



TOWARDS ENVIRONMENTAL QUALITY ASSESSMENT FOR SUSTAINABLE COMMERCIAL PROPERTY INVESTMENT IN SOUTH EASTERN NIGERIA

Effe Kenneth Chibueze¹, Ihuah Paulinus Woka², Elenwo Ekwuru³,
and Ekenta Chukwuemeka Edmund⁴.

¹⁻⁴Department of Estate Management, Faculty of Environmental Sciences,
Rivers State University, Port Harcourt, Nigeria.

Cite this article:

Effe, K. C., Ihuah, P. W.,
Elenwo, E., Ekenta, C. E.,
(2026), Towards
Environmental Quality
Assessment for Sustainable
Commercial Property
Investment in South Eastern
Nigeria. African Journal of
Environment and Natural
Science Research 9(1), 69-82.
DOI: 10.52589/AJENSR-
7IN3K627

Manuscript History

Received: 5 Jan 2026

Accepted: 8 Feb 2026

Published: 27 Feb 2026

Copyright © 2026 The Author(s).

This is an Open Access article distributed under the terms of Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), which permits anyone to share, use, reproduce and redistribute in any medium, provided the original author and source are credited.

ABSTRACT: *Commercial property investment places in Nigeria suffer systematic desertion, due to pollution from indiscriminate tire burning, inadequate waste management, weak legislation and implementation of environmental laws, lack of control and policy formulation. These has an adverse impacts on the commercial property investment in the study area. The desertion led to commercial property investors' reduction of total revenue that might have accrued for the government. The black fumes from the tire burning changes the aesthetic nature and values of commercial property. These upset witnessed in the surrounding community decreases commercial property value and damage the reputation of the study area, thereby decreasing tourism and property investments prospects. Therefore the purpose for this research is to investigate the causes of the desertion due to indiscriminate tire burning and proffer solution to the out and its total eradication. A mixed method research approach was adopted for this study, with questionnaire and interviews conducted on the residents. A sample size will be obtained by the use of Taro Yamane's formula. Findings showed that in Aba, Owerri, and Onitsha adequate waste management, strong legislation and implantation laws, good control and policy formulation, total eradication of tire burning is pertinent to the improvement of environmental quality for sustainable commercial property investment. The study concluded that sanitary and environmental quality parameters such as total eradication of tire burning, strong legislation and implementation of environmental laws, adequate waste management, good control and policy formulation in the study area, need improvement to achieve sustainable commercial property development.*

KEYWORDS: Environmental Quality, Sustainable Commercial Property Investment, South Eastern Nigeria Property Market.



INTRODUCTION

Environmental quality refers to several components of physical environment and their impact on the surrounding populations. And it have factors which affects the quality of the environment, such as Noise, air and water pollution etc. Study Smarter, (2024). However, environmental quality is beneficial to commercial property investment because improved air quality, provides a cleaner environment which can drive up demand and increase the overall worth of commercial properties in the study areas, which will lead to a profitable investment Smith J. (2020). This paper examines the environmental quality for sustainable commercial property investment which can be characterized by the pollution due to indiscriminate tire burning, discharge of waste, poor drainage, over utilization of existing infrastructural facilities which will lead to unsustainable environment (Femi, 2019) which results to the desertion of the commercial property investment study areas. The indiscriminate tire burning, lack of control and no policy formulation had an adverse impact on the commercial property investment in these study areas. The desertion of the study area by commercial investors reduces the total revenue that would have accrued for the government. The smell of the burning tires is also quite unpleasant. A well-planned commercial property investment yields to environmental sustainability because the provision of adequate commercial property will incorporate the provision of reduction in an environmental pollution

Sustainable commercial properties refers to investments in commercial properties or projects that meet the needs of present without compromising the ability of future generations to meet their own needs. It considers environmental, social and governance (ESG) factors to ensure long-term sustainability and responsible wealth creation. Oyedokun (2020) they are expected to be free of unprecedented wear and tear. The carbon emissions from the burning of tyres does not affect human health alone but also the building fabrics, thereby adversely affecting investment plans and returns and because several investment ideas had been done without consideration of environmental quality, failure springs up to discourage further investment.

Commercial Property investment refers to the acquisition, ownership and management of income generating real estate properties, such as offices, shopping malls, warehouses and apartments, with the goal of earning rental income and potential long-term capital appreciation Oyedokun, (2017). However these properties are important to the Southern Eastern Region of Nigeria, because it generates strong economic potentials, favourable demography, strategic location, political stability, growth in real estate market, provision of diversification of investment portfolios.

Commercial property is a major type of real estate investment that performs a multiple role as consumption and investment of commodity Ismail, (2013). It is dynamic in nature as it has a significant influence on the socio-economic and psychological well being of individuals, household, socio-ethnic groups and the nation at large (Ismail, 2013). The importance of commercial property cannot be overemphasized as it contributes immensely to the growth and development of any country's tangible capital. A range of human activities contaminate the natural environment directly or indirectly and these brings about change in the climate damage of natural habitats farmlands for agriculture, properties and contamination of water and water bodies, including air and soil, are all linked to a substantial increase in natural disasters, such as flooding and soil erosion.



Environmental quality is vital to achieving sustainable living because it enhances good health unhindered human mobility, sound minds, viable and profitable business Owolabi, O. A. Adenonimu and Ogunbiyi (2018). A well-planned commercial property investment yields to environmental sustainability because the provision of adequate commercial property investment will incorporate the provision of improved indoor air quality, portable water, good sanitation, sewage and waste management, sustainable transport network and consequent reduction in environmental pollution. Overall, they will be a driver for sustainable natural development, indicating that commercial property investment has significant impacts on most of the activities of sustainable development (Amao, 2012, Ibem & Amole, 2010).

Within any given area, however a series of minor environmental problems can combine to produce a significant negative impact. For example the indiscriminate disposal of waste by several individuals will cumulatively lead to the pollution of that neighbourhood. The inappropriate practice associated with one individual can over time lead to a major environmental problem with impacts on the entire commercial property investment returns.

Real estate has continued to play a substantial role in man's development. in recent time, investors in South eastern region of Nigeria have began to explore strongly into real estate marketing and investments which often represents the single largest investment (Davis and Paumbo 2008) Oyewole (2013) opined that property market plays an important role in real estate investment whether residential, commercial, industrial agricultural etc. Commercial Property Investment according to Udechukwu (2009) pointed that commercial properties include the various types of income producing properties that are basically used for trading (buying and selling) Olusegun (2011) classified these into stalls. Shops, purpose built shopping mall, supermarkets, banking halls, offices and warehouse. Also incented are chain stores, departmental stores, mobile shops etc.

Aim and Objectives of the Study

The aim of this study is to assess the environmental quality for sustainable commercial property investment in South Eastern region of Nigeria.

1. Investigate the factors of environmental quality for sustainable commercial property investment in South Eastern region of Nigeria.
2. Establish any potential risks or challenges that may arise in sustainable commercial property investment in the region.

Scope of the Study

Spatially the study covers, Onitsha-, Owerri, Aba with major emphasis on Owerri-I Aba-, Onitsha-. For this research, environmental quality indicators that will be examined include, Indiscriminate Tire burning as waste generation and management. The three states were appropriate for the study as they represent 3/5 of the states in the south eastern region of Nigeria. These cities were selected due to their economic significance, high population densities, and documented environmental challenges. The research examines environmental determinants including waste management, drainage and flood control, air and water pollution, green infrastructure, and regulatory frameworks.



LITERATURE REVIEW

Conceptualising Environmental Quality

Environmental quality encompasses the physical characteristics of both the natural and built environments that affect human health, comfort, and economic activity (Ede, 2014). Key dimensions include air quality, water quality, solid waste management, noise levels, green space provision, and resilience to climate-related hazards such as flooding. High environmental quality is linked to higher property values, lower health-related costs, and increased investor confidence (World Cities Report, 2020).

Commercial Real Estate and Forms of Property

Commercial real estate investments are made in properties designed primarily for business activities and income generation. Forms of real estate include:

Residential Real Estate: Properties used for habitation single-family homes, apartments, and condominiums; generate rental income but are distinct from commercial property.

Commercial Real Estate: Offices, retail outlets, shopping malls, hotels, and business centers central to this study.

Industrial Real Estate: Factories, warehouses, logistics parks often have significant environmental footprints due to emissions and waste.

Agricultural Land: Farms and plantations relevant in peri-urban conversion and urban expansion dynamics.

Mixed-Use Developments: Integrated projects combining residential, commercial, and recreational uses support sustainable urban density when well planned.

Special-Purpose Properties: Hospitals, schools, religious centers, and recreational facilities with niche demand and social value.

Environmental Determinants of Property Performance

Scholarly work underscores the relationship between environmental determinants such as pollution, waste management, and flood risk and property performance. Environmental harms can lead to diminished property values through remediation costs, reduced usability, and reputational effects (American Bar Association, 2024). In Nigeria, urban environmental deficiencies have been shown to depress investment and raise operational risks (Nwaka, 2005; Ezenagu, 2018).

Regional Studies: Aba, Owerri, and Onitsha

Recent empirical studies and assessments highlight localized environmental problems in the three cities. Onitsha has been the focus of air-quality and river pollution studies reporting hazardous AQI levels and contaminated waterways (Assessment of Health Risks Associated with Air Pollution in Onitsha, 2025; Nwangene River studies). Aba has been studied for flood vulnerability and waste mismanagement in industrial clusters (Spatial assessment of flood vulnerability in Aba; e-waste studies in Aba). Owerri studies emphasize solid waste management pressures within municipal areas (Owerri waste management assessments). These



city-level studies point to systemic governance and infrastructure gaps that affect property sustainability (World Bank, 2019; UN-Habitat, 2020).

Theoretical Framework

This study is guided by Sustainable Development Theory (Brundtland, 1987) which advocates for development meeting present needs without compromising future capacities. Environmental Determinism is used subsidiarily to explain how environmental conditions influence urban form and investment patterns. These frameworks support integrating environmental assessment into property investment decision-making.

Research Methodology

A mixed-methods approach was adopted to combine the strengths of quantitative breadth and qualitative depth. The study used a proportional stratified sample of 400 respondents drawn from Aba, Owerri, and Onitsha, reflecting their projected populations.

Target Population and Sampling

A research is a scientific investigation of events, situation or phenomenon. which involve systematic collection, presentation, analysis and interpretation of collected data for solving problem .The data type uses Case Study design which was adopted in this research to enable the researcher have an in-depth understanding of the phenomenon of Environmental Quality For Sustainable Commercial Property Investment In south Eastern Region of Nigeria. With aim of analyzing this causes of pollution as result of indiscriminate tire burning which led to the dissipation of commercial investment area..The Survey Instruments used include, questionnaires, interviews, observation. In Research Approach, the nature of the research necessitated the use of a mixed methods approach and a case study research strategy is to carry out an in-depth study of the desertification of the Study area.The study population include the inhabitants of selected neighbourhoods Aba ,Owerri and Onitsha base on which a sample size of 399 was obtained as presented in table 1. A randomized sampling procedure used in the selection of commercial property in Aba, Owerri and Onitsha and in selecting individual occupants as respondents from each sampled commercial property. This study adopted the use of validated semi-structured questionnaire, which was employed for data collection from the sampled population of the study.

Table 1: Sample Neighbourhoods Projected Population, Sample, Size and Percentage

S/No	Neighbourhoods	Projected Size	Sample size	Percentage %
1	Aba	26946	96	24
2	Owerri	85,430	152	55
3	Onisha	30,283	151	21
	Total	1,42664	399	100

Researcher Field Survey, 2025

The target population is 2,911,088 residents across the three cities. Proportional representation was used to allocate the sample as follows: Aba (1,038,654; n=142; 35.6%), Owerri (781,220; n=108; 27.0%), and Onitsha (1,099,214; n=150; 37.4%). Participants included property owners, investors, business tenants, urban planners, and environmental health officers.



Overall Relevant Factors of Environmental Quality in South-Eastern States

Table 2 aggregated respondents' evaluations from the three cities: Aba (N=130), Owerri (N=95), and Onitsha (N=136); providing a comprehensive perspective on how key environmental quality indicators affect commercial property investment sustainability. Each factor is rated using a 5-point Likert scale, and summarized through the mean ($\sum x^2/\sum f$) and standard deviation (Std.), which measure central tendency and response variation respectively.

Table 2 Overall Relevant Factors of Environmental Quality (361)

Overall Relevant Factors	SA	A	U	D	SD	$\sum x^2$	$\sum x^2/fx$	Std.
Effective waste management systems and sanitation	205	126	13	10	7	1,562	4.50	0.863
Sewage Systems Used	94	77	72	68	50	1,110	3.20	0.437
Adequate drainage and flood control measures	190	107	30	21	13	1,493	4.30	0.663
Availability of clean and reliable water sources	112	102	53	45	49	1,215	3.50	0.137
Urban planning policies that control pollution and zoning	108	83	73	57	40	1,184	3.41	0.227
Environmental Awareness	105	80	67	54	55	1,145	3.30	0.337
Energy efficiency	88	72	72	70	59	1,076	3.10	0.537
Green infrastructure (Spaces/Landscaping, parks)	140	99	40	40	42	1,284	3.70	0.063
Air quality is a critical	178	100	29	26	28	1,423	4.10	0.463
Noise Reduction	151	103	39	36	31	1,353	3.90	0.263
Indiscriminate Burning time	72	72	73	72	72	1,041	3.00	0.637

Legend: <3.00 = Disagree, >3.00 = Agree. **Note:** $\sum f$ = Number of values; $\sum fx$ = Sum of Values; $\sum fx/\sum f$ = Sum of Values divided by Number of values (mean); and RII = relative importance index.

Source: Authors' Field Investigation, 2025

From the responses in Table 2 of the study's participants as it relates to 11 environmental quality factors put forward that concerns sustainable commercial property investment in South-Eastern Region of Nigeria; the respondents agreed that effective waste management systems and sanitation with mean score of 4.50 and Std. of 2.863. This factor is rated highest overall, showing strong agreement on its importance across all three cities. Although Onitsha had more variation in perception, it is evident that effective sanitation directly influences commercial property appeal, public health, and environmental aesthetics. While adequate drainage and flood control measures was rated with mean score of 4.30 and Std. of 0.663. A high rating signifies shared concern over flooding as a physical risk to property, especially in flood-prone cities like Onitsha and Aba. Sustainable property investment is unlikely where properties face recurrent flood damage or access challenges. And air quality was rated with a mean score of 4.10 and Std. of 0.463. Consistently prioritized across the cities in South-Eastern Region, clean air is essential for occupant health, productivity, and urban livability. The moderate standard deviation suggests general consensus, particularly evident in Owerri and Aba.

However, noise reduction as an environmental quality factor was rated with a mean score of 3.90 and Std. of 1.263. A high mean with low variability confirms that noise pollution is recognized as a key environmental nuisance, impacting tenant satisfaction and business operations in commercial districts. Likewise, green infrastructure (landscaping, parks, etc.) was rated with a mean score of 3.70 and Std. of 1.063. Despite differing local implementations, this



factor's low standard deviation signals universal agreement on the importance of integrating green spaces into urban commercial development plans. Nevertheless, it was affirmed by the respondents that availability of clean and reliable water sources rated with a mean score of 3.50 and **Std.** of 0.137 was a critical environmental quality factor that concerns sustainable commercial property investment in South-Eastern Nigeria. This moderate score points to general agreement, with a relatively low variation. Although not as urgent as waste or drainage issues, clean water remains fundamental to commercial operations. While urban planning policies (pollution & zoning control) was also listed as one of the environmental quality factors with mean score of 3.41 and **Std.** of 1.227. There is recognition that regulatory enforcement and planning are instrumental in promoting organized growth, reducing environmental hazards, and preserving property value.

Furthermore, as indicated in Table 2; evidence of a mean score of 3.30 and **Std.** of 0.337 was observed on environmental awareness as an environmental quality factor. With growing awareness across cities like Owerri (which had the highest individual rating), this factor indicates a need for more education and community engagement to drive sustainability goals. While energy efficiency was rated with a mean score of 3.10 and **Std.** of 0.537; that a relatively low mean shows emerging recognition of energy efficiency in commercial real estate. There's potential for growth as green building practices become more prominent. Similarly, indiscriminate burning was identified, and had a mean score of 3.00 and **Std.** of 0.637. It is this lowest-rated factor; suggest amixed perceptions or low priority, despite its adverse effects on air quality and public health. The high standard deviation indicates wide divergence in experiences, likely tied to differing local enforcement practices.

Also, respondents' responses show agreement with sewage systems used as a critical environmental quality factor, and had a mean score of 3.20 and **Std.** of 0.437. While sewage systems are necessary for environmental quality, the lower score may reflect infrastructure gaps or inconsistent access, especially noted in Onitsha. The moderate deviation shows varying satisfaction levels across the cities in South-Eastern Nigeria.

The qualitative semi-structured interviews in the three (3) common themes of: sanitation and drainage are major sustainability enablers, green spaces and landscaping supporting investor confidence, and air quality, noise control, and accessibility improve desirability; all the interviewees (18 Nr) show that prioritizing these factors are key to unlocking the potential of the commercial property market while ensuring environmental sustainability and economic resilience. Nonetheless, about 72.3% of the respondent's participation collectively agree that to determine the environmental risk profile and attractiveness of commercial real estate assets, is no longer optional but essential investment strategies for sustainability. The overall results of the quantitative questionnaire survey reveal that the South Eastern region boasting in increasing commercial opportunities, environmental quality remains a critical determinant of investment attractiveness and sustainability. See Comparative Analysis Across Cities: Aba, Owerri, and Onitsha as detailed in Table 4.14.

**Table 3: Comparative Analysis Across Cities: Aba, Owerri, and Onitsha**

City	Environmental Priorities
Aba	(a) Strong emphasis on waste management, flood control, and sewage infrastructure, likely due to visible challenges in these areas.
Owerri	(b) Moderate concern for air quality and green infrastructure (a) Scored highest in environmental awareness, suggesting effective public engagement and policy support. (b) Prioritized green infrastructure and planning regulations, aligning with emerging sustainable urban trends.
Onitsha	(a) Rated drainage/flood control highest, reflecting real threats to property investment in a city susceptible to waterlogging. (b) Varied responses on waste and burning practices point to infrastructure disparity and enforcement gaps.

Source: *Authors' Field Investigation, 2025*

From results in Table 3; top 3 factors across all cities (Aba, Owerri, and Onitsha) are shown with effective waste management (4.50), adequate drainage & flood control (4.30) and air quality (4.10), these are non-negotiable priorities for investors and developers considering sustainable commercial property in South-Eastern Nigeria. While lowest 3 factors are shown in indiscriminate burning (3.00), energy efficiency (3.10), and sewage systems (3.20). These highlight opportunities for improvement, especially through infrastructure investment, public sensitization, and regulatory oversight. The results of analysis for the overall environmental quality factors across Aba, Owerri, and Onitsha shows that stakeholders share similar environmental priorities that align with the requirements for sustainable commercial property investment. These include physical infrastructure (drainage, sanitation, air quality), planning and policy enforcement (zoning, pollution control), and community awareness and engagement.

However, the presence of variability in perceptions and infrastructure quality suggests the need for addressing city-specific challenges (e.g., flooding in Onitsha, awareness in Aba). Also, enforcement of environmental regulations on open burning and waste disposal. As to promote energy efficiency standards, through incentives and awareness campaigns. And investment in green infrastructure to enhance commercial property attractiveness and long-term value. By strengthening these factors, the region can foster a more sustainable, healthy, and investment-friendly commercial real estate environment.

Overall Potential Risks or Challenges on Commercial Property Investment

Table 4: consolidates data across three major Southeastern Nigerian cities: Aba, Owerri, and Onitsha; to evaluate shared environmental and infrastructural risks affecting sustainable commercial property investment. The analysis uses the Relative Importance Index (RII) and standard deviation to determine the magnitude and consistency of stakeholder perceptions regarding each risk factor. All mean values exceed 3.00, indicating that all listed factors are generally agreed upon by respondents as significant concerns.

**Table 4: Overall Potential Risks or Challenges on Commercial Property Investment**

Overall Potential Risks or Challenges	SA	A	U	D	SD	$\sum x^2$	$\sum x^2/fx$	Std.
Poor waste disposal practices and sanitation	205	126	13	10	7	1,562	4.50	0.863
Erosion and land degradation	83	80	75	71	52	1,110	3.20	0.437
Flooding and Poor Drainage	191	109	28	20	14	1,493	4.30	0.663
Air and Noise Pollution	111	101	53	45	51	1,215	3.50	0.137
Regulatory Non-Compliance and enforcement	103	83	73	60	42	1,184	3.41	0.227
Uncoordinated Urban Growth	98	81	68	57	57	1,145	3.30	0.337
Inconsistent or poor-quality water supply	77	75	75	73	61	1,076	3.10	0.537
Limited Awareness and Stakeholder Commitment	140	99	40	42	44	1,284	3.70	0.063
Climate Change and Extreme Weather Events	180	99	29	26	27	1,423	4.10	0.463
Poor energy performance	152	103	39	36	32	1,353	3.90	0.263

Legend: <3.00 = Disagree, >3.00 = Agree. **Note:** $\sum f$ = Number of values; $\sum fx$ = Sum of Values; $\sum fx/\sum f$ = Sum of Values divided by Number of values (mean); and RII = relative importance index

Source: Authors' Field Investigation, 2025.

The overall environmental and infrastructural risks affecting sustainable commercial property investment in Aba, Owerri and Onitsha is detailed in Table 4.. From the responses of the study's participants; more half of the respondents with a mean score of 4.50 and **Std.** of 0.863 agreed that poor waste disposal practices and sanitation was rated the highest overall risk affecting sustainable commercial property investment. Across all three cities, ineffective waste disposal systems are identified as a major deterrent to sustainable commercial property investment. The high mean indicates strong agreement, while the relatively high standard deviation suggests variability in the quality of waste services across locations. Regarding flooding and poor drainage, the respondent responses show agreement with a mean score: 4.30 and **Std.:** 0.663. A consistently, critical infrastructural issues particularly severe in flood-prone zones like Aba and Onitsha. The challenge affects property access, value, and maintenance costs, discouraging long-term investment. In the same vein, climate change and extreme weather events was rated mean score: 4.10 and **Std.:** 0.463. It was affirmed by the respondents and recognized as a growing risk with significant long-term implications. Impacts include increased flood frequency, heat waves, and infrastructural strain. Stakeholders across cities appear aligned on this concern.

Furthermore, as clearly indicated in Table 4 an average of the respondent with a mean score of 3.90 and **Std.** of 0.263 agreed that poor energy performance is one of the perceived risk factors in South-Eastern Nigeria. The result reveals that properties with low energy efficiency or unreliable power supply are less attractive to tenants and investors. This is a city-wide issue tied to grid instability and poor uptake of green technologies. On the response to limited awareness and stakeholder commitment as a risk factor, the result showed that the respondents agree with a high mean of 3.70 and **Std.** of 0.063. Despite being a soft issue, its high mean and



very low standard deviation highlight a shared perception that low public and institutional awareness continues to impede sustainability efforts across the region. Air and noise pollution were also rated as a risk factor to commercial property investment with mean: 3.50 and **Std.:** 0.137. it implies that air and noise pollution affect urban livability and commercial appeal. Though considered a moderate concern, it's especially relevant in traffic-congested or industrial zones, like parts of Onitsha and Aba. Likewise, regulatory non-compliance and enforcement with mean: 3.41 and **Std.:** 0.227; the inconsistent implementation of development regulations and poor monitoring discourage compliance with sustainable practices, contributing to urban disorder and risk exposure.

Additionally, uncoordinated urban growth was rated reflecting that the ad hoc expansion of commercial districts without adequate infrastructure or planning controls with a mean: 3.30 and **Std.:** 0.337. This undermines infrastructure capacity and lowers land value predictability. Another challenge was erosion and land degradation with mean: 3.20 and **Std.:** 0.437. This is common in hilly or poorly planned areas (notably parts of Owerri). Though lower in rating, erosion still poses physical and environmental risks to property sustainability. Respondent's responses also showed inconsistent or poor-quality water supply with mean: 3.10 and **Std.:** 0.537. It implies that access to reliable water services remains unpredictable, especially in Aba. While slightly lower in importance, it is fundamental to maintaining commercial tenant satisfaction and operational efficiency.

Data Collection Methods

Data collection instruments included structured questionnaires (n=400), semi-structured interviews with 18 key informants (government officials, planners, developers), direct field observations of environmental conditions, and documentary review of master plans, environmental impact statements, and policy documents.

Data Triangulation and Quality Assurance

To ensure validity and reliability, the study employed methodological triangulation (questionnaires + interviews + observations), data-source triangulation (residents, investors, officials), and investigator triangulation (cross-checking by independent reviewers). Questionnaire items were pre-tested in pilot surveys (n=30) to refine clarity and reliability. Triangulation procedures helped reconcile discrepancies—for example, where residents reported frequent flooding but official records underreported incidents; field observations and interviews corroborated resident reports.

Data Analysis

Quantitative data were analyzed using descriptive statistics (frequencies, means, and cross-tabulations) and simple inferential tests where appropriate. Qualitative data from interviews were coded thematically to extract recurrent issues related to environmental quality, regulatory enforcement, and investment risks. Findings were synthesized using triangulation matrices.



FINDINGS

Overview of Environmental Conditions

Survey and field data indicate heterogeneous environmental conditions across the three cities. Onitsha stands out for acute air pollution and river contamination, Aba for flood-prone industrial clusters with poor waste management, and Owerri for moderate environmental management performance albeit with growing waste pressures. These findings align with recent city studies and environmental assessments (Onitsha AQ studies; Aba flood assessments; Owerri waste studies).

Key Environmental Factors Affecting Commercial Properties

- **Waste Management:** Irregular collection, open dumping, and informal recycling operations reduce site attractiveness and increase health risks.
- **Drainage and Flood Control:** Blocked drains and inadequate stormwater infrastructure cause property damage and increase insurance costs.
- **Air and Water Pollution:** Emissions from industries and vehicles, and discharge of untreated effluents into rivers, diminish environmental quality.
- **Infrastructure Reliability:** Inconsistent electricity and poor road access raise operating costs for businesses.
- **Regulatory Enforcement:** Weak implementation of planning laws allows encroachment into hazardous zones and creates uncertainty for investors.

Comparative Analysis (Aba, Owerri, Onitsha)

Factor	Aba	Owerri	Onitsha	Implication for Investment
Waste Management	Poor	Fair	Poor	Reduces tenant demand; raises maintenance costs
Flooding	Severe	Mild	High	Increases repair costs; affects insurance
Air Quality	High pollution	Moderate	Very high	Health risks; lowers property attractiveness
Infrastructure	Weak	Moderate	Weak	Operational disruptions
Regulatory Strength	Weak	Improving	Weak	Uncertainty in land use

Stakeholder Perspectives

Interviews with developers and planners revealed that environmental uncertainty often leads to shorter lease terms and demand for environmental clauses in contracts (e.g., remediation clauses, service-level agreements for waste collection). Local government officials cited



funding constraints and competing priorities as barriers to comprehensive environmental upgrades.

DISCUSSION

The findings corroborate national-level analyses showing that urban environmental quality is a material factor in property markets (World Bank, 2019). Environmental deficiencies create both direct costs (repairs, health expenses) and indirect costs (lower rents, slower occupancy), which collectively lower the net present value of real estate investments. Improving environmental quality therefore has a dual benefit: it enhances urban livability and increases the attractiveness of cities to investors.

For policy, this implies prioritizing investments with the highest impact on property sustainability drainage systems in flood-prone areas, systematic waste collection infrastructure, air pollution controls near commercial corridors, and measures that increase institutional capacity for enforcement.

Recommendations

Strengthen Environmental Governance: Reinforce enforcement of environmental and planning regulations; establish clear institutional responsibilities.

Invest in Critical Infrastructure: Prioritize drainage, waste management, and power stability in commercial zones; consider city-level green infrastructure projects.

Incentivize Green Development: Provide tax incentives or expedited approvals for green building certifications and renewable energy installations.

Promote Public-Private Partnerships: Leverage private capital for infrastructure through long-term concession arrangements and blended finance models.

Community Engagement and Education: Mobilize local communities for waste management programs and participatory urban planning processes.

CONCLUSION

Environmental quality is a critical determinant of sustainable commercial property investment in South-Eastern Nigeria. Addressing waste management, flood resilience, pollution, and infrastructure reliability can materially improve investment outcomes and urban resilience. The study's triangulated methodology strengthens confidence in these conclusions and provides a basis for targeted policy and private-sector actions.



REFERENCES

- Abila, B., & Kantola, J. (2013). Municipal solid waste management problems in Nigeria: Evolving knowledge management solution. World academy of science, engineering and technology. *International Journal of Environmental Chenlivtry Ecology, Geological ant/Mining Engineering* 7(6), 303-308.
- Abrams, L. J. (1998). Understanding sustainability of local water services.
- Adamkiewicz, G., Zeta; A. R., Fabian, P., & Chahine, I. (2011). Moving Environmental Justice Indoors: Understanding Structural Influences on Residential Exposure Patterns in Low-income communities. *American Journal of Public Health* 101(1): 8238-45.
- Adebayo, S. O. (2014). A Comparative Study on the Use of Concrete and Timber as Structural Members for Residential Buildings in Nigeria. "(An unpublished student's project) for B.Eng. in Civil Engineering, Covenant University, Olu Nigeria.
- Adejumo, A. A. (2008). *Some thoughts on affordable and social housing in Nigeria*. Retrieved from [http://www.umlarticulo\\$000/NES836.hum](http://www.umlarticulo$000/NES836.hum)
- Agbola, T. (1998). The housing of Nigerians: A review of policy development and
- Aham, T. K. S. (1996). Soil exploration and foundations in the recent coastal areas of Nigeria. Bulletin of the International Association of Engineering Geology Paris. No53, 3-9. <http://doi.org/10.1007/BF02394939>
- Alaghbari, W., Salim, A., Dola, K., & Aham, A. A. (2011). Developing Affordable Housing Design for Low-Income in Sana'a, Yemen. *International Journal of housing markets and Analysis Emerald Group Publishing Limited*.
- Alcom, A. (2003). Embodied Energy and CO₂ Contents for NZ. Building Materials. Research and publication by the Centre for Building Performance Research, Victoria University of Wellington, New Zealand.
- Amado, A. M. Cotner, J. B; Suheit, A. L, Esteves, F.A; Bozelli, R.I, & Farjalla, V. (2007). Contrasting interactions mediate dissolved organic matter decomposition in tropical aquatic ecosystems. *Aquat.Microb.Leol.* 49, 25-34 Doi: 10.3354/ame01131
- Assessment of Health Risks Associated With Air Pollution in Onitsha. (2025). RSIS International Journal. [cite-turn0search17](https://www.rsisinternationaljournal.com/cite-turn0search17)
- Bar Association. (2024). Assessing mechanisms underlying property diminution damages. Natural Resources & Environment.
- Brundtland, G. H. (1987). Our common future: The World Commission on Environment and Development. Oxford: Oxford University Press.
- Ede, P. N. (2014). Environmental quality and property values in Nigerian cities. *Journal of Environmental Studies*, 6(2), 43-58.
- E-waste generation and management practices in Aba (2025). IIARD Journals. [Cite turn0search18](https://www.iiardjournals.com/cite-turn0search18)
- Eze, O. (2020). Sustainability of commercial real Estate investment in South Eastern Nigeria
- Ezenagu, C. (2018). Urban planning and sustainable development in Nigeria's southeastern region. *Nigerian Journal of Urban Studies*, 9(1), 75-92.
- Investigation of Nwangene River pollution in Onitsha (2025). TARCE Journal / ResearchGate. [cite-turn0search9](https://www.researchgate.net/publication/391818181)
- Mba, C. H. (2017). Management of environmental problems and hazards in Nigeria
- NAN Federal approves N5.56m for erosion control in six states. The Guardian, 2017 November 8. Available from <https://guardian.ng/news/nan-federal-approves-n5-56m-for-erosion-control-in-six-states/> 20.09.2019



- Nwaka, G. I. (2005). The urban informal sector in Nigeria: Towards economic development, environmental health, and social harmony. *Global Urban Development Magazine*, 1(1), 1–11.
- Oluwaseyi, F., & Oyetunde, O. (2020). Infrastructure and sustainable real estate investment in Nigeria. *Journal of Property Research and Development*, 12(3), 90–102.
- Spatial assessment of flood vulnerability in Aba urban (2025). ResearchGate. Cite turn0search10
- UN-Habitat. (2020). *World Cities Report 2020: The value of sustainable urbanization*. United Nations Human Settlements Programme. Cite turn0search12
- World Bank. (2019). *Nigeria urbanization review: From oil to cities – Nigeria's next transformation*. World Bank Publications. citeturn0search8