Impact of Sustainable Property Development on Residential Property Value

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Abstract
Traditional patterns of urban growth have to be rethought in light of growing awareness of social injustice, environmental degradation, and climate change. The study aim to examine the impact of sustainable property development on residential property values in Ibadan, Oyo State; examine the various sustainable property developments and the trend of property value between 2015 – 2025. Data were collected through closed-ended structured questionnaires administered to 113 estate surveying and valuation firms, with the retrieval of 75 valid responses and also, 68 questionnaires were administered to real estate development firms, with the retrieval of 42 responses. A simple random sampling technique was used, and the analysis employed frequency tables, trend analysis and multiple regression. The multiple regression results show modest correlations: sustainable features explain ~28% – 46% of rental/property value variation across flat types, with adjusted R^2 considerably lower after accounting for predictors. Only a few features were significant such as sustainable landscaping (negative) and resilient design (positive) for two-bedroom flats, and waste reduction (negative), green landscaping (positive), certifications, energy systems (positive), and some negatives like smart grid integration in three-bedroom flats. Financial incentives should be introduced to mitigate the high initial costs often associated with sustainable development. In conclusion, the findings highlight the urgent need for an enthusiastic policy structure, financial incentives, capacity building, and public awareness to mainstream sustainable practices in property development.
Keywords: Sustainability, Property values, Property development, , Stakeholders, Ibadan

1. Introduction

Traditional patterns of urban growth have to be rethought in light of growing awareness of social injustice, environmental degradation, and climate change. In this regard, sustainable property development has become a popular strategy that aims to strike a balance between social responsibility, environmental integrity, and economic viability throughout a property's life cycle. As global urbanization accelerates, particularly in developing regions, the pressure on housing supply continues to rise. This rapid urban growth is frequently accompanied by challenges such as urban sprawl, poor infrastructure, and unsustainable building practices, all of which undermine efforts to achieve livable and resilient cities (Nhamo et al., 2021). In recent years, there has been growing empirical evidence suggesting that sustainable features in residential properties can significantly influence their market value. Gabe (2023) study conducted in US developed markets have shown that homes with green certifications such as LEED (Leadership in Energy and Environmental Design), BREEAM (Building Research Establishment Environmental Assessment Method), or Energy Star tend to attract price premiums and rent advantages compared to non-certified counterparts.

Recent empirical studies suggest that the impact of sustainability and infrastructure on property values continues to grow in magnitude, although not necessarily in a straightforward or systematic fashion. For example, Ruggeri et al. (2024) show that properties with sustainable considerations in the UAE are associated with a small but positive property value premium as a result of increasing awareness of the environment coupled with operational cost savings in spite of the lack of qualified sustainable infrastructure capacity and resources. Reflecting a slightly differing opinion in support of the argument that infrastructure can positively impact property values, Forouhar and Van Lierop (2021) contend that in the Netherlands, the effect of property proximity to transportation infrastructure in the form of transit-oriented development infrastructure can impact property values in a geospatial context that is not necessarily favorable to property values close to train stations yet greatly enhances property prices when optimized.

2. Statement of the Problem

Sustainable property development (SPD) has gained global attention as a strategic response to climate change, rapid urbanization, and the growing demand for environmentally responsible real estate. However, the implementation of SPD continues to face significant challenges, particularly due to uneven levels of engagement and awareness among key stakeholders. Bamgbage et al. (2022) explained that the adoption of sustainable property development is influenced by a complex set of factors, ranging from regulatory support and economic incentives to technological accessibility and market readiness. However, the interplay of these factors is often poorly understood, particularly in emerging economies where institutional capacity and policy enforcement may be limited. Although tax rebates, building code reforms, and access to sustainable construction materials can stimulate interest in green development, their effectiveness depends heavily on local implementation dynamics and stakeholder perceptions. Lastly, while existing studies in developed economies have established a positive relationship between sustainable property development and residential property values attributing this to factors such as reduced operational costs, increased buyer demand, and compliance with environmental regulations empirical evidence from less mature markets remains sparse.

On the demand side, recent empirical studies carried out on the willingness-to-pay analysis for sustainable residential elements have shown that Nigerian consumers, particularly the mid-tier section, are willing to pay a slight additional cost for sustainable residential properties (Takuh et al. 2024). However, the aforementioned studies are largely based on non-actualized valuation practices. This automatically gives rise to significant empirical gaps between the willingness-to-pay components and the actualized market prices. This further makes it difficult to apply sustainable property developments as an effective criterion for valuing residential properties.

Adopting a more systems-based perspective, Dahlblom (2020) examines the influence of building services systems, specifically material selection and energy consumption, in promoting sustainability within Swedish residential developments. Employing a combination of literature reviews, case studies, life-cycle inventories, and thermal energy simulations, the study demonstrates that material choices, energy use, and indoor environmental quality have significant effects on both environmental performance and operational outcomes. Particularly notable is the finding that a limited range of materials accounts for the majority of total building mass and embodied energy, emphasizing the importance of careful material selection. These sustainability-related decisions, therefore, carry wide-ranging implications not only for environmental outcomes but also for the economic viability and desirability of residential properties. Homes designed for energy efficiency and constructed with durable materials typically offer lower maintenance costs and greater comfort, factors that directly enhance market value and buyer interest.

Jiao (2023) conducted a quantitative investigation into the effects of green property features on residential housing prices in Austin, Texas. Drawing from an extensive dataset of 21,292 real estate listings, the study employs multiple regression analyses to highlight the financial impact of specific sustainability enhancements from those of formal green certifications. Key results indicate that homes equipped with energy-efficient upgrades command price increases of up to 11.9% while water-saving fixtures and improved insulation add approximately 11.7 % in value. Interestingly, the study finds that certification alone produces a comparatively modest effect, highlighting the importance of actual, performance-based features over mere labeling. As a result, the authors position tangible, property-level green enhancements as both environmentally responsible and economically advantageous, with clear implications for valuation practices and residential development planning.

Institutional and regulatory factors also indicate a clear gap in existing literature. For sustainable construction in Nigeria, there is a lack of compliance with policies, a lack of incentive schemes, and a lack of formal green-building certification schemes (Oyalowo et al. 2018). However, existing literature on sustainable construction does not empirically examine the influence of these institutional issues on residential property values, associated with sustainable construction. Thus, an understanding of sustainability is no longer a technical issue but also an institutional and economic phenomenon.

Adding another layer to the technical dimension of sustainability, Altuma and Ghasemlounia (2021) examined how the use of sustainable building materials contributes to both structural performance and perceived market value. They conducted their study in two distinct stages, enabling them to first map the context and then evaluate outcomes with greater precision. The initial phase identified common challenges to material adoption, including cost, supply limitations, and awareness gaps. The second phase evaluated the long-term benefits of sustainable materials, which included increased durability, superior energy efficiency, and reduced maintenance requirements. These features were shown to significantly shape buyer perceptions, as many purchasers equate high-quality materials with superior construction standards and, by extension, better value. The study reaffirmed that material choices, though often underemphasized in valuation models, play a critical role in shaping long-term property desirability and marketability.

3. Research Methodology

A survey research design was used in this research, which was very ideal for analyzing attributes, behaviors, and perceptions of a specific population by collecting data and analyzing it from a representative sample (Raden et al. 2023). This was done using a questionnaire, which was a central instrument for conducting this research, ideal for collecting quantitative information from estate surveying and valuation firms, as well as real estate development firms, within Ibadan City. The questionnaire was centered on sustainable estate developments, as well as their effect on residential estate values, with mostly close-ended questions arranged on a likert scale for ease of answer, standardization, and statistical analysis.

The target population consisted of one hundred thirteen (113) registered firms of Estate Surveying and Valuation and sixty-eight (68) real estate development firms in Ibadan, with firms traced from up-to-date professional and financial records. The study area was limited to Oluyole estate (Ibadan Southwest Local government) and Ikolaba (Ibadan North Local government area). Simple random sampling was adopted to choose respondents for the research, with every firm having an equal chance of being sampled, thus reducing bias in sampling. Data for the research was analyzed using both descriptive and inferential statistical methods. Descriptive statistical methods like frequency distribution tables and trend analysis were utilized to analyze characteristics and methods of sustainable development of respondents, while multiple regression was used for inferential analysis to determine how a set of several variables, including aspects of sustainable property development like efficiency of energy, conservation of water, adoption of sustainable materials, and environmental qualities of surrounding neighborhood areas, influence a set of dependent variables like two and three bedroom flat rents.

4. Results and Discussion of Findings

Various sustainable property development practices in Ibadan were assessed using frequency distribution tables and trend analysis to examine rental value patterns of residential properties with and without sustainable features. The impact of sustainable property development on residential property values was further analyzed using multiple regression analysis, and the results are presented below.

4.1 Various Sustainable Property Developments

Respondents (estate surveying and valuation firms and real estate development firms) were requested to identify the sustainable features present in their various area in order to determine the type of sustainable property development and to actualize the various sustainable property development present in the study area. The result is shown in Tables 1 and 2

Table 1: Various Sustainable Property Developments (Estate Surveying and Valuation Firms)

Sustainable Features	Classification	Frequency	Percent (%)
Energy Efficiency	Absent	0	0.00
	Present	75	100.0
	Total	**75**	**100.0**
Renewable Energy	Absent	28	37.3
	Present	47	62.7
	Total	**75**	**100.0**
Water Conservation	Absent	22	29.3
	Present	53	70.7

	Total	**75**	**100.0**
Sustainable Materials	Absent	9	12.0
	Present	66	88.0
	Total	**75**	**100.0**
Waste Reduction and Management	Absent	6	8.0
	Present	69	92.0
	Total	**75**	**100.0**
Green Building Certifications	Absent	17	22.7
	Present	58	77.3
	Total	**75**	**100.0**
Indoor Environmental Quality	Absent	6	8.0
	Present	69	92.0
	Total	**75**	**100.0**
Climate Resilience	Absent	19	25.3
	Present	56	74.7
	Total	**75**	**100.0**
Green Roof	Absent	8	10.7
	Present	67	89.3
	Total	**75**	**100.0**
Sustainable Landscaping	Absent	5	6.7
	Present	70	93.3
	Total	**75**	**100.0**
Smart Building Technology	Absent	5	6.7
	Present	70	93.3
	Total	**75**	**100.0**
Lower energy mechanical	Absent	50	66.7
	Present	25	33.3
	Total	**75**	**100.0**
Green Landscaping	Absent	6	8.0
	Present	69	92.0
	Total	**75**	**100.0**
Energy Management	Absent	9	12.0
	Present	66	88.0
	Total	**75**	**100.0**
Carbon offsetting	Absent	1	1.3
	Present	74	98.7
	Total	**75**	**100.0**
Carbon Neutral or Low-Carbon Design	Absent	26	34.7
	Present	49	65.3
	Total	**75**	**100.0**
	Absent	7	9.3
	Present	68	90.7
Smart Grid Integration	**Total**	**75**	**100.0**

	Absent	29	38.7
	Present	46	61.3
Waste-to-Energy Technologies	**Total**	**75**	**100.0**
Ecological Restoration and Biodiversity Conservation	Absent	21	28.0
	Present	54	72.0
	Total	**75**	**100.0**
Resilient Housing Design	Absent	19	25.3
	Present	56	74.7
	Total	**75**	**100.0**

Source: Author's Fieldwork, 2025.

A particularly noteworthy finding is that all the surveyed developments (100%) reported the incorporation of energy-efficient features. Akande et al. (2023) observed that among Nigerian developers, energy efficiency is often prioritized due to its alignment with both market demand and regulatory frameworks, particularly in urban settings where energy supply remains unreliable and costly. In contrast, renewable energy technologies were present in only 62.7% of the developments, with 37.3% reporting their absence. Water conservation strategies, including the use of low-flow plumbing fixtures, rainwater harvesting, and water reuse systems, were present in 70.7% of the properties. Aivazidou et al. (2021) revealed the fact that nearly 30% of developments still do not incorporate water-saving features suggests room for policy enforcement and public awareness campaigns.

A strong commitment was also observed in the use of sustainable materials (88%) and implementation of waste reduction and management systems (92%). These high levels of adoption indicate a maturing awareness of construction lifecycle impacts. Green building certifications such as the International Finance Corporation's EDGE, LEED, or GBCN's Green Star were present in 77.3% of the surveyed developments. Indoor Environmental Quality (IEQ), which includes adequate ventilation, natural lighting, noise control, and the use of non-toxic materials, was reported in 92% of developments. Similarly, features designed for climate resilience such as elevated foundations, storm water drainage, and heat-resilient materials were found in 74.7% of developments. Green roofs were present in 89.3% of developments, and sustainable landscaping in 93.3%, with green landscaping slightly lower at 92%.

Smart building technologies such as automated lighting, energy management systems, and integrated security were adopted in 93.3% of developments, indicating that digitization is increasingly becoming a standard in residential property development. Smart grid integration was also present in 90.7% of projects, suggesting a readiness for energy optimization and demand-side management, which are vital for sustainable urban development.

Table 2: Various Sustainable Property Development (Real Estate Development Firms)

Sustainable Features	Classification	Frequency	Percent (%)
	Absent	1	2.4
Energy Efficiency	Present	42	97.6
	Total	**42**	**100.0**

Renewable Energy	Absent	12	28.6
	Present	30	71.4
	Total	**42**	**100.0**
Water Conservation	Absent	11	26.2
	Present	31	73.8
	Total	**42**	**100.0**
Sustainable Materials	Absent	10	23.8
	Present	32	76.2
	Total	**42**	**100.0**
Waste Reduction and Management	Absent	7	16.7
	Present	35	83.3
	Total	**42**	**100.0**
Green Building Certifications	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Indoor Environmental Quality	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Climate Resilience	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Green Roof	Absent	7	16.7
	Present	35	83.3
	Total	**42**	**100.0**
Sustainable Landscaping	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Smart Building Technology	Absent	11	26.2
	Present	31	73.8
	Total	**42**	**100.0**
Lower energy mechanical	Absent	10	23.8
	Present	32	76.2
	Total	**42**	**100.0**
Green Landscaping	Absent	8	19.0
	Present	34	81.0
	Total	**42**	**100.0**
Energy Management	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Carbon offsetting	Absent	11	26.2
	Present	31	73.8
	Total	**42**	**100.0**
Carbon Neutral or Low-Carbon Design	Absent	10	23.8

	Present	32	76.2
	Total	**42**	**100.0**
Smart Grid Integration	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Waste-to-Energy Technologies	Absent	10	23.8
	Present	32	76.2
	Total	**42**	**100.0**
Ecological Restoration and Biodiversity Conservation	Absent	9	21.4
	Present	33	78.6
	Total	**42**	**100.0**
Resilient Housing Design	Absent	17	40.5
	Present	25	59.5
	Total	**42**	**100.0**

Source: Author's Fieldwork, 2025.

Energy efficiency appears to be a top priority, with 97.6% of the firms reporting its presence in their developments. Renewable energy integration was reported by 71.4% of respondents, indicating a relatively strong but not universal adoption. The absence of such systems in nearly 29% of developments suggests that while the awareness of renewable energy benefits is growing, full-scale implementation remains hampered by high installation costs, lack of technical capacity, or insufficient policy incentives issues previously discussed by (Obuseh et al. 2025). Water conservation technologies were present in 73.8% of developments, which, although commendable, leaves a significant 26.2% that do not utilize water-saving fixtures or rainwater harvesting systems. Sustainable material usage was recorded in 76.2% of developments. The absence in nearly a quarter of projects (23.8%) suggests that the selection of environmentally responsible materials is still not standard practice across the board.

In terms of waste reduction and management, 83.3% of the projects incorporate such systems, which is an encouraging sign of progress toward minimizing environmental impacts from construction and occupancy phases. Similarly, green building certifications, which help verify and benchmark the sustainability of a building, were present in 78.6% of cases. However, the 21.4% non-certified projects may reflect reluctance to bear the costs of third-party evaluations or a lack of awareness of their benefits. Indoor environmental quality (IEQ), climate resilience features, and sustainable landscaping were each present in 78.6% of developments. These findings align with the findings of Li et al. (2022) who emphasize the growing importance of climate-responsive architecture in urban Nigeria due to the frequency of extreme weather events such as flooding and heatwaves.

Green roofs (83.3%) and green landscaping (81%) were widely adopted, highlighting the popularity of biophilic and climate-sensitive design interventions that improve microclimate and biodiversity. Smart building technologies were also found in 73.8% of the projects while smart grid integration was reported in 78.6%. On the other hand, more advanced features such as waste-to-energy technologies (76.2%) and carbon offsetting strategies (73.8%) are less uniformly adopted. Similarly, carbon-neutral or low-carbon design was present in 76.2% of developments. Energy management systems were implemented in 78.6% of developments. However, the presence of lower energy mechanical systems, such as energy-saving HVAC or elevators, was slightly lower at 76.2%, possibly due to higher upfront costs or lack of local expertise. A notable observation is that resilient housing design, which incorporates adaptive features for long-term durability against climate change, was present in only 59.5% of developments, representing the lowest prevalence among all sustainable features. Lastly, ecological restoration and biodiversity conservation practices were integrated in 78.6% of developments.

4.2 Trend in Rental Values of Residential Properties With and Without Sustainable Development

The study assessed trends in residential property values in Ibadan, specifically in Ibadan Southwest and Ibadan North, with the aim of evaluating the influence of sustainable development features on rental values. Estate Surveying and Valuation firms provided historical rental value data from 2015 to 2025, distinguishing between properties with sustainable development features and those that do not as shown in Table 3 and 4

Table 3: Ibadan Southwest and Ibadan North Average Rental Value Index for Residential Properties without Sustainable Development

IBADAN SOUTHWEST (OLUYOLE ESTATE) (Without Sustainable Development) (AVERAGE RENTAL VALUE INDEX)			IBADAN NORTH (IKOLABA ESTATE) (Without Sustainable Development) AVERAGE RENTAL VALUE INDEX	
Year	Two bedroom (₦)	Three bedroom (₦)	Two bedroom (₦)	Three bedroom (₦)
2015	188,000	253,000	250,000	350,000
2016	206,000	284,000	300,000	423,190
2017	253,000	352,000	350,000	450,000
2018	290,500	392,000	420,000	521,340
2019	352,000	560,000	450,000	612,000
2020	392,000	740,000	525,000	796,000
2021	560,000	870,000	800,000	1,200,000
2022	740,000	680,000	1,200,000	1,500,000
2023	870,000	1,200,000	1,325,900	1,650,000
2024	1,020,000	1,400,000	1,500,000	1,800,000
2025	1,220,000	2,200,000	1,800,000	2,100,000

Source: Author’s Fieldwork, 2025.

With regard to residential properties without sustainable development in Oluyole estate, two-bedroom apartments increased from □188,000 in 2015 to □1,220,000 in 2025 a 549% increase over ten years. Three-bedroom apartments rose from □253,000 to □2,200,000, showing a 769% increase. In Ikolaba estate, two-bedroom rents increased from □250,000 in 2015 to □1,800,000 in 2025 (620% increase), while three-bedroom apartments appreciated from □350,000 to □2,100,000 (500% increase).

Table 4: Ibadan Southwest and Ibadan North Average Rental Value Index for Residential Properties with Sustainable Development

IBADAN SOUTHWEST (OLUYOLE ESTATE) (Without Sustainable Development) (AVERAGE RENTAL VALUE INDEX)			IBADAN NORTH (IKOLABA ESTATE) (Without Sustainable Development) AVERAGE RENTAL VALUE INDEX	
Year	Two bedroom (₦)	Three bedroom (₦)	Two bedroom (₦)	Three bedroom (₦)
2015	285,186	321,560	293,600	421,382
2016	312,050	435,700	345,890	450,135
2017	352,985	522,123	400,400	535,600
2018	432,190	634,230	530,000	721,000
2019	590,535	783,175	723,460	849,120
2020	625,260	1,230,485	850,700	945,000
2021	725,000	1,678,350	1,130,500	1,325,100
2022	834,000	2,123,455	1,432,100	1,789,000
2023	1,200,100	2,650,120	1,650,000	1,900,000
2024	1,567,315	3,340,235	2,120,000	2,450,000
2025	1,841,000	3,845,100	2,853,000	3,145,000

Source: Author's Fieldwork, 2025.

With regard to residential properties with sustainable development in Oluyole estate experienced an over 547% increase in average rental values for two-bedroom apartments, rising from □285,186 in 2015 to □1,841,000 in 2025. Likewise, the three-bedroom apartments witnessed an even more dramatic rise from □321,560 to □3,845,100, representing a 1,096% increase over the same period. Similarly, Ikolaba estate shows a parallel trend in rental appreciation, with two-bedroom rents increasing from □293,600 in 2015 to □2,853,000 in 2025, an 872% increase, while three-bedroom units rose from □421,382 to □3,145,000 a 646% increase.

4.3 Impact of Sustainable Property Development on Residential Property Values

The impact of sustainable property development on residential property values was analyzed using a multiple regression model. The dependent variables employed for the purpose of this study are the rental values of two-bedroom and three-bedroom flats, respectively. The independent variables represent various dimensions of sustainable property development that may influence residential property values. Table 5 discussed the coffiecient impact of

Table 5: Coefficients on Sustainable Property Development on Residential Property Values for Two Bedroom Flat in Ibadan Southwest (Oluyole Estate)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	412296.622	251217.887		1.641	.106
	Renewable Energy	-81071.132	48480.029	-.252	-1.672	.100
	Water Conservation	60710.703	52153.341	.178	1.164	.249
	Sustainable Materials	-710.381	74551.339	-.001	-.010	.992
	Waste Reduction and Management	-26493.431	72228.350	-.046	-.367	.715
	Green Building Certifications	90101.264	62502.477	.243	1.442	.155
	Indoor Environmental Quality	63726.644	46976.033	.189	1.357	.180
	Climate Resilience	-28078.441	49674.144	-.079	-.565	.574
	Green Roof	47161.008	71605.471	.094	.659	.513
	Sustainable Landscaping	-211997.481	75435.755	-.340	-2.810	.007**
	Smart Building Technology	-61043.358	82335.200	-.098	-.741	.462
	Lower energy mechanical	3183.427	49470.666	.010	.064	.949
	Green landscaping	89713.149	70587.745	.157	1.271	.209
	Energy management	-85295.603	67869.495	-.178	-1.257	.214
	Carbon offsetting	-39729.805	181722.445	-.029	-.219	.828
	Carbon Neutral or Low-Carbon Design	-4817.359	47936.730	-.015	-.100	.920
	Smart Grid Integration	3991.585	71918.255	.007	.056	.956
	Waste-to-Energy Technologies	-4366.448	45479.777	-.014	-.096	.924
	Ecological Restoration and Biodiversity Conservation	10077.438	46491.847	.029	.217	.829
	Resilient Housing Design	117481.993	55600.285	.346	2.113	.039**

sustainable property development on residential property values. Among the predictors, sustainable landscaping and resilient housing design were found to be statistically significant. Sustainable landscaping has a negative coefficient of -□211,997.48 (t = -2.810, p = 0.007), indicating a significant negative impact on rental value, possibly due to increased maintenance cost perceptions. Other variables, such as renewable energy (B = -□81,071.13, p = 0.100), green building certifications (B = □90,101.26, p = 0.155), and indoor environmental quality (B = □63,726.64, p = 0.180), showed directional influence but were not statistically significant. Notably, green landscaping (B = □89,713.15, p = 0.209) and energy management (B = -□85,295.60, p = 0.214). Waste reduction and management demonstrate a significant negative impact on property value, with a coefficient of -□1,037,164.63 (p = 0.001). Secondly, green landscaping shows a statistically significant positive effect on property value, with a coefficient of □655,193.51 (p = 0.032). Similarly, renewable energy (□168,617.50), sustainable materials (□99,394.26), carbon-neutral designs (□230,345.50), and ecological restoration (□64,004.29) all show positive.

Source: Author's Fieldwork, 2025.

Table 6 discusses the coefficient impact of sustainable property development factors on the market values of three-bedroom flats in Ibadan Southwest (Oluyole Estate). Among the predictors, waste reduction and management and green landscaping were found to be statistically significant. Waste reduction and management recorded a negative coefficient of –□1,037,164.63 (p = 0.001), indicating a significant adverse effect on residential property values, which may be attributed to buyers' perceptions of higher installation, maintenance, or operational costs associated with such systems. In contrast, green landscaping exhibited a positive and statistically significant coefficient of □655,193.51 (p = 0.032), suggesting that well-designed and eco-friendly landscaping enhances aesthetic appeal and environmental comfort, thereby increasing property value. Other sustainability variables showed directional influences but were not statistically significant. These include smart building technology (□487,048.48), indoor environmental quality (□267,556.72), and green building certifications (□294,252.05), indicating that while these features may contribute positively to property values, their effects are not yet strongly recognized in the local market. Similarly, renewable energy (□168,617.50), sustainable materials (□99,394.26), carbon-neutral designs (□230,345.50), and ecological restoration (□64,004.29) all recorded positive coefficients but lacked statistical significance, reflecting emerging but still limited buyer awareness and valuation of these sustainability attributes.

Conversely, some variables such as smart grid integration (–□399,688.96), carbon offsetting (–□514,404.59), and energy management (–□124,648.84) recorded negative coefficients and were not statistically significant, suggesting that these advanced sustainability features may be perceived as costly, unfamiliar, or misaligned with prevailing consumer priorities in the study area.

Table 6: Coefficients on Sustainable Property Development on Residential Property Values for Three Bedroom Flat in Ibadan Southwest (Oluyole Estate)

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	296568.889	1061539.257		.279	.781
Renewable Energy	168617.500	204855.849	.112	.823	.414
Water Conservation	-33562.549	220377.695	-.021	-.152	.880
Sustainable Materials	99394.262	315022.046	.045	.316	.754
Waste Reduction and Management	-1037164.626	305206.092	-.388	-3.398	.001***
Green Building Certifications	294252.053	264108.715	.170	1.114	.270
Indoor Environmental Quality	267556.720	198500.608	.170	1.348	.183
Climate Resilience	-236864.926	209901.668	-.142	-1.128	.264
Green Roof	-118162.147	302574.071	-.050	-.391	.698
Sustainable Landscaping	-59685.850	318759.208	-.021	-.187	.852

Smart Building Technology	487048.479	347913.310	.168	1.400	.167
Lower energy mechanical	-299869.148	209041.859	-.195	-1.434	.157
Green landscaping	655193.506	298273.596	.245	2.197	.032**
Energy management	-124648.843	286787.435	-.056	-.435	.666
Carbon offsetting	514404.594	767881.267	.081	.670	.506
Carbon Neutral or Low-Carbon Design	230345.501	202560.103	.151	1.137	.260
Smart Grid Integration	-399688.958	303895.759	-.160	-1.315	.194
Waste-to-Energy Technologies	-222829.916	192178.072	-.150	-1.159	.251
Ecological Restoration and Biodiversity Conservation	64004.285	196454.643	.040	.326	.746
Resilient Housing Design	181107.566	234943.004	.114	.771	.444

Source: Author's Fieldwork, 2025.

Table 7 discussed the coefficients on sustainable property development on residential property values for two- bedroom flat. Waste reduction and management shows a significant negative impact on property values with a coefficient of -□156,116.64, a t-value of -2.152, and a p-value of 0.036, indicating statistical significance at the 5% level. Green landscaping exhibits a strong positive effect with a coefficient of □203,015.04, a t-value of 2.665, and a p-value of 0.010, also significant at the 5% level. Energy management has a coefficient of □149,601.30 with a significance (p = 0.072), indicating it may have a modest influence, though not at conventional significance levels. Other variables such as renewable energy, sustainable materials, indoor environmental quality, and green building certifications have positive coefficients, but their t-values and p-values suggest that their influence is not statistically significant. Negative yet insignificant impacts are observed for variables like resilient housing design, ecological restoration, and climate resilience.

Table 7: Coefficients on Sustainable Property Development on Residential Property Values for Two Bedroom Flat in Ibadan North (Ikolaba Estate)

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	32012.442	271438.761		.118	.907
Renewable Energy	44069.079	47921.092	.132	.920	.362
Water Conservation	24533.895	53193.307	.069	.461	.646
Sustainable Materials	48780.273	104493.788	.068	.467	.642
Waste Reduction and Management	-156116.637	72558.546	-.263	-2.152	.036**
Green Building Certifications	114390.060	121863.248	.139	.939	.352
Indoor Environmental Quality	28726.631	56345.205	.064	.510	.612
Climate Resilience	-55957.831	51929.588	-.151	-1.078	.286

Green Roof	-10964.031	70000.697	-.021	-.157	.876
Sustainable Landscaping	-45877.814	82055.691	-.071	-.559	.578
Smart Building Technology	-42920.646	86460.390	-.067	-.496	.622
Lower energy mechanical	-62767.207	50488.819	-.191	-1.243	.219
Green landscaping	203015.038	76164.169	.342	2.665	.010**
Energy management	149601.302	81546.688	.232	1.835	.072*
Carbon offsetting	208971.856	176292.285	.149	1.185	.241
Carbon Neutