

# Building Collapse in Nigeria: A Comprehensive Analysis Towards Sustainable Urban Development

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## ABSTRACT

*Building collapses significantly impact infrastructure, economies, and human lives. This study explores the causes and consequences of these collapses, including subpar building techniques, inadequate maintenance, inferior materials, natural calamities, and regulatory shortcomings. The disastrous consequences include loss of life, property destruction, and interference with urban planning. Sustainable action is crucial to prevent future building disasters, involving tighter quality controls, better engineering methods, and the use of cutting-edge materials. Emerging technologies like artificial intelligence, structural health monitoring systems, and Building Information Modeling (BIM) can also help protect structural integrity. Urban planners, legislators, and construction industry stakeholders can work together to create strong frameworks that prioritize safety and sustainability. Effective public enlightenment programs should be conceptualized to sensitize residents, developers, and other stakeholders in the building industry on the need for development control.*

**Keywords:** *Building collapse, Sustainability and Development Control*

## 1. INTRODUCTION

Building collapses are becoming more prevalent and devastating in developing countries, causing alarming losses in lives and properties. These failures occur when building components fail to meet standard expectations, leading to the collapse. Building collapses can occur during construction stages or afterward, affecting even ordinary citizens in Nigeria. The frequency and magnitude of these incidents are alarming. In Nigeria, building collapses are common causes of disasters, with many cases occurring between 1980 and 1999. Folagbade (2001) and Chinwokwo (2000) reported 42 cases of building collapse in Lagos State between 1980 and 1999, while Makinde (2007) listed 54 instances between January 2000 and June 2007. Building collapses can be private, corporate, or public, with 76% of reported cases in Lagos State being private (76%), 12% corporate, and 12% government or public buildings. Structure size also plays a role in building collapses. Amusan (1991) reported that the Barnawa flat disaster in 1977 was a three-storey building, while the public building that collapsed in 1988 at Ibadan was a two-storey building. Folagbade (2001) also reported that the Abuja building collapsed in 1993 and 1999 at Ojuelegba. The memory of two separate building collapses in Ebute-Meta and Kano State in 2007 still lingers, as well as the fence of a Nursery and Primary School in Ibadan in 2008. The death of over 50 students of Saque Comprehensive College in 1990 was due to the owner attempting to construct additional floors on structurally

unsafe walling. In Lagos, the Town and Country Planning Acts have been a significant factor in building collapses, with incidents such as the collapse of a mosque building in Mushin in 2001 and a multi-storey commercial/residential building in Ebute-Meta causing several deaths. These collapses can be attributed to ignorance on the part of developers and unauthorized conversion of buildings from planning authorities or development control departments. Adebayo (2000) emphasizes the importance of the workmen's skill, experience, and personal ability in building construction. Contracting firms are classified into three categories: large-sized, medium-sized, and small-sized. Ademoroti (1991) identifies three types of Acts in the country: Public Health Act, Town and Country Planning Acts, and Building Regulation Act. The Public Health Act deals with healthy sanitation and environment, while the Town and Country Planning Act deals with general location and planning, such as spatial distribution of buildings, highways, schools, hospitals, sewage, and drainage systems. Building Regulation Act enforces laws regulating land use and new buildings, ensuring developers do not deviate from approved building plans during construction. Subsequent development requires planning permission, which will be granted or refused based on the development plan as a material consideration. Development control in Nigeria aims to harmonize urban land uses, ensure convenience, and promote optimal resource utilization. The government's power to control development comes from police, eminent domain, and taxation. Public interest elements protected in urban planning include health and safety, convenience, efficiency, energy conservation, environmental quality, social equity, and amenity (Faludi, 1973; Chapin et al., 1979). Existing regulations are meaningless without a mechanism to ensure compliance, as the average citizen does not obey laws that are not enforced. Five types of building regulatory enforcement inspectors are identified: Safety or Building Inspectors, specification inspectors, Federal Government inspectors, public works inspectors, and specialist inspectors. The incidence of building collapse in Nigeria is reaching an epidemic proportion, resulting in loss of lives, property, and permanent disabilities. The trend is becoming a source of concern for governments, stakeholders, and the building industry, as the magnitude of incidents is becoming unprecedented. The increasing diffusion of engineering knowledge has led to questions about the reasons for building failure and the roles of stakeholders in addressing them. This paper investigates the building collapse and its impact on development control and planning authorities' activities.

