reach the buildings they actually deliver."

Why does this gap persist so stubbornly across cities, professions, and building types? The barriers literature synthesised under the third theme offers a fairly consistent answer, even where individual studies frame it in slightly different language. The obstacles that stand between awareness and practice in Nigeria are structural rather than individual. Cost concerns recur in study after study, but a closer reading suggests this is less a simple, fixed price premium and more a perception that has proven unusually resistant to correction, repeated almost unchanged from the earliest studies in this review's corpus through to the most recent ones. Regulatory weakness recurs just as often, and here the evidence is unambiguous rather than merely perceptual: Nigeria genuinely lacks a single, authoritative, consistently enforced green building standard of the kind that LEED, BREEAM, or EDGE provide in their home jurisdictions, and the country's National Building Code, as several reviewed studies note, still incorporates only minimal sustainability provisions. Material and skills constraints complete the picture; in that locally available, climate-appropriate green materials clearly exist, the north-western materials Delphi study and the compressed earth block studies in this review both demonstrate this convincingly, but they remain outside formal specification and procurement systems, which means individual professionals who want to use them face cost, liability, and client-acceptance risks that better-resourced firms can absorb and smaller firms generally cannot.

This pattern across the literature supports a simple but useful reframing of how green building adoption in Nigeria should be modelled going forward. Much of the early literature, understandably for a young field, implicitly treated awareness as the main lever: raise awareness, and adoption will follow. The accumulated weight of the more recent, larger, and more statistically sophisticated studies reviewed here, particularly Osulale & Felkner's (2026) finding that awareness explains only a modest share of the variance in adoption, suggests this model is now empirically inadequate. A more accurate model, consistent with what this review's evidence shows, treats green building adoption in Nigeria as gated by three sequential, largely independent conditions: a professional must be aware of a green practice, that practice must be available to them within an accessible, affordable, and code-compliant supply chain, and the project's client or commissioning body must be willing to pay for, or otherwise permit, its use.

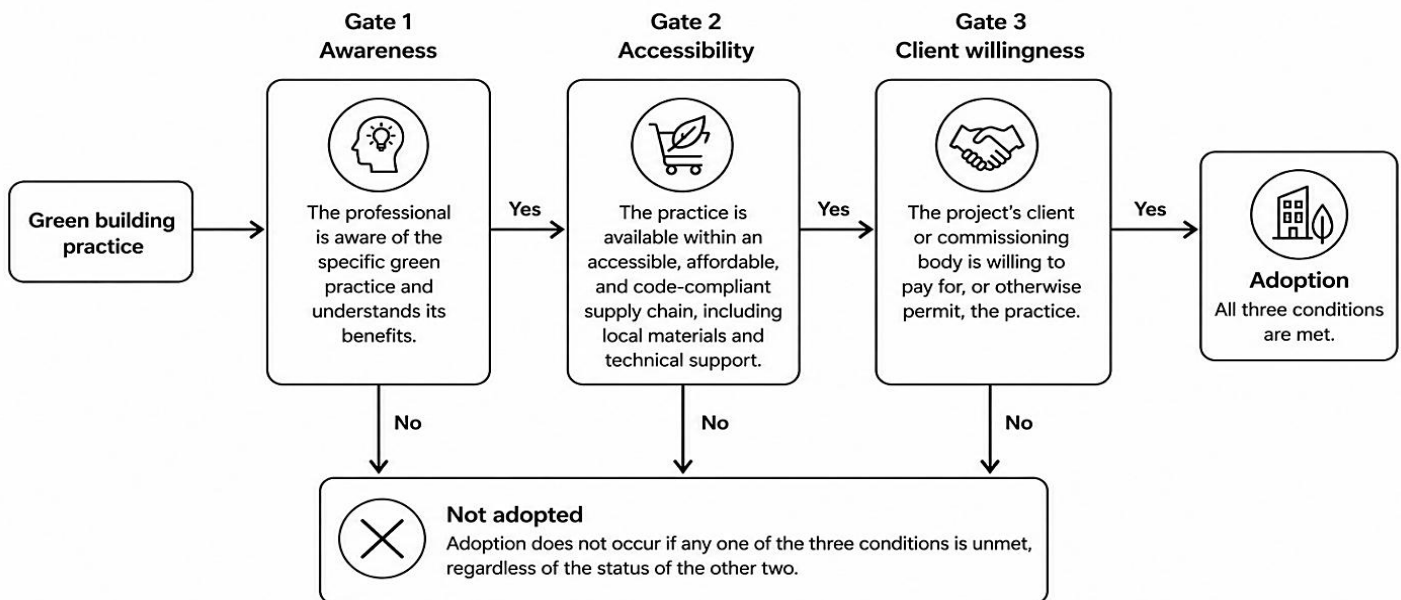


Figure 2: Three-Condition Model I for Green Building Practices in Nigeria

Most of this literature has measured only the first condition. The studies that come closest to measuring the second and third conditions, the compressed-earth-block and compressed-adobe-brick studies and the rating-system and certification studies among them, consistently find that these later-stage conditions, not awareness, are where adoption actually stalls. Future research, and future policy, would benefit from being organised explicitly around this three-condition model rather than continuing to default to awareness as the primary variable of interest.

For professional bodies, principally the Nigerian Institute of Architects, the Nigerian Institute of Building, the Nigerian Institution of Quantity Surveyors, and the Nigerian Institution of Estate Surveyors and Valuers, the clearest implication is that continuing professional development programmes built around raising general awareness are likely to show diminishing returns from this point forward, since the evidence suggests most members already have that awareness. A more useful focus, several of the studies reviewed here suggest, would be applied, project-level training: how to specify and cost locally available green materials, how to communicate the lifecycle financial case for green building to cost-sensitive clients, and how to navigate the limited certification and incentive schemes that do exist. The pronounced gap this review found between architects' and quantity surveyors' relatively strong awareness and builders' comparatively weaker scores also points to a specific, addressable training gap at the construction-delivery end of the professional pipeline, rather than at the design end where most existing training appears to be concentrated.

For policymakers, the evidence assembled here offers a reasonably clear, evidence-backed set of priorities, several of which echo recommendations made independently across multiple studies in this review. A nationally recognised, Nigeria-specific green building rating and certification framework, building on but not simply importing LEED, would address the structural gap identified under the sixth theme and give professionals, clients, and lenders alike a shared reference point that currently does not exist. Mandatory or incentivised minimum green-material content in public procurement, an idea consistent with the most recent and methodologically strongest study in this review's corpus (Osuolale & Felkner, 2026), would also shift the third gating condition identified above, client willingness to pay, away from individual negotiation and toward default practice. Strengthening enforcement of the existing National Building Code's sustainability provisions, even without writing entirely new regulation, was independently recommended across several of the policy-focused studies synthesised here and appears to be a comparatively low-cost intervention relative to its likely impact, given how consistently weak enforcement, rather than absent regulation altogether, is identified as the proximate problem.

Placed alongside the wider African and developing-country literature, Nigeria's pattern looks more like a regional norm than an outlier. The systematic review of decarbonisation barriers included in this review's corpus draws explicitly on lessons from Ghana and South Africa, both of which appear to have made faster progress than

Nigeria on integrated policy approaches and targeted financial incentives, suggesting that Nigeria's gap is not inevitable but reflects policy choices that other comparable economies have, at least partially, already addressed (Erifeta, 2025). This comparative angle is worth taking seriously precisely because it implies the gap documented throughout this review is closeable through known, demonstrated policy instruments rather than requiring Nigeria to invent an entirely new approach from scratch.

This review has several limitations worth stating plainly. First, the search process relied on manual searching across multiple databases rather than a single, fully automated protocol; while every effort was made to verify authorship, venue, and findings independently before inclusion, this approach is inherently iterative and may be less precisely replicable than a single-database systematic search. This limitation is disclosed here in the interest of transparency. Second, the evidence base itself is geographically lopsided: with fifteen of seventy-one studies set in the South-West region and Lagos alone accounting for thirteen, conclusions about national patterns rest disproportionately on evidence from Nigeria's commercial capital, and may not transfer cleanly to less-studied regions with different climates, building stocks, and regulatory enforcement capacity. Third, because the included studies use different definitions, instruments, and scales to measure awareness and adoption, this review's thematic synthesis identifies a consistent pattern across studies but cannot, and does not claim to, produce a single pooled statistic for the size of the awareness-practice gap nationally. Finally, much of the field remains cross-sectional, capturing a single moment in time; almost none of the studies reviewed here track the same professionals or firms over multiple years, which limits what can currently be said about whether the gap identified throughout this review is narrowing, widening, or holding steady.

Several clear directions for future research follow from these limitations and from the gaps this synthesis has exposed. Longitudinal studies that track the same cohort of professionals or firms over several years would finally allow researchers to distinguish a genuinely narrowing gap from a merely differently measured one. Research that explicitly measures all three conditions in this review's proposed adoption model, awareness, supply-chain accessibility, and client willingness to pay, within a single study design, rather than measuring awareness in isolation as most of the existing literature does, would help test the model proposed above directly. Geographically, deliberate research investment in the North-Central, North-East, North-West, and South-South zones, which together account for a small fraction of the evidence reviewed here despite covering most of the country's land area and a large share of its population, would meaningfully strengthen how confidently any future review can speak about Nigeria as a whole rather than primarily about Lagos. Finally, intervention studies, evaluating what happens to adoption when a specific barrier, financing access, certification cost, or material availability, is deliberately removed for a defined group of professionals or projects, would move this field from describing the gap, which it now does well, toward demonstrating concretely how to close it.

CONCLUSION

This review set out to make sense of a literature that, until now, existed only as a fragmented collection of city-specific surveys, conference papers, and isolated reviews. Bringing seventy-one studies together within a single, structured framework yields a clearer and more useful answer than any individual study could provide on its own. This study shows that Nigerian built environment professionals are reasonably well informed about green building, and that awareness has grown steadily and convincingly since the early 2010s. What this synthesis shows just as clearly, however, is that awareness has been a necessary but far from sufficient condition for change. Cost perceptions, weak regulatory enforcement, limited access to certified local materials, and the absence of a Nigeria-specific rating framework continue to stand between what professionals know and what they are able, or willing, to build.

For researchers, this review's main contribution is the empirical pattern itself, an unusually consistent awareness-practice gap documented across cities, professions, and methods, and the three-condition adoption model proposed in the discussion as a more useful frame for the next generation of studies than awareness alone. For professional bodies and educators, the implication is to shift continuing professional development away from general awareness-raising and toward applied, project-level skills, particularly among builders and at the construction-delivery stage of the professional pipeline. For policymakers, the evidence converges on a small number of high-leverage interventions: a nationally recognised rating and certification framework, stronger enforcement of existing building-code sustainability provisions, and procurement rules that make green specification the default rather than the exception.

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APPENDIX

Appendix A: Search Strings and Sources

Block 1 (concept): "green building" OR "sustainable construction" OR "sustainable building" OR "green architecture" OR "eco-friendly construction"

Block 2 (population): "built environment professional*" OR architect* OR "quantity surveyor*" OR engineer* OR builder* OR contractor* OR "construction professional*"

Block 3 (geography): Nigeria OR Lagos OR Abuja OR "Port Harcourt" OR Enugu OR Kano OR Kaduna

Combined search: (Block 1) AND (Block 2) AND (Block 3)

Databases and platforms searched: Google Scholar, Emerald Insight, MDPI, SpringerLink, IOPscience, ScienceDirect, AJOL, ResearchGate

Date range: inception to June 2026 (no lower bound imposed)

Language: English only

Appendix B: Full Table of Included Studies

The table below lists all seventy-one studies retained for synthesis in this review, in alphabetical order by first author, together with research design, geographic setting, sample, and principal finding relevant to this review's research questions. Full bibliographic details for every entry appear in the References section.

