# Environmental and Structural Risk Factors Influencing the Proliferation of Uncompleted Buildings in Coastal Urban Areas: A Case Study of Eti-Osa, Lagos

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***Abstract-*** ***Uncompleted buildings in coastal urban regions pose serious environmental and structural risks, threatening sustainable development, livability, and resilience in affected communities. This study investigates the factors responsible for the increasing number of abandoned and partially constructed buildings in Eti-Osa, a rapidly urbanizing coastal district in Lagos, Nigeria. Using spatial analysis, field surveys, and semi-structured interviews, the study identifies flooding, salt-laden winds, unstable soil conditions, and weak regulatory enforcement as core environmental and structural factors contributing to the phenomenon. The findings reveal that proximity to the Atlantic Ocean exacerbates material degradation and delays in construction, while ineffective land use monitoring further complicates project continuity. The paper recommends context-specific building codes, coastal planning reforms, and integrated construction monitoring frameworks for minimizing risks and improving building project outcomes in vulnerable urban coastlines.***

***Indexed Terms-*** ***Coastal Urban Areas, Uncompleted Buildings, Environmental Risks, Structural Degradation, Eti-Osa, Urban Resilience***

## I. INTRODUCTION

Urban development in coastal regions faces distinct environmental and structural challenges that differentiate them from inland cities. In Lagos, Nigeria's economic hub, the Eti-Osa Local Government Area exemplifies the intersection of coastal dynamics and rapid urban expansion. Despite its strategic importance, Eti-Osa is characterized by numerous uncompleted building projects, many of which remain abandoned indefinitely. These structures not only symbolize resource waste but also contribute to environmental degradation, urban blight, and socio-spatial vulnerability.

This phenomenon is particularly concerning given the increasing pressure on coastal urban areas due to climate change, population influx, and land scarcity. In areas such as Lekki, Jakande, and Sangotedo within Eti-Osa, several stalled projects exhibit patterns of corrosion, subsidence, and material deterioration, conditions linked to the coastal ecosystem.

Although several studies have examined housing crises and planning failures in Lagos, few have explicitly investigated the environmental and structural dimensions of uncompleted buildings in coastal settings. This study fills that gap by exploring how ecological factors such as saline intrusion, flooding, and weak soil integrity intersect with planning and construction lapses to proliferate uncompleted structures. The insights generated aim to inform policy and technical strategies for enhancing resilience in coastal urban housing projects.

## II. LITERATUREREVIEW

Uncompleted buildings have been studied in various contexts, but their environmental and structural dimensions in coastal cities like Lagos remain under-explored. Akinmoladun and Oluwoye (2007) linked persistent housing challenges in Nigeria to weak policy enforcement and economic limitations. Agbola and Jinadu (1997) argued that forced relocations result from planning failures, while Onifade and

Ogunsemi (2020) identified common abandonment causes such as litigation, inflation, and regulatory delays.

Enisan and Sanusi (2021) emphasized poor urban control and overstretched infrastructure as major contributors to urban housing crises in Lagos. In coastal areas specifically, Ayedun et al. (2011) highlighted the role of rising sea levels and flooding in weakening foundations and construction materials.

This study builds on these findings by focusing on the structural and environmental risks that lead to project abandonment in Eti-Osa, where salt-laden winds, coastal flooding, and soft soil have emerged as major contributing factors.

## III. METHODOLOGY

### 3.1StudyArea

The study was conducted in Eti-Osa LGA, Lagos, with specific focus on coastal neighbourhoods including Sangotedo, Jakande, and Ikate-Elegushi. These areas are situated within low-lying floodplains and experience seasonal tidal surges, high water tables, and infrastructural pressures from adjacent high-value developments.

### 3.2ResearchDesign

A mixed-method design was adopted, combining qualitative interviews with spatial and environmental analysis. This allowed for a multi-dimensional understanding of both technical and contextual contributors to building abandonment.

### 3.3 Data Collection Methods

- Environmental Observation: Site visits were conducted to examine material degradation, ground movement, and weather-induced stress on structures.
- Spatial Mapping: GIS-based tools were used to plot the locations of uncompleted buildings relative to coastlines, flood zones, and soil types.
- Key Informant Interviews: Interviews were held with structural engineers, environmental planners, local authorities, and residents.
- Document Review: Archival records including building approvals, site analysis reports, and Lagos State coastal zoning guidelines were assessed.

### 3.4SamplingTechnique

Sites were selected using purposive sampling based on proximity to the coastline and visible stages of abandonment. Snowballing was employed to identify key professionals and stakeholders knowledgeable about construction trends in the area.

### 3.5DataAnalysis

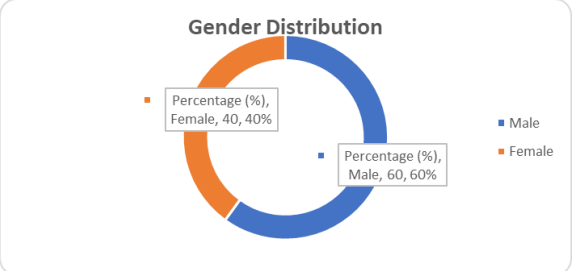
Thematic analysis was used to extract dominant narratives from interview data. Spatial data were analyzed using QGIS to identify clusters and environmental risk overlays. Structural observations were correlated with common risk indicators including corrosion, efflorescence, and foundation exposure.

## IV. DATA PRESENTATION, ANALYSIS, AND DISCUSSION

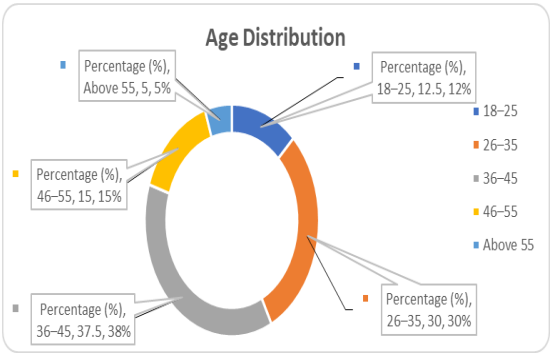
- Thematic content analysis was applied to interview transcripts.
- Spatial distribution data were interpreted using visual clustering and proximity risk mapping.
- Policy documents were analyzed for regulatory gaps and compliance trends.

Table 4.1: Gender Distribution

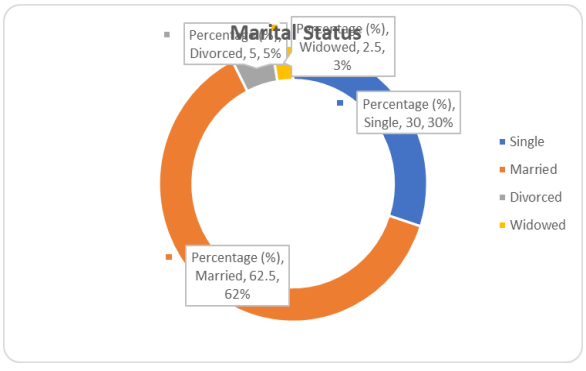
| Gender | Frequency | Percentage (%) |
|---|---|---|
| Male | 240 | 60 |
| Female | 160 | 40 |
| Total | 400 | 100 |



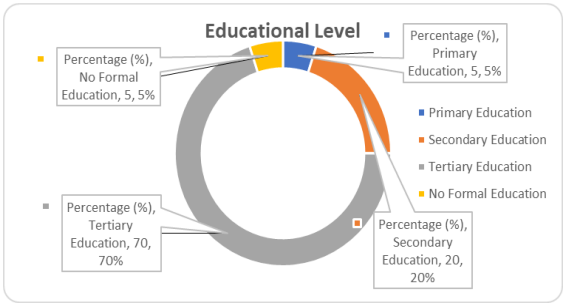
| Table 4.2: Age Distribution | | |
|---|---|---|
| Age Group (Years) | Frequency | Percentage (%) |
| 18–25 | 50 | 12.5 |
| 26–35 | 120 | 30 |
| 36–45 | 150 | 37.5 |
| 46–55 | 60 | 15 |
| Above 55 | 20 | 5 |
| Total | 400 | 100 |



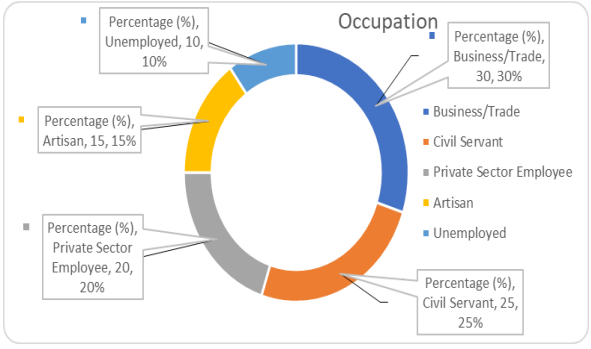

| Table 4.3: Marital Status | | |
|---|---|---|
| Marital Status | Frequency | Percentage (%) |
| Single | 120 | 30 |
| Married | 250 | 62.5 |
| Divorced | 20 | 5 |
| Widowed | 10 | 2.5 |
| Total | 400 | 100 |




| Table 4.4: Educational Level | | |
|---|---|---|
| Education Level | Frequency | Percentage (%) |
| Primary Education | 20 | 5 |
| Secondary Education | 80 | 20 |
| Tertiary Education | 280 | 70 |
| No Formal Education | 20 | 5 |
| Total | 400 | 100 |




| Table 4.5: Occupation | | |
|---|---|---|
| Occupation | Frequency | Percentage (%) |
| Business/Trade | 120 | 30 |
| Civil Servant | 100 | 25 |
| Private Sector Employee | 80 | 20 |
| Artisan | 60 | 15 |
| Unemployed | 40 | 10 |
| Total | 400 | 100 |



| Table 4.6: Length of Residence | | |
|---|---|---|
| Length of Residence (Years) | Frequency | Percentage (%) |
| Less than 1 year | 40 | 10 |
| 1–5 years | 120 | 30 |
| 6–10 years | 150 | 37.5 |
| Above 10 years | 90 | 22.5 |
| Total | 400 | 100 |

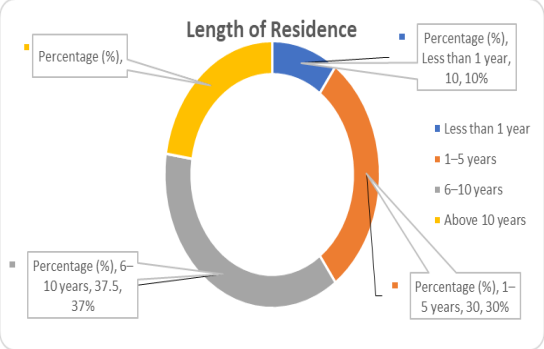
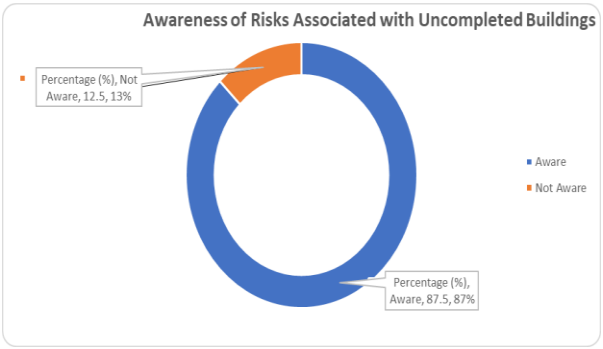



Table 4.7: Awareness of Risks Associated with Uncompleted Buildings

| Awareness Level | Frequency | Percentage (%) |
|---|---|---|
| Aware | 350 | 87.5 |
| Not Aware | 50 | 12.5 |
| Total | 400 | 100 |



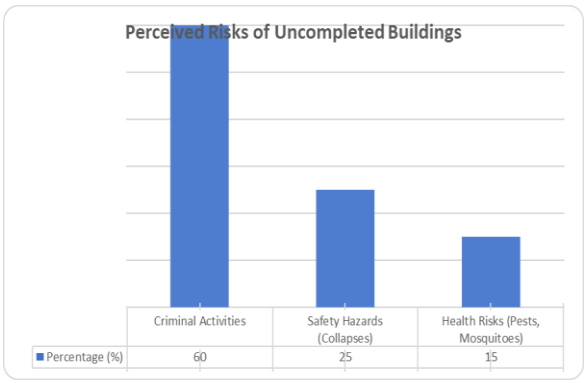




Table 4.8: Impact on Property Value

| Impact on Property Value | Frequency | Percentage (%) |
|---|---|---|
| Decrease in Property Value | 260 | 65 |
| No Significant Impact | 120 | 30 |
| Increase in Property Value | 20 | 5 |
| Total | 400 | 100 |

Table 4.9: Economic Impact on Businesses

| Economic Impact | Frequency | Percentage (%) |
|---|---|---|
| Reduced Customer Footfall | 200 | 50 |
| No Significant Impact | 150 | 37.5 |
| Increased Operational Costs | 50 | 12.5 |
| Total | 400 | 100 |

Table 4.10: Frequency of Security Incidents

| Frequency of Incidents | Frequency | Percentage (%) |
|---|---|---|
| Very Frequent | 120 | 30 |
| Occasionally | 180 | 45 |
| Rarely | 80 | 20 |
| Never | 20 | 5 |
| Total | 400 | 100 |

Table 4.11: Response to Security Threats

| Response Measures | Frequency | Percentage (%) |
|---|---|---|
| Hiring Security Personnel | 150 | 37.5 |

| | | |
|---|---|---|
| Installation of Security Devices | 100 | 25 |
| Increased Community Policing | 90 | 22.5 |
| No Action Taken | 60 | 15 |
| Total | 400 | 100 |

Table 4.12: Health Challenges Attributed to Uncompleted Buildings

| Health Issue | Frequency | Percentage (%) |
|---|---|---|
| Malaria (due to stagnant water) | 200 | 50 |
| Respiratory Issues | 100 | 25 |
| Injuries from Structural Debris | 60 | 15 |
| Other | 40 | 10 |
| Total | 400 | 100 |

Table 4.13: Preferred Mitigation Measures

| Mitigation Measure | Frequency | Percentage (%) |
|---|---|---|
| Government Intervention | 220 | 55 |
| Community Advocacy | 100 | 25 |
| Individual Actions | 80 | 20 |
| Total | 400 | 100 |

## V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary:

The study identified environmental and structural factors contributing to uncompleted buildings in coastal Eti-Osa, Lagos. These include flooding, corrosion from saline air, weak soil composition, and poor regulatory enforcement. Social and economic data reveal high awareness of risks and negative impacts on community wellbeing and property values.

5.2 Conclusion:

Uncompleted structures in coastal areas like Eti-Osa are not only aesthetic and spatial liabilities but also environmental and public safety threats. Construction delays caused by flooding, salinity, and regulatory lapses compound structural failures.

5.3 Recommendations:

1. Develop localized coastal construction codes reflecting environmental realities.
2. Improve inter-agency coordination on building approvals and coastal monitoring.
3. Introduce early-warning systems and enforce drainage compliance near construction zones.
4. Provide training and coastal resilience awareness for builders and local stakeholders.
5. Digitize building control processes and improve public access to development regulations.

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