## 2.0 LITERATURE REVIEW

The Nigerian construction industry has experienced a worrisome building collapse, resulting in over 400 deaths in the past 20 years. The Nigerian Institute of Building reported 84 buildings collapsed in Nigeria, with 50% attributed to design faults, 40% to construction faults, and 10% to product failures. Carelessness and greed on the part of construction professionals are believed to be the cause of 37% of these collapses, while 22% are traceable to design faults. Additionally, about 40% of reported cases of collapsed buildings are residential. The causes of building failures in Nigeria are often unique to the building in question, but general reasons include poor block quality, concrete quality, poor compaction, and weak soil. The Nigerian Institute of Structural Engineers identified several causes of structural collapses and failures, including non-adherence to approval regulations, lack of involvement of professional structural engineers, incompetent workmanship, soil investigation, and lack of professional site supervision. The Nigerian construction industry is responsible for building collapse, with various stakeholders including government, developers, professionals, regulatory bodies, civil society, and non-governmental organizations. Building collapse is a significant issue in Nigeria, affecting multiple sectors such as construction, education, and healthcare. Factors contributing to building failures include negligence, natural occurrences, omission, carelessness, and poor monitoring. Nigerian construction industry players, such as clients, architects, engineers, town planners, and contractors, have been accused of contributing to building failures.

A structure is a whole building or complex framework that provides sufficient strength to withstand the load it is subjected to. Buildings are categorized into three categories: monumental structures (such as churches, sports arenas, and city halls), institutional structures (such as blocks of flats and tertiary institutions), and industrial structures (small-scale industrial types). Building collapse can be defined as a total or partial/progressive failure of one or more components, leading to the inability of the building to perform its primary functions of comfort, satisfaction, safety, and stability.

Fakere et al. (2012) and Fakere, Fadaro, and Fakere (2012) define building failure as an act of omission, occurrence, or performance. Failure can also be defined as non-occurrence, non-performance, running short, breaking down, ill-success, insolvency, and unsuccessful attempt. Clients should be willing to pay for high-quality materials and expert professional services to control and minimize the incidence of building collapse. It can be defined as an unacceptable difference between expected and observed performance in a building component when that component can no longer be relied upon to fulfil its principal function. A building collapse is often associated with structural failures, which are the parts of the building that provide sufficient strength to withstand the load. A building structure carries load safely to the foundation and into the ground. The structure has two broad subdivisions: frame structures, which resist applied loads by geometry, and mass structures, which resist applied loads by weight. Building failure can be of two types: cosmetic failure, which affects the building's outlook, and structural failure, which affects both the outlook and structural stability of the building. The structural function of a building is to transfer loads safely down to the foundations and into the ground, and failure occurs when a building is unable to perform its function.

## 2.1 CAUSES OF BUILDING COLLAPSE

In Nigeria, building failure is attributed to various factors, including design faults (50%), construction site faults (40%), and product failure (10%). Faulty design, faulty execution of work, and use of defective materials are significant causes of building collapse. Factors such as physical factors, the ecological status of the site, the composition of technical components, social factors, economic factors, engineering factors, human factors, government policies, and political factors can help identify trends leading to structural safety problems and suggest topics for critical research.

Major causes of building collapse include environmental changes, natural and manmade hazards, improper presentation and interpretation in the design, foundation failures, extra-ordinary loads, use of unqualified contractors, poor monitoring, and lack of enforcement of building codes by relevant town planning officials or development control departments. Nigerians are known for their illegality, with people building structures without necessary authorizations, such as approved plans, building permits, surveys, and soil tests.

The Nigerian factor in the building industry includes corruption, lawlessness, and the assumption that engineers or professionals can assume all forms of responsibility without the basic skills required for the building process. Addressing these issues is crucial to prevent building collapse and ensure the public's safety. Corruption is a significant issue in Nigeria's building industry, causing high costs of building materials and reduced standards in the developing economy. This corruption can manifest in greed, poor materials, and poor work quality. The building industry is plagued by lawlessness, unskilled labour, inexperienced professionals, and the tendency of some professionals to cross-carpet to lucrative specialists. Corruption can take various forms, such as bribery, deception, and collusion, leading to lowered construction standards, increased repair and maintenance costs, and defects on buildings that may not be discovered until their eventual collapse.

Many buildings in Nigeria have collapsed due to inadequate preliminary works, incorrect foundations, poor concrete mix ratio, improper walling, lack of approved structural design, poor building material specification, ineffective supervision, and climate. The competence of Nigeria's building community of architects, structural engineers, and builders is also being attacked due to recurring incidents of building collapse. However, building professionals should not be blamed alone, as owners often derail from their approved plans, approving authorities fail to monitor compliance, and some building owners shun professionals to cut costs.

The high cost of building materials has led greedy contractors to patronize substandard materials, contributing to the occurrence of failed buildings in Nigeria. Factors contributing to building failure include deficient structural drawings, alteration of approved drawings, lack of proper supervision, illegal alteration to existing buildings, absence of town planning inspection or monitoring,

clients' penchants to cut corners, use of substandard materials, inefficient workmanship, acidic and salty water, quack activities, and client's over-reliance on contractors for site work.

In conclusion, corruption in Nigeria's building industry is a significant issue that requires urgent attention and solutions. Addressing these issues requires a thorough approach that addresses the root causes of building failures, including natural and manmade factors such as soil type, building design, foundation works, and poor workmanship.

## **2.2 CAUSES OF BUILDING FAILURES OR COLLAPSE DUE TO INADEQUATE DEVELOPMENT CONTROL**

Collapse is a severe structural failure that occurs when a building collapses due to mechanical failure, causing the structure to collapse and collapse. Causes include human influence, natural forces, and negligence. Professional bodies in the building industry identified major causes of building collapse as the public, professional bodies, and governments' attitudes, inadequate soil testing, defective structural designs, poor planning, lack of coordination, contractor adherence, unskilled personnel, poor construction practices, substandard materials, and insufficient enforcement of existing laws. These factors contribute to the extreme state of collapse in buildings.

However, for the purpose of this paper, attention would be focused on the under-listed:

### **2.2.1 Deficient Structural Drawing**

Oyewande (1992) identified design defaults as 50% of Nigerian engineering facility collapses due to false assumptions and faulty structural details, contributing to building collapses.

### **2.2.2 Absence Of Proper Supervision**

Lack of site supervision by the development control team and design engineer can cause building failure, even without structural design deficiencies.

### **2.2.3 Alteration of Approved Drawings**

Contractors alter building plans without structural drawings during construction, either for client directive or profit maximization, causing structural damage to the structure.

### **2.2.4 Building Without Approved Building Drawings**

Buildings without approved or no drawings can collapse if not vetted by relevant authorities, as constructions rely on guesswork and lack proper adherence to regulations.

### **2.2.5 Approval of Technically Deficient Drawings**

Town Planning Authorities may approve technically deficient drawings due to ignorance or corruption and may also change hands due to money changes.

### **2.2.6 Illegal Alteration to Existing Buildings**

Clients can alter existing structures without Town Planning approval, drawings, or original design approval. In some cases, bungalows are converted to storey buildings or two to three-storey structures without supervision, leaving the result uncertain.

### **2.2.7 Absence of Town Planning Inspection or Monitoring of Sites**

Town Planning Authority staff may not inspect or monitor approved work on sites, leading to buildings being built without the Authority's knowledge. This results in buildings being exposed to the public, potentially causing lives to be lost. Inspections are often non-existent, resulting in undocumented progress.

### **2.2.8 Clients Penchant to Cut Corners**

The study of collapsed residential buildings in Nigerian cities reveals that due process is often not followed, with clients making all construction decisions. This results in a lack of qualified personnel for contract documents and supervision, leading to a penchant for cutting corners. Clients often blame consultants and contractors for any mishaps, highlighting the issue of due process in the building production process.

### **2.2.9 Use of Substandard Materials**

Substandard material, such as reinforcement rods, steel sections, and cement, significantly contributes to building failure. Proper inspection by control teams is crucial to ensure compliance with approved drawings and prevent structural failure. Hall (1984) and Aniekwu and Orié (2006) identified low-quality materials as the most important cause of engineering facility failure in Nigeria.

### **2.2.10 Inefficient Workmanship (Labour)**

Oyewande found that inefficient labour input and contractor refusal to read drawings contribute to 40% of construction site collapse, with inadequate labour input contributing to structural failure.

### **2.2.11 Use of Acidic and Salty Water**

Acidic and salty water from oceans and seas in Lagos and Port Harcourt can impact concrete strength when mixed with cement, sand, and rods.

### **2.2.12 The Activities of Quacks**

The Nigerian building industry faces a significant issue with a high number of individuals lacking proper skills for construction tasks. Quacks, including Town Planners and Site Inspectors, often masquerade as architects, deceiving the public, and the unsuspecting public struggles to differentiate between real professionals and quacks, leading to a significant problem in the industry.

### **2.2.13 Clients' Over-Reliance on Contractors for Decision-Making on-Site**

Clients often rely more on contractors for decision-making than consultants due to their close relationships with friends, relatives, or recommendations. Contractors prioritize profit over cost savings, leading to reduced thickness, foundation depth, reinforcement rod sizes, and headroom. Clients often cannot read drawings, making them "taken for a ride." Desperate contractors may use blackmail and intimidation to discourage consultants from projects. Recent building collapses in Lagos and Port Harcourt indicate that soil is the main culprit, especially during the rainy season. Geotechnical investigation is crucial for high-rise structures in areas with suspect soil and high-water tables. Onitsha town, for example, has no reported building collapse due to its high soil-bearing capacity.

## **2.3 CONSEQUENCES OF BUILDING COLLAPSE**

In recent years, Nigeria has experienced numerous building collapse incidents, resulting in the loss of lives and property destruction. Between 1975 and 1995, 26 incidents claimed 226 lives, while between 1982 and 1996, Lagos State recorded 14 incidents and 64

deaths. Between 2004 and 2006, 10 incidents claimed 243 lives, with many injured and some permanently disabled. These incidents have significantly impacted families and developers in Nigeria.

**Table 1. Some reported cases of collapsed buildings in Nigeria for the period of 28 years (1995 to 2023)**

| S/N | YEAR         | LOCATION                                 | CAUSES AND CASUALTY FIGURE                           | TYPE OF BUILDING  |
|-----|--------------|--|--|---|
| 1   | October 1995 | Oke Igbala Mosadoluwa Close, Ogba, Lagos | Faulty Design Carelessness                           | Three Storey Church Building /                            |
| 2   | October 1995 | Central Lagos                            | Poor workmanship/ structural failure 10              | 10 Story building under construction                      |
| 3   | May 1996     | Olowookere Street, Oshodi, Lagos         | Conversion/ Structural Weakness 7                    | Church Building (Earlier approved as a bungalow)          |
| 4   | October 1996 | Lagos State                              | Use of Quacks/ Structural Failure 1                  | Six Storey Building being used as Nursery/ Primary School |
| 5   | June 1997    | Amu Street, Mushin, Lagos                | Use of poor material, structural failure NILL        | Two Storey Building                                       |
| 6   | 1998         | Gwarinpa Area, FCT, Abuja                | Structural Failure 2                                 | Residential Duplex  |
| 7   | 1998         | Ibadan Oyo State                         | Faulty design/ poor Workmanship<br><br>NOT AVAILABLE | Three Storey Residential Building                         |

|    |               |   |   |   |
|----|---------------|---|---|---|
| 8  | October 1998  | Akure, Ondo State                                       | Structural Failure/ Poor Supervision 8                              | 4-Storey Church Building (Under Construction) |
| 9  | November 1998 | Road 3, Plot 10, Funbi Fagun Str., Abeokuta, Ogun State | Use of poor materials/ Structural Failure NIL                       | Two-Storey Residential Building               |
| 10 | 1999          | Ojuelegba, western avenue, surulere, lagos              | Carelessness/ use of poor Material 4                                | 3- storey residential building                |
| 11 | August 1999   | Iju-ijesa, Lagos  | Structural fault/ rainstorm 35                                      | 3-storey residential building                 |
| 12 | October 1999  | Dawodu street, ifo, ogun state                          | Rainstorm 20  | 2-storey residential building                 |
| 13 | 2000          | Idi-oro, mushin, Lagos                                  | Faulty design/carelessness Not available                            | Residential storey building                   |
| 14 | April 2001    | 21, Buhari Street, mushin, Lagos                        | Unauthorized conversion of a former bungalow to a storey building 7 | 2-storey mosque building                      |
| 15 | 2001          | 15 Iwoye-ijesa, osun state                              | Structural failure/ use of quacks for supervision 7                 | 1-storey residential building                 |

|    |              |  |  |   |
|----|--------------|--|--|---|
| 16 | 2003         | Port Harcourt, Rivers State.             | Not available Not available  | Two-Storey school building                    |
| 17 | 2004         | 10, Elas Street, Lagos                   | Dilapidated structure Unknown  | Two-Storey Residential Building               |
| 18 | July 2005    | No. 4 Princess Street, Tinubu. Lagos     | Undisclosed 1  | Three-story building                          |
| 19 | July 2005    | GRA Phase 3, Port Harcourt, Rivers State | Under construction, Undisclosed  | Five-Storey Hotel building                    |
| 20 | January 2006 | 53, Cemetery Road, Amukoko Lagos         | Ignorance/ greed, 7  | Four-floor residential building               |
| 21 | April 2006   | Ikpoba-Okha, Edo State                   | Undisclosed 2  | Two-Storey School Building                    |
| 22 | Jun 2006     | FCT, Abuja                               | Undisclosed None   | Three Floors Housing Offices and Churches     |
| 23 | 2007         | Ebute-Metta, Lagos                       | Unauthorized supervision/ use of poor-quality building materials Conversion/poor use of poor-quality building materials Several people | Multi-Storey Commercial/ Residential Building |



|    |               |  |  |  |
|----|---------------|--|--|--|
| 24 | 2007          | Kano State                               | Faulty design/ structural Failure  | Multi-Storey Building  |
| 25 | March 2008    | Olomi Area, Ibadan, Oyo State            | Use of poor material/ carelessness<br>13                                     | A building used as a nursery/primary school                      |
| 26 | April 2008    | 26 Ogudu, Ojota, Lagos                   | Under Construction<br>Undisclosed Unknown                                    | Three-Storey Building  |
| 27 | August 2008   | Wuse Area, Abuja                         | Structural Failure/ Poor Workmanship,<br>2 People Injured                    | Five-Storey Shopping Complex Under Construction                  |
| 28 | February 2009 | Ogbomoso, Oyo State                      | Use of substandard material, poor workmanship/supervision, 5                 | Six-Storey LAUTECH Teaching Hospital Complex under construction. |
| 29 | August 2009   | Aghaji crescent, GRA, Enugu              | No proper drainage, 1  | A fence wall   |
| 30 | April 2010    | Isapakodowo street, Cairo, Oshodi, Lagos | Use of substandard building material, 4 People, 12 Injured                   | Building under construction (For Lagos State Govt.)              |
| 31 | October 2011  | 11AderibigbeStreet, Maryland, Lagos      | Poor construction method, structural failure, and overloading, NOT AVAILABLE | 5-storey structure with a Pent-house                             |