Author(s) & Year	Design	Setting	Sample	Key Finding
Abdulkareem & Al-Maiyah (2025)	Quantitative simulation	Abuja	6 housing prototypes	Passive design solutions cut thermal discomfort by up to 20% during peak heat; national codes lack low-cost passive guidance for low-income housing.
Abdullahi et al. (2025)	Comparative case study	Lagos & Abuja	4 hotels	Transcorp Hilton scored highest on a LEED-based checklist (63 of 85); none of the four hotels had adopted renewable energy systems.
Abdullahi (2025)	Cross-sectional survey + PLS-SEM	Nigeria, national	263 professionals	Economic, social, and technical dimensions of green innovation competency each predicted sustainable construction practice, while the environmental dimension showed a weaker direct effect.
Abdulsalam et al. (2024)	Cross-sectional survey + interviews	North-East Nigeria	122 professionals	Resource conservation and reduced maintenance ranked as the leading benefits; economic and governance issues, including the absence of a standard assessment system, were the leading challenges.
Ade-Ojo (2022)	Cross-sectional survey	Nigeria, national	Built-environment professionals	Awareness of LEED requirements differed significantly by professional category, with land surveyors scoring highest and builders scoring lowest.
Adegbile (2013)	Comparative scoring survey	Nigeria, national	232 of 280 questionnaires	LEED scored highest among seven international rating systems reviewed (80 of 100 points); the study recommends a dedicated West African green building council.
Adejumo et al. (2024)	Cross-sectional survey	Lagos	216 professionals	Sustainable construction was estimated to save about 18% of total project cost; twenty-six distinct benefits were catalogued from the literature and validated by respondents.

Author(s) & Year	Design	Setting	Sample	Key Finding
Adeniyi et al. (2025)	Cross-sectional survey	South-West Nigeria	300 professionals	Twelve distinct barriers to green building technology adoption were identified; reduced energy costs and occupant comfort were the most valued benefits.
Adeogun (2026)	Sequential explanatory mixed methods	Lagos	196 professionals + 10 interviews	High awareness of green strategies coexists with low, inconsistent implementation; firm size, age, and project type significantly mediate the translation of knowledge into practice.
Adeogun et al. (2025a)	Mixed methods	Lagos	344 architects + 12 experts	Relative Importance Index values for architects' knowledge ranged from .70 to .74 across strategy categories, with technological systems consistently the weakest area.
Adeogun et al. (2025b)	Mixed methods	Lagos	344 architects + 12 experts	Knowledge significantly predicts adoption (chi-square = 358.7, $p < .001$; $r = .71$); sustainable-materials adoption is highest at 92.7%, while advanced technological systems lag.
Aghimien et al. (2020)	Quantitative survey	Nigeria, national	Construction professionals	Drivers and barriers to sustainable construction were identified and ranked, providing one of the field's most widely cited evidence baselines.
Akande & Olagunju (2024)	Conceptual review	Nigeria, national	N/A	Retrofitting low-income housing for energy conservation could ease the disproportionate share of income low-income households spend on energy; calls for supportive retrofit policy.
Akindele et al. (2023)	Mixed methods	Nigeria, multi-city	Construction professionals	Barriers cluster around education and training deficits; strategies for improvement are ranked, with capacity building rated most impactful.
Akinfolarin (2023)	Cross-sectional survey	Lagos	63 of 90 builders	Builders' average competence score for sustainable practice was moderate (4.32 of a possible higher scale); involvement at the design stage remains under-used.
Alaka et al. (2025)	Mixed methods	South-West Nigeria	University buildings, multiple institutions	Critical design deficiencies were found across campuses; awareness of sustainable design varied widely among stakeholders, and adoption of passive and solar strategies was inconsistent.
Alohan & Oyetunji (2021)	Cross-sectional survey	Benin City	5 professional groups	43.5% of respondents actively advocated for green building development; benefits and hindrances were ranked by relative importance.
Amuda-Yusuf et al. (2020)	Cross-sectional survey + discriminant analysis	Nigeria, national	Practitioners in green building development	Lack of institutional and policy support was the top-ranked barrier; discriminant analysis showed organisation type significantly differentiates how barriers are perceived.
Ashen et al. (2024)	Cross-sectional survey	Abuja	526 of 560 housing professionals	Improved health and well-being was the top-rated driver ($M = 4.33$); high upfront cost was the top-rated barrier ($M = 4.49$).
Ayodele et al. (2025)	Cross-sectional survey	Nasara wa	256 of 384 (Yamane formula)	Compact development and reduced urban sprawl were the most significant outcomes linked to green building practice; adoption skewed toward simpler, lower-cost interventions.
Babayo (2024)	Conceptual review	Nigeria, national	N/A	Green technologies such as solar integration and rainwater harvesting are effective for efficiency gains, but cost, awareness, and regulatory inconsistency remain obstacles.

Author(s) & Year	Design	Setting	Sample	Key Finding
Chima (2025)	Case-based review	Abuja Municipal Area Council	N/A	Combining local materials with modern technology was found to lower both construction cost and environmental harm in a municipal case study.
Chukwu et al. (2019)	Cross-sectional survey + t-test	Enugu	135 of 159 building workers (85%)	Capacity-building needs were identified across five green building domains; educational-sector and industry-sector workers significantly disagreed on which needs mattered most.
Dahiru et al. (2024)	Cross-sectional survey	Nigeria, national	40 of 50 respondents	Green building was found to be effectively unpractised in Nigeria despite acknowledged need; lack of awareness was the most significant hindering factor.
Dalibi et al. (2017)	Cross-sectional survey	Nigeria, multi-zone	302 project professionals	The perception of green building as an expensive concept emerged as the leading hindrance, ahead of material unavailability and weak professional capacity.
Emeka et al. (2025)	Cross-sectional survey	Enugu	200 respondents (86.96% response rate)	66% of architects and builders consistently applied green architecture features; 77.5% rated insufficient knowledge and 74% rated weak government policy as major impediments.
Erifeta (2025)	Systematic literature review	Nigeria, national	80 sources, 2014-2025	High initial cost, weak building-code enforcement, and limited public awareness were the critical barriers to construction-sector decarbonisation; cross-country lessons were drawn from Ghana and South Africa.
Ezema et al. (2024)	Cross-sectional survey	Lagos	75 architects	Architects held strong conceptual knowledge but applied techniques inconsistently; client budget constraints were the primary barrier, while passive cooling and solar strategies were most adopted.
Garba et al. (2024)	Qualitative case study	Nigeria, national	Multiple case studies	Locally sourced stabilised-earth materials and solar power were found to reduce construction and running costs, though shortage of technical expertise limits wider uptake.
Ifeanyi et al. (2025)	Survey + Mann-Whitney U + SEM	Nigeria, public & private sectors	199 of 213 respondents	Five constraints, led by lack of government incentives and high construction cost, were found to significantly impede green building uptake; public and private respondents agreed closely on severity.
Ikudayisi & Adegun (2025)	Policy analysis + systematic review + case study	Nigeria, national	7 policy documents + 35 studies + 16 cases	Acceleration pathways for green building are proposed, with policy fragmentation and weak enforcement implicated repeatedly across the policy review, literature review, and case analysis.
Kalu et al. (2025)	Systematic review (PRISMA)	Nigeria, national	30 studies, 2020-2025	Passive design strategies were found to cut energy use by up to 50%, yet only 28.6% of the Lagos high-rise condominiums examined elsewhere in the literature had applied passive cooling measures.
Koko & Bello (2020)	Cross-sectional survey	Nigeria, national	Built-environment professionals	Insufficient government support ranked as the second most significant hindrance to green architecture, after limited awareness of its economic benefits.
Majid et al. (2023)	Cross-sectional survey + factor analysis	Kano	Residents/professionals, Kano metropolis	Social attributes, more than technical or economic ones, were found to most strongly influence the successful uptake of green residential building attributes.

Author(s) & Year	Design	Setting	Sample	Key Finding
Matthias et al. (2025)	Cross-sectional survey	Jos, Plateau State	120 construction workers	80% of respondents showed high theoretical knowledge of sustainable construction, yet 71% still reported generating construction waste regularly, a clear knowledge-practice split.
Nduka & Ogunsanmi (2015)	Cross-sectional survey	Nigeria, national	91 of 150 respondents	Awareness of green building issues did not differ significantly across professional groups; lack of awareness and expertise was the leading barrier identified.
Nduka & Ogunsanmi (2016)	Cross-sectional survey	Nigeria, national	91 of 150 respondents	Most professionals were broadly familiar with green building principles and largely agreed on benefit rankings, supporting calls for a Green Building Council of Nigeria.
Nwogu & Emedosi (2024)	Cross-sectional survey	Nigeria, selected firms	Construction professionals	High awareness of environmental, economic, and social benefits was found across participants, with government involvement seen as essential to wider promotion.
Nwokoro & Onukwube (2011)	Mixed methods + focus groups	Lagos	85 professionals, 3 sites	Working-condition quality and legal enforcement scored highest among sustainability indicators; integrated design processes were rarely practised on the sites studied.
Ogunyemi (2024)	Conceptual review	Nigeria, national	N/A	Identifies recurring barriers to energy efficiency in the built environment and draws on case studies to argue for stronger policy frameworks and incentives.
Oke et al. (2023)	Quantitative survey	Nigeria, national	Construction professionals	Both awareness and implementation of environmental-economic practices were found to be limited, with targeted recommendations proposed for closing the gap.
Oke et al. (2024)	Systematic review + exploratory factor analysis	Nigeria, national	Building professionals	Financial constraints, inadequate policy, and weak technological infrastructure were the dominant hindrances to embracing energy-economics principles.
Oke et al. (2025a)	Quantitative survey	Nigeria, national	Construction practitioners	A significant disconnect was found between professionals' awareness of 20 identified green policies and programmes and their actual adoption of those policies.
Oke et al. (2025b)	Cross-sectional survey	Lagos	Construction professionals	Awareness of green wall systems was generally high, but only 8 of 18 identified systems were actively implemented (mean implementation score = 3.0).
Oladokun et al. (2021)	Mixed methods	Nigeria, national	Construction professionals	High overall awareness of sustainability practices was reported; resource-conscious construction-method choice and client satisfaction ranked as the most implemented practices.
Olatunde et al. (2025)	Mixed methods	South-West Nigeria	Quantity surveying professionals	Quantity surveyors were found to play a pivotal but currently under-used role in specifying sustainable construction materials on Nigerian projects.
Oni (2015)	Conceptual review	Nigeria, national	N/A	Proposes a Professionals Integrating Sustainable Construction framework, arguing that weak synergy among construction professionals is itself a barrier to adoption.
Onyegiri & Onyegiri (2025)	Conceptual review	Nigeria, national	N/A	Positions green building as a pivotal mechanism for sustainable urban transformation and outlines civil-engineering proposals for wider uptake.

Author(s) & Year	Design	Setting	Sample	Key Finding
Onyia et al. (2026)	Cross-sectional survey + Kruskal-Wallis test	Nigeria, national	Engineers, architects, construction managers	Improved indoor air quality and renewable-energy promotion were the most highly rated implications of energy-efficient buildings; limited access to financing was the most significant barrier.
Osuolale & Felkner (2026)	Cross-sectional survey	Nigeria, 6 geopolitical zones	273 AEC professionals	47.3% of respondents showed high awareness of sustainable construction materials, but only 11.4% showed high adoption, a gap of nearly 36 percentage points; awareness was the sole significant predictor of adoption, leaving most variance explained by unmeasured institutional barriers.
Samson & Bernard (2018)	Cross-sectional survey	Lagos	175 respondents (52 developers, 123 estate surveyors)	Stakeholder awareness of green building practice was found to be low overall, though orientation and energy-efficient lighting were features stakeholders said they would readily adopt.
Selnan (2025)	Descriptive survey	Nigeria, 6 geopolitical zones	381 professionals	Public-sector sustainable construction practice adoption was moderate and economically pragmatic; high-adoption buildings showed over 30% greater energy efficiency and higher occupant satisfaction ($r = .81$ with performance index).
Simon-Eigbe et al. (2022)	Cross-sectional survey	Lagos	137 (58 contractors, 41 consultants, 38 clients)	Expertise and higher cost ranked as the top barrier to green building practice, followed by lack of government backing and limited awareness or acceptability of green technology.
Soji et al. (2024)	Delphi survey	Nigeria, national	30 experts	Consensus was reached on 26 of 38 proposed green-innovation competencies; the technical dimension showed the weakest agreement among panellists.
Taiwo & Rahman (2025)	Mixed methods	Ikeja, Lagos	100 residential properties	Properties with green features commanded measurably higher rental premiums than comparable conventional properties, alongside a stated tenant preference for sustainable living spaces.
Tunji-Olayeni et al. (2020)	Qualitative interviews	Nigeria, national	Construction practitioners	Five major drivers of sustainable construction practice were identified through interviews, alongside commonly used practices and the policy support practitioners said they needed.
Unegbu et al. (2024a)	Systematic literature review	Nigeria, national	50 studies, 2000-2023	Flood barriers, green roofs, and sustainable materials were identified as effective climate-resilience strategies, benchmarked against international practice.
Unegbu et al. (2024b)	Quantitative survey	Nigeria, national	Construction professionals	A moderate level of green building awareness was found, with a strong positive correlation between awareness and the benefits professionals perceived.
Unegbu et al. (2024c)	Mixed methods	Nigeria, national	255 professionals	Recycled materials and green concrete were already in active use among respondents, but cost remained the binding constraint on wider adoption.

Author(s) & Year	Design	Setting	Sample	Key Finding
Unegbu et al. (2024d)	Quantitative survey	Nigeria, national	370 professionals	Sustainable construction practice correlated positively with job creation, broader economic growth, and rising property values.
Unegbu et al. (2025a)	Mixed methods + case studies	Nigeria, national	Professionals and stakeholders	Energy-efficient technologies delivered measurable economic, environmental, and social value, but high upfront cost and a shortage of technical expertise constrained wider adoption.
Unegbu et al. (2025b)	Quantitative survey + structural equation modelling	Nigeria, national	400 professionals	Environmental factors ($\beta = .42$), climate-change awareness ($\beta = .38$), and policy regulation ($\beta = .37$) all significantly predicted sustainability adoption; stakeholder collaboration mediated the policy-adoption relationship.
Unegbu et al. (2025c)	Systematic literature review	Nigeria, national	Literature, 2015-2023	Uptake of LEED, EDGE, and BREEAM certification is rising but remains well below global norms; cost and a shortage of trained assessors were the leading barriers identified.
Unegbu et al. (2025d)	Mixed methods + energy simulation	3 major Nigeria n cities	Stakeholders, renewable-energy projects	Solar photovoltaic systems were the most efficient option, cutting energy use by 25 to 35% with a 6 to 8 year payback period; high starting cost and weak policy enforcement remained binding.
Unegbu et al. (2025e)	Mixed methods (SPSS + LISREL)	Nigeria, national	237 professionals	Weak regulatory frameworks and high upfront cost were the dominant barriers; organisational culture was found to moderate how readily firms adopted sustainable practice.
Unegbu & Yawas (2025)	Structural equation modelling + geospatial analysis	Nigeria, national	High response rate (94.6%)	Urban areas were found to adopt sustainable construction practices more rapidly than rural areas, with sustainable practice positively associated with market value.
Victor et al. (2025a)	Multi-criteria experimental evaluation	Nigeria, national	Laboratory + field testing	Compressed earth blocks cost roughly half as much as concrete blocks per square metre and emit over 90% less carbon, but public perception and building-code integration limit scale-up.
Victor et al. (2025b)	Mixed methods + laboratory testing	Lagos	132 surveys + 15 interviews	70% of professionals were aware of compressed adobe bricks, but only 11% had used them; exclusion from regulation was the most cited barrier (84%).
Wahab Taiwo (2021)	Comparative conceptual review	Nigeria, national	N/A	Reviews international green building rating tools and argues that Nigeria needs a domestically tailored rating system rather than relying solely on imported standards.
Waziri Yusof (2015)	Conceptual review	Nigeria, national	N/A	An early review tracking the implementation of green construction practice, flagging regulatory gaps and insufficient training as recurring constraints.
Yakub et al. (2024)	Delphi survey	North-West Nigeria	25 experts	Nineteen of thirty-three candidate green materials were agreed by experts to be suitable and readily available for the region's hot, dry climate.

Appendix C: Excluded Studies and Reasons for Exclusion

The table below provides a sample of records that were identified during the search process but excluded at the title/abstract or full-text eligibility stage, along with the reason for exclusion in each case. Exact-duplicate repository mirrors of included studies are summarised as a single row rather than listed individually.

Study (Author, Year)	Focus	Reason for Exclusion
Adams, Roberts & Turner (n.d.)	Carbon reduction in residential housing, Nigeria	Publication-integrity concern: mismatched international co-author affiliations, single non-indexed outlet, no independent verification found
Landman (1999)	Barriers to sustainable building, Boston professionals	Wrong setting: study conducted in the United States, not Nigeria
Liphadzi, Osunsanmi & Aigbavboa (2023)	Green building and sick building syndrome, Africa	Wrong primary setting: South Africa-based authorship and data, not Nigeria-specific
Anonymous (2025)	Green building certifications, Osogbo, Nigeria	No verifiable authorship in the available source record
Anonymous (2025)	Architects' knowledge of smart building concepts, Lagos	No verifiable authorship in the available source record
Owoicho (2024)	Perception of green building rating system implementation	Non-empirical opinion piece; thin sourcing; outlet could not be independently verified
Oyebode (2018)	Green building as panacea for environmental sustainability	Insufficient methodological detail to verify design or sample
Shaibu (2023)	Unveiling sustainable architecture in Nigeria	Journal-DOI mismatch raised unresolved verification concerns
Alkali, Mohammad & Usman (2024)	Green architecture in public buildings, Savannah region	Thin, literature-only methodology with no identifiable primary data collection; venue could not be verified
Ugonabo & Oladejo (2023, and related reposts)	Building professionals' perspectives on green building for climate mitigation	Non-empirical narrative review; treated as background context only, not entered into thematic synthesis
Ogunnaike, Bello & Oketayo (2025)	Sustainable architecture and design in Nigeria's built environment	Non-empirical narrative review overlapping substantially with included background literature
Various duplicate repository records	Multiple studies	Exact-duplicate Zenodo/repository mirrors of an already-included study, deposited under separate DOIs