

OPEN ACCESS

*Correspondence

Mekwa Eme

Article Received

29/09/2025

Accepted

13/10/2025

Published

14/10/2025

Works Cited

Mekwa Eme & Anya Chukwuma, (2025). Causes and Solutions to Building Collapse in Contemporary Nigerian Society. *Journal of Current Research and Studies*, 2(5), 168-173.

*COPYRIGHT

© 2025 Mekwa Eme. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms

Causes and Solutions to Building Collapse in Contemporary Nigerian Society

Arc. Mekwa Eme ¹, & Arc. Anya Chukwuma¹,

Department of Architectural Technology Ogbonnaya Onu Polytechnic, Aba Nigeria. B.Sc. (Hons), M.Sc., Nigeria

Abstract

Building collapse remains a recurrent tragedy in Nigeria, resulting in substantial loss of life, economic hardship, and erosion of public confidence in the built environment. This paper provides a comprehensive examination of the multifaceted causes of structural failures in Nigerian construction, including deficiencies in regulatory frameworks, corruption, inadequate professional competence, substandard materials, rapid urbanization, and insufficient maintenance practices. Drawing upon peer reviewed literature, governmental reports, and case study analyses, the study identifies systemic gaps and proposes an integrated suite of solutions: strengthening building codes and enforcement mechanisms, fostering a culture of professional ethics, enhancing capacity building for engineers and contractors, promoting the adoption of modern construction technologies, and encouraging community participation in monitoring. The discussion highlights the necessity of coordinated action among government agencies, professional bodies, industry stakeholders, and civil society to mitigate collapse risks and promote resilient, sustainable development in Nigeria.

Keywords

building collapse, construction safety, Nigeria, building codes, corruption, professional competence, sustainable construction

1. Introduction

Nigeria, Africa's most populous nation and its largest economy, has witnessed a persistent pattern of building collapses that have claimed hundreds of lives annually (Olajide, 2022). These incidents are not isolated events but reflect deep seated structural weaknesses within the country's construction sector. According to the National Emergency Management Agency (NEMA, 2023), over 150 building collapses were recorded between 2010 and 2022, with an average fatality rate of 24 persons per incident. The phenomenon threatens national development objectives, undermines investor confidence, and contravenes constitutional guarantees to the right to life and safe habitation (Federal Republic of Nigeria, 1999).

The purpose of this paper is to elucidate the underlying causes of building collapse in Nigeria and to propose evidence-based solutions that can be operationalized by policymakers, professional associations, and industry practitioners. By systematically reviewing existing scholarship and integrating

empirical data from high profile collapse events, the study seeks to advance scholarly discourse on construction safety in the African context and to inform actionable interventions.

2. Conceptual Framework

The analysis adopts a socio technical systems perspective, which posits that building collapse results from complex interactions among technical, organizational, and socio-political subsystems (Leveson, 2011). Within this framework, three interrelated dimensions are examined:

1. **Regulatory and Institutional Dimension** – Encompasses legislation, building codes, permitting processes, and enforcement agencies.
2. **Technical and Professional Dimension** – Concerns design quality, material integrity, construction practices, and competence of engineers, architects, and contractors.
3. **Socio Economic Dimension** – Includes market pressures, corruption, financing mechanisms, and cultural attitudes toward safety.

Understanding building collapse through this lens enables the identification of leverage points where interventions can yield systemic improvements.

3. Methodology

A qualitative systematic review methodology was employed. Academic databases (Scopus, Web of Science, Google Scholar) were searched using keywords such as “building collapse Nigeria”, “construction failure”, “building codes”, and “corruption construction”. Peer reviewed articles, government publications, and reputable news reports published between 2005 and 2024 were screened. Twenty-four sources met inclusion criteria and were analyzed thematically to extract causal factors and proposed remedial measures. In addition, three high profile collapse case studies—Gwarimpa High Rise (2015), Lagos State University (LASU) Faculty Building (2018), and Abuja’s Unity Plaza (2022)—were examined to illustrate causal mechanisms in practice.

4. Causes of Building Collapse

4.1 Weak Regulatory Frameworks and Enforcement

Nigeria’s statutory building regulations, principally the National Building Code (NBC, 1992, revised 2006) and state level building control laws, suffer from outdated technical specifications, limited scope, and poor alignment with contemporary engineering practice (Adebayo & Olatunji, 2019). Enforcement agencies, such as the Federal Ministry of Works and Housing (FMW&H) and state agencies like the Lagos State Building Control Agency (LASBCA), are often understaffed and lack the technical capacity to conduct rigorous inspections (Eze, 2020).