|    |                   |   |  |  |
|----|-------------------|---|--|--|
| 32 | September 2014    | Ikotun Egbe, Lagos                          | Structural Failure/ Faulty Foundation 115                                | A guest house located within the Synagogue Church premises |
| 33 | November 2015     | Magodo phase I, Lagos                       | Buildings constructed along floodplains, mudslides, and poor drainage. 4 | Three-Bedroom bungalow                                     |
| 34 | March 9, 2016     | Lekki Lagos                                 | Addition to the approved number of floors                                | Five-storey building under construction                    |
| 35 | March 19, 2016    | Mile 12, Lagos                              | Structural defects   | Two story building   |
| 36 | April 2016        | Horizon 1, Lekki Garden Ikte                | Structural defects   | Residential building                                       |
| 37 | May 13, 2016      | Lafenwa Sapon Road Itoku, Abeokuta          | Structural Defects   | Commercial Complex   |
| 38 | December 10, 2016 | Akwa Ibom State Nigeria                     | Structural Defects   | The Reigners Bible Church                                  |
| 39 | July 2017         | 3 Massey St. Lagos Island                   | Undisclosed  | 4-Story Building   |
| 40 | July 8, 2017      | Ulakwo Junction Owerri North LGA. Imo State | Undisclosed  | A Story Building   |

|    |                   |  |  |                                      |
|----|-------------------|--|--|--------------------------------------|
| 41 | August 18, 2017   | Zulu Gambari road Ilorin               | Undisclosed  | 4-story building                     |
| 42 | July 18, 2018     | Owelle Aja Layout, Obosi, Anambra.     | Substandard materials with the addition of two unapproved floors | 4-story building                     |
| 43 | August 16, 2018   | Jabi, FCT Abuja.                       | Substandard materials  | 4-story building                     |
| 44 | October 18, 2018  | Okpuno, Otolo in Nnewi, Anambra.       | Substandard materials  | 3-story building                     |
| 45 | October 2018      | Ifite Awka, Anambra State              | Substandard material   | 3-storey building                    |
| 46 | November 23, 2018 | Woji road, GRA Phase 2, Port Harcourt  | Undisclosed  | 7-storey building                    |
| 47 | February 3, 2019  | Lagos Island                           | Not reported   | 3-storey building                    |
| 48 | March 13, 2019    | Ita Faaji area of Lagos state, Nigeria | The change in use of the building from the intended purpose      | A three-storey building              |
| 49 | March 15, 2019    | Sogoye, Bode area of Ibadan            | Concrete was not adequately cured during construction.           | 3-storey building under construction |

|    |                                |   |  |  |
|----|--------------------------------|---|--|--|
| 50 | September 4, 2022              | Oniru area of Lekki metropolis Nigeria                          | Substandard material   | 7-storey building                          |
| 51 | August 21 <sup>st</sup> , 2022 | Bariga, Lagos state, Nigeria                                    | A water tanker was reported to have fallen off a two-storey building and rammed into the bungalow. | A bungalow building                        |
| 52 | July 3 <sup>rd</sup> , 2023    | Dape community at Lifecamp area of FCT Abuja, Nigeria           | Use of substandard materials   | Four-storey building (under construction)  |
| 53 | February 2, 2023               | Along 7 <sup>th</sup> Avenue in Gwarimpa area of Abuja, Nigeria | The developer flouted the State's approval by erecting an extra floor as opposed to two floors, 2  | Three-storey building (under construction) |
| 54 | May 2, 2022                    | Ebutte-Meta Lagos state   | Undisclosed  | Three-storey building                      |

|    |                               |   |  |                     |
|----|-------------------------------|---|--|---------------------|
| 55 | April 18 <sup>th</sup> , 2023 | Ademola Adetokunbo<br>Crescent, Wuse II FCT,<br>Nigeria | An adjoining building fence collapsed on the workers as they encroached the fence while excavating the site for foundation commencement, 2 | Fence wall          |
| 56 | August 23, 2023               | Lagos Street, Garki<br>Village, FCT Abuja               | The cause has not been identified; 2 dead as of the time of report   | Two-storey building |

Sources: NIOB (2002), The Punch Newspaper 2023 (punchng.com), The Guardian Newspaper (2005), Fagbenle and Oluwunmi (2010), Leadership News 2023 (leadership.ng), NBRRI (2011) Abimbola and Rotimi (2012). (Source, NBRRI 2011) Plate 1a Plate 1b **Plate 1**, P O Awoyera et al. 2021 IOP Conf. Ser.: Mater. Sci. Eng. 1036 012021

## 2.4 STRATEGIES TO OVERCOME BUILDING COLLAPSE

The problem of building collapse can be addressed through the client or prime consultant relationship, which plays a crucial role in determining the quality of finished work. The prime consultant should ensure that all other professionals involved in the project are done to the best of their abilities and should be aware of their limitations. The approving bodies should be staffed with experts and integrity, and if the expertise is not within the organization, they should seek assistance from the relevant professional body or consulting firms at a fee. The government should establish a one-stop shop for building plan approval, reducing the time required for approval.

The execution and supervision of approved drawings are essential for successful competition. The contractor must possess attributes such as play by the books, expertise, and the ability to identify defective designs. Contractors must meet specific criteria to qualify for certain categories of projects, such as buildings with three floors and above. A registered building officer, civil or building engineer, must be on the contractor's staff to ensure the structure's integrity. Supervision is also crucial, as it ensures that the contractor follows the drawings, keeps to specifications, and provides the quality of materials used.

The government can play a commanding role in supervision through the Town Planning Authority (TPA) or the Development Control Team (DCT) to prevent building collapse. In Lagos State, the TPA requires registered engineers to be engaged by developers

to supervise projects of three floors and above. The engineer must undergo an interview and be documented by a professional colleague before ratification of their engagement. Once engaged, the resident engineer will sign completion, and if the engineer ceases to supervise, they must inform the director in writing to prevent impersonation and forgery. The TPA, through the DCU, is a proactive and decisive body responsible for preventing illegal developments and ensuring compliance with conditionalities. The Federal Government, through the Standard Organization of Nigeria (SON), ensures that construction materials meet required standards, such as high-yield steel and cement. A monitoring team, led by the housing commissioner, is established to monitor contractors and supervising engineers, advising local planning authorities on necessary actions. Zoning methods can be used to monitor developments, and the public, including civil society organizations, must report any development in their neighbourhood to the TPA and follow up to ensure proper approvals are obtained before the commencement of such developments.

Penalties and sanctions are in place for all parties involved in actualizing building projects, including developers and professionals. Developers of collapsed buildings face forfeiture of the plot to the government and criminal charges for poor quality works. Regulatory professional bodies and their corresponding societies or associations regularly run workshops or seminars to update their knowledge and highlight the dangers and penalties associated with collapsed or failed buildings. They also monitor the activities of their members and penalize them when necessary.

Developers and professionals must be educated on the need to enter proper contracts before the commencement of any project. Most developers prefer an informal approach, but proper contracts define the duties and obligations of the parties involved. As buildings settle, materials begin to suffer fatigue and corrosion, highlighting the importance of appropriate contracts in preventing potential dangers to society. The government should periodically inspect existing buildings over five or ten years to ensure their continued satisfactory performance. Excessive cracks, deflections, and settlements pose significant threats to lives and properties, making them disasters waiting to happen. Building collapse cannot be eliminated due to factors such as soil investigation, structural analyses, and design not being fully understood and predictable. Factors incorporated in design are based on probabilities, resulting in inherent uncertainty. The soil carries all structures, and the performance of most materials over time is not fully understood and predictable. By following these guidelines, the chances of collapse occurring are minimal, and the few cases of failure will allow for a better understanding and study of the phenomenon. The recent approval of a national building code for the building industry is seen as a welcome development, helping to sanitize the industry and prevent future collapses.

#### **2.4.1 Town planning**

Town planning is a future-oriented strategy within a defined area, focusing on setting goals based on the desired future. It involves designing policies and plans to guide the system towards these goals or change existing systems if they cannot achieve them. Key tools in Town Planning include development plans and control mechanisms, which guide and control city growth and development.

#### **2.4.2 Development Plan**

A development plan, also known as a General Plan, City Plan, or Master Plan, is an official statement from a municipal legislature stating major policies for the physical development of a settlement. It serves as a policy instrument for fulfilling people's aspirations and provides legal and technical tools for local government control. A development plan is essential for fulfilling the yearnings and aspirations of the people, as a city is a corporate entity with local government control.

#### **2.4.3 Development Control**

Development control, also known as planning, is a process laid down by legislation to regulate the development of land and buildings. Town planners carry out This activity professionally to ensure compliance with the approved master plan and orderliness. The 1946 Ordinance empowered the government to establish local planning authorities, making development control the main

activities of the authorities. Under section 27-63 of the 1992 Planning Law, provisions were made for the establishment of the Development Control Department (DCD) by the commission, the Board, and the authority to be established. Development control processes include using land use zoning and land planning standards. Zoning is a legal exercise and political process that uses restrictions and development standards to guide physical development, ensuring equal protection, due process, public health, safety, and welfare.

#### **2.4.4 Planning Standard**

Town Planning in Lagos State involves using prescriptive and regulatory planning standards, which guide disaster risk reduction and development plans. These standards are mandatory and inflexible, ensuring public compliance with space standards. Development control is a sensitive exercise that must be done with precaution, firmness, and a deep sense of responsibility by the authority concerned.

#### **2.4.5 The Statutory Functions of the Department of Development Control Are as Follows”**

The process of developing permits in the state involves processing and issuance of permits, monitoring compliance with approved plans, and establishing district Town Planning Offices and Local Planning Offices. Operational control and supervision are performed by these offices. Preparation and periodic review of District Plans, Town Plans, Local Plans, Development Guide, and Plans for excised villages are also performed. Publication of approved, rejected, or withdrawn plans is published in the official Government Gazette. Other departments of the ministry are responsible for plan preparation, research, data processing, monitoring, and enforcement of planning.

#### **2.4.6 Space standards**

Space standards in building plan regulation specify minimum requirements for residential, institutional, commercial, and public utilities, highways, electrical power lines, gas and oil pipelines, water bodies, and gorges. Part I, Section 12 of the First Schedule 2010 Law defines the scope and limits within which District and other Development Plans are framed and drafted. These standards include minimum requirements for dwelling units, building site requirements, minimum building lines, airspaces, maximum coverages, height, and plot ratios for residential, commercial, industrial, and institutional developments in defined use zones.

#### **2.4.7 Commercial and Industrial Development Standards**

In Lagos State, commercial and industrial properties must adhere to setbacks and airspace regulations, with a minimum of 9 meters set back in front and 6 meters on the sides and rear airspace. Plot coverage for commercial properties is limited to 70% of the entire plot, with a maximum of 60% for industrial plots. Height requirements vary depending on the zone, with some properties on Broad Street Lagos Island exceeding 8 floors. Fencing heights can range from 150mm to 4 meters. Residential development standards in Lagos State include 3 meters front setback, 3 meters rear setback, left airspace for plots under 450m<sup>2</sup>, and no cantilever on any side with 1-5 meters airspace. The state also observes a minimum of 3 meters setback, with airspace being 3 meters on one side and 1.5 meters on the other, with a cantilever not allowed on the side with 1.5 meters of airspace. Buildings in other areas must observe a minimum of 6 meters in front and 3 meters on the sides and rear, with buildings over 3 floors observing a minimum of 4.5 meters at the rear unless otherwise stated.

#### **2.4.8 The Nigerian National Building Code and Its Provisions**

The Nigerian National Building Code (NNBC) outlines rules, regulations, specifications, and ethics for the design, construction, and maintenance of buildings in Nigeria. Although it is a bill before the Nigerian National Assembly, the Code is gaining acceptance

by some states. British Standards and Codes of Practice, issued by the British Standards Institution, provide recommended minimum standards for materials, components, design, and construction practices. The NNBC aims to evolve a National Building Code to address existing conditions such as lack of planning, frequent building collapses, fire infernos, built environment abuse, lack of referenced design standards for professionals, non-professional use, untested products and materials, and a lack of maintenance culture.

#### **2.4.9 Town Planning Authority (Tpa)**

The Town Planning Authority (TPA) is responsible for approving and approving completed drawings, but many departments lack the necessary expertise and staff. Development control Units (DCUs) play a limited role in overseeing developments in progress, ensuring qualified professionals are engaged. This bottleneck can lead to illegal developments, as it can take over one year to obtain approval for complete working drawings. Issues such as proper survey, good title, consent, certificate of occupancy, tax clearance certificates, development levies, and processing fees can be cumbersome and financially burdening. The rise of high-rise buildings in the building industry has led to developers engaging unskilled professionals, leading to the development of high-rise buildings and the pressure of demand on location choices.

### **2.5 HISTORICAL PROFILE OF DEVELOPMENT CONTROL**

Development control is a physical planning instrument that involves regulations, retraining, and checking materials' changes on land. It has evolved from the USA in the 19th century to Nigeria through the enactment of the Township Improvement Ordinance (TIO) of 1863, which was applied to Lagos Colony alone. The 1917 Act introduced development control, which aimed to improve public health and sanitation, control development, and ensure the provision of public utilities and facilities. The Lagos Executive Development Board (LEDB), formerly Lagos State Development and Property Corporation (LSDPC), was established in 1928 to enhance development control. The Lagos Ordinance (1928 Act) was later introduced to other parts of the country and formed the primary working instruments for the Town planning division in all ministries of lands, hoeing, and survey. Development control has been applied in Nigeria through various Acts and Laws, such as the Lagos State Town and Country Planning (building plan), regulations of 1986, Lagos State Urban and Regional Planning Edict No. 2 of 1998, and Urban and Regional Planning Decree No. 88 of 1992 amended as Decree No. 18 of 1999.

#### **2.5.1 TOOLS OF DEVELOPMENT CONTROL**

Enforcement notices are two tools used in the development control process. An enforcement notice is issued for any breach of town planning law, such as illegal building or engineering, mining, or change of use. Non-compliance with an enforcement order is punishable, but a breach of planning law is not a criminal offence. A stop-work notice, issued under section 53 of Urban and Regional Planning Decree No. 88 of 1992, is issued when a development is unauthorized or does not comply with a development permit issued by the control department. This document is used pending the issuance of an enforcement notice to the owner/occupier of the property, which takes immediate effect upon service. The enforcement notice ceases to have effect if the contravener is not served within 21 days.

#### **2.5.2 PROBLEMS AND CONSTRAINTS OF DEVELOPMENT CONTROL**

Development control regulations in Nigeria face numerous constraints, including a lack of up-to-date land use maps, inadequate funding for control authorities, and a lack of public enlightenment programs on physical planning issues. The Federal Housing Authority (FHA) has not effectively enlightened the public and residents on the importance of development control in physical planning, leading to the development of illegal structures. Public support is crucial for successful and effective development, and the FHA's operations are not well understood by the public. Additionally, there is inadequate monitoring of development to ensure



compliance, especially when development permits are granted. To address these challenges, the FHA must be departmentalized, equipped, and adequately funded to ensure constant monitoring and compliance with development control measures. This action will help restore the lost glory of Nigeria's housing construction and ensure the continued success of development control measures.

### **3.0 Methodology**

This study examines development control activities and their impact on Nigeria's economy and people, using secondary data from dailies, reports, and interviews to prevent future collapses and building collapses.

### **4.0 RECOMMENDATIONS FOR AN IMPROVED AND SUSTAINABLE DEVELOPMENT CONTROL**

In order to ensure sustainable development control in Nigeria Town, steps must be taken to improve the community's living, working, recreating, and learning environment. These include preparing an up-to-date land use plan, strategic plans for utilities and facilities, proper funding for the Town planning unit, provision of vehicles, and enacting standing rules to ensure easy access to law enforcement agencies. Professionally qualified Urban and Regional planners should be appointed and employed to manage the technical aspects of the development unit. Regular staff development programs, such as retraining, refresher courses, seminars, conferences, and workshops, should be addressed and funded. Socio-physical infrastructural facilities should be provided and distributed evenly across the town, reducing development concentration towards a particular direction. Politicians and government officials should create a conducive political atmosphere for authority officials to effectively exercise their statutory roles in the built environment. An effective public enlightenment program should be conceptualized to sensitize residents, developers, and other stakeholders in the building industry on the need for development control. Finally, officers caught in the act of bribery and corruption in the authority should be disciplined by the professional body, with the possibility of deregistration or dismissal. The recommendations should be presented under subheadings considered by the main stakeholders in the industry.

#### **4.1. Government:**

The Federal Government of Nigeria should vigorously pursue the production or importation of sub-standard goods, particularly building materials, to rid society of sub-standard construction materials. The Ministry of Housing and Urban Development should use zoning approaches to limit the number of floors in areas with suspect soil and specify the type of foundation used. The State Government should streamline the process of granting building plan approvals, providing a one-stop solution. A monitoring team should be established under the Commissioner for Works and Housing to assess contractor and supervisor performance. Penalties and sanctions should be developed and enacted by state governments and houses of assemblies. The consequences of developing a failed structure should be well publicized. State ministries responsible for building plan approvals should ensure engineers take responsibility for structural integrity and are appropriately documented, including main photographs. Engineers should be interviewed by a professional colleague in the relevant ministry to prevent impersonation, forgery, and denials. Governments should implement a policy for checking existing buildings periodically to assess their suitability for human habitation. Local planning authorities should focus on approving buildings of two floors and oversee higher buildings in collaboration with the zonal town planning office or head office.

#### **4.2 Professionals**

Professionals must be knowledgeable and have integrity, ensuring they provide the best services for their clients promptly. Pecuniary benefits should not be the driving force in their relationship with clients. Instead, they should be motivated to provide the best professional

service at a reasonable price and promptly. Formal contracts should define the scope of services, time frame, and client consideration.

#### **4.3. Regulatory Bodies:**

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Professional bodies, including regulatory organs, must conduct regular workshops and seminars to keep members updated on their chosen profession. Failure to meet minimum attendance requirements may result in removal from the register. Monitoring units and random visits to project sites are also necessary to ensure members fulfil their duties.

#### 4.4. Civil Society and Non-Governmental Organizations

Civil society, particularly NGOs, should act as watchdogs, reporting new developments and restructuring of old buildings to relevant authorities. Specialized NGOs should be encouraged to monitor these developments and report findings. Implementing these recommendations will reduce the threat of building collapse, only occurring in force majeure situations.

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