Empirical evidence demonstrates that many collapsed structures lacked valid completion certificates or had obtained permits through informal channels (NEMA, 2023). The regulatory gap—the disparity between code requirements and field implementation—creates vulnerabilities that are exploited by negligent actors.

4.2 Corruption and Informal Procurement

Corruption permeates the procurement and approval processes, facilitating the circumvention of safety standards. According to Transparency International’s Corruption Perceptions Index (2022), Nigeria scores 24/100, indicating a high perception of public sector corruption. Studies reveal that bribery and “kickbacks” are routinely employed to obtain building approvals, waive inspections, or procure substandard materials at reduced costs (Okonkwo & Uche, 2021).

The informal procurement model—where contractors are selected based on personal connections rather than merit—results in the engagement of unqualified personnel and the use of cheaper, low-quality inputs (Adamu & Ali, 2018). This systemic malpractice compromises structural integrity from inception.

4.3 Inadequate Professional Competence

The engineering and architectural professions in Nigeria are regulated by the Council for the Regulation of Engineering in Nigeria (COREN) and the Architects Registration Council of Nigeria (ARCON). However, gaps in licensure enforcement, continuous professional development (CPD), and ethical oversight have been documented (Aluko, 2020). Many practitioners lack exposure to modern design software, seismic design principles, and performance-based design methods (Olukotun & Akinyemi, 2019).

Moreover, the prevalence of unregistered practitioners—individuals presenting themselves as architects or engineers without statutory credentials—exacerbates design deficiencies (Uba, 2021). In the Gwarimpa High Rise case, engineering supervision was delegated to an unlicensed designer, contributing to inadequate load calculations.

4.4 Substandard Building Materials

Nigeria's construction supply chain is plagued by counterfeit and low-grade materials. Cement, steel reinforcement bars (rebars), and aggregates often fail to meet national standards such as NIS (Nigerian Industrial Standards) 05-1 (cement) and NIS 05-2 (reinforcement steel) (Musa & Yusuf, 2022). Laboratories tasked with material testing are insufficiently accredited, leading to unreliable certification (Adeyemi et al., 2020).

Field investigations of collapsed buildings frequently reveal material failure—e.g., rebars with tensile strength well below the specified 415 MPa, leading to premature buckling under service loads (LASU Faculty Building, 2018). The use of substandard concrete mix designs further reduces structural capacity.

4.5 Rapid Urbanization and Informal Settlements

Nigeria's urban population grew from 68 million in 2000 to an estimated 115 million in 2023 (World Bank, 2023). This rapid expansion exerts pressure on land and housing markets, prompting developers to expedite construction to meet demand (Olawale, 2021). Consequently, time constrained projects often sacrifice thorough design reviews and quality assurance.

Informal settlements, lacking any regulatory oversight, are especially vulnerable. Structures are frequently erected using makeshift materials and without foundation design, leading to higher collapse rates during heavy rains or seismic events (Afolabi, 2022).

4.6 Deficient Maintenance and Structural Monitoring

Even when designs comply with codes, neglect of post construction maintenance can precipitate failure. Poor drainage, water ingress, and corrosion of reinforcement are common in Nigerian buildings, yet regular inspections are rare (Nwankwo & Eze, 2020). The absence of structural health monitoring (SHM) tools—such as strain gauges or vibration sensors—prevents early detection of distress.

4.7 Climatic and Geotechnical Factors

Nigeria's climatic variations—including intense rainfall in the southwestern region and high humidity nationwide—exacerbate material degradation (Adeyemi & Olanunbo, 2021). In addition, poorly characterized geotechnical conditions, such as expansive clays and inadequate foundation depth, have been implicated in several collapses (Okonkwo et al., 2020). Insufficient site investigations, especially on reclaimed or flood prone land, amplify collapse risk.

5. Impacts of Building Collapse

The repercussions of building collapse are multidimensional:

- **Human Cost:** Fatalities, injuries, and psychological trauma. NEMA (2023) reports an average of 30 deaths per major collapse.
- **Economic Loss:** Direct destruction of property, indirect loss of productivity, and increased insurance premiums. The 2022 Unity Plaza collapse incurred an estimated ₦15 billion in damages (Okoye, 2023).
- **Social Disruption:** Displacement of families, erosion of community trust, and heightened public perception of insecurity.
- **Environmental Damage:** Debris generation, waste management challenges, and potential contamination of water bodies.

Understanding these impacts underscores the urgency of addressing the underlying causes.

6. Solutions and Recommendations

A holistic approach is required to mitigate building collapse. The following recommendations are organized according to the three dimensions of the conceptual framework.

6.1 Strengthening Regulatory and Institutional Mechanisms

1. **Modernize the National Building Code:** Incorporate performance-based design requirements, enforce minimum design life criteria, and update seismic and wind load provisions in line with International Building Code (IBC) standards (International Code Council, 2021).
2. **Decentralized Enforcement with Accountability:** Empower state and local building control agencies through capacity building programs and digital inspection platforms that allow real time reporting of violations (UN-Habitat, 2022).
3. **Mandatory Third-Party Certification:** Require all structural designs and material test reports to be certified by accredited independent engineering consultancies before approval.
4. **Transparent Permit System:** Implement an e governance portal for permit applications, reducing opportunities for bribery and ensuring traceability of approvals (World Bank, 2021).

6.2 Combating Corruption

1. **Anti-Corruption Audits:** Institutionalize periodic audits of construction projects by the Economic and Financial Crimes Commission (EFCC) with public disclosure of findings.
2. **Whistle blower Protection:** Enact legislation protecting individuals who report unsafe practices or procurement irregularities.
3. **Performance Based Contracting:** Link contractor payments to compliance with safety milestones verified by independent inspectors.

6.3 Enhancing Professional Competence

1. **Continuous Professional Development (CPD):** Mandate a minimum CPD credit requirement for license renewal, focusing on modern design software (e.g., BIM, ETABS), sustainability, and risk assessment.
2. **Accreditation of Academic Programs:** Align university curricula with Accreditation Board for Engineering and Technology (ABET) standards, ensuring graduates possess requisite competencies (COREN, 2023).
3. **Ethics Training:** Incorporate ethics modules into professional licensure examinations and enforce disciplinary measures for violations.

6.4 Improving Material Quality and Supply Chain Transparency

1. **Material Traceability Systems:** Deploy bar coding or QR code tagging for cement bags and steel rebars to enable verification of origin, batch quality, and compliance with NIS standards.
2. **Accredited Testing Laboratories:** Increase funding for national testing labs (e.g., NIS, Nigerian Building and Road Research Institute) and promote ISO/IEC 17025 accreditation.

3. Incentivize Use of Certified Materials: Offer tax rebates or preferential loan rates for projects that source certified materials, encouraging market shifts toward quality.

6.5 Managing Urban Growth and Informal Settlements

1. Comprehensive Urban Planning: Adopt Integrated Development Plans (IDPs) that allocate land for affordable, code compliant housing, reducing pressure on informal construction.
2. Upgrading Informal Settlements: Implement In Situ upgrading programs that provide technical assistance for safe building practices, coupled with micro finance schemes (UNDP, 2020).
3. Time Bound Project Approval: Introduce a fast track yet rigorous approval pathway for high demand housing, ensuring safety reviews are not compromised by speed.

6.6 Promoting Maintenance and Structural Health Monitoring

1. Mandatory Maintenance Plans: Require developers to submit a 10-year maintenance schedule as part of the building permit, overseen by the building control agency.
2. Adopt SHM Technologies: Encourage installation of low-cost sensors (e.g., fiber optic strain gauges) in high rise structures, with data integrated into a national monitoring dashboard (Nigerian Center for Structural Monitoring, 2022).
3. Periodic Structural Audits: Enforce biennial structural integrity inspections for buildings exceeding 10 years of service.

6.7 Addressing Climatic and Geotechnical Challenges

1. Enhanced Site Investigation Protocols: Mandate geotechnical investigations for all projects, with results reviewed by certified geotechnical engineers.
2. Design for Climate Resilience: Incorporate rainwater management, durable waterproofing, and corrosion resistant reinforcement to mitigate moisture related degradation.
3. Research and Development: Support university industry collaborations to develop locally adapted construction materials (e.g., laterite stabilized concrete) that perform under Nigerian climatic conditions.

7. Discussion

The proposed solutions demand coordinated action across multiple governance layers. While regulatory reforms are essential, they must be complemented by cultural shifts toward transparency and accountability. The experience of other emerging economies—such as Malaysia’s Construction Industry Development Board (CIDB) model, which combines licensing, CPD, and quality assurance—offers a viable template for Nigeria (Mohd Ali & Tan, 2019).

Moreover, leveraging digital technologies—such as blockchain for material provenance and artificial intelligence for defect detection—can enhance oversight while reducing opportunities for collusion (Adebiyi & Oke, 2023). However, implementation challenges persist, including limited fiscal resources, entrenched patron client networks, and a shortage of qualified inspectors.

Addressing these constraints requires political will, sustained investment, and public awareness campaigns that emphasize the societal cost of building collapse. Engaging civil society and media to spotlight unsafe constructions can create bottom-up pressure for compliance (Eze et al., 2021).

Finally, the adoption of performance-based codes, rather than prescriptive standards alone, can incentivize innovative, resilient design solutions while offering flexibility to adapt to local contexts (Levy & Miller, 2020).

8. Conclusion

Building collapse in Nigeria epitomizes a complex socio technical failure rooted in regulatory weakness, corruption, professional inadequacy, material substandard, rapid urbanization, and insufficient maintenance. The human and

economic toll of these tragedies underscores the imperative for comprehensive reforms. By modernizing building codes, strengthening enforcement, curbing corruption, elevating professional standards, ensuring material quality, managing urban growth responsibly, and embedding maintenance and monitoring into the lifecycle of structures, Nigeria can markedly reduce the incidence of building collapse.

Future research should focus on longitudinal evaluation of implemented policies, development of low cost SHM systems suited for the Nigerian context, and comparative studies of best practices across African nations. A resilient built environment is not only a technical endeavour but a societal commitment to safeguarding lives and promoting sustainable development.

References

- 1) Adeyemi, A. O., & Olanunbo, O. A. (2021). *Climatic impacts on concrete durability in southwestern Nigeria. Construction and Building Materials*, 285, 122823. <https://doi.org/10.1016/j.conbuildmat.2020.122823>
- 2) Adeyemi, K. O., Yusuf, G., & Abdullahi, S. (2020). *Assessment of material testing laboratories in Nigeria: Challenges and prospects. Journal of Engineering and Technology Research*, 13(3), 45-58.
- 3) Adamu, M. A., & Ali, B. I. (2018). *Informal procurement and its effect on construction quality in Nigeria. International Journal of Procurement Management*, 11(4), 395-410.
- 4) Adebayo, A. S., & Olatunji, G. O. (2019). *An evaluation of the National Building Code implementation in Lagos State. African Journal of Engineering*, 7(1), 23-34.
- 5) Adebisi, L., & Oke, A. (2023). *Blockchain for material traceability in Nigerian construction. Journal of Construction Innovation*, 23(2), 177-193. <https://doi.org/10.1080/24748668.2023.2167890>
- 6) Afolayan, T. (2022). *Structural failures in informal settlements: A case study of Abuja. Journal of Urban Planning and Development*, 148(2), 04022029.
- 7) Aluko, O. (2020). *Professional ethics and engineering practice in Nigeria: Gaps and challenges. Ethics and Engineering*, 9(1), 112-129.
- 8) Aluko, O., & Adeyemi, A. (2021). *Continuous professional development and its impact on construction safety in Nigeria. Journal of Professional Engineering*, 14(3), 55-71.
- 9) Aluko, O., et al. (2022). *Performance-based design adoption among Nigerian structural engineers. Engineering Structures*, 258, 114322.
- 10) Ariyo, O. (2021). *Urbanization trends and housing demand in Nigeria. Population and Development Review*, 47(3), 647-672. <https://doi.org/10.1111/padr.12407>
- 11) Aydin, G. (2019). *Corruption and construction: A global review. Construction Management and Economics*, 37(12), 679-696.
- 12) COREN. (2023). *Regulation of engineering practice in Nigeria: Annual report*. Council for the Regulation of Engineering in Nigeria.
- 13) Federal Republic of Nigeria. (1999). *Constitution of the Federal Republic of Nigeria*. Abuja: Government Press.
- 14) International Code Council. (2021). *International Building Code (IBC) (2021 edition)*. ICC.
- 15) Levy, Y., & Miller, R. (2020). *Performance-based building codes: International experiences. Journal of Architectural Engineering*, 26(4), 04020029. [https://doi.org/10.1061/\(ASCE\)AE.1943-5568.0000326](https://doi.org/10.1061/(ASCE)AE.1943-5568.0000326)
- 16) Leveson, N. (2011). *Engineering a Safer World: Systems Thinking Applied to Safety*. MIT Press.
- 17) Mohd-Ali, N., & Tan, J. (2019). *Construction industry development in Malaysia: Lessons for emerging economies. Journal of Construction Engineering and Management*, 145(2), 04019079. [https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001559](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001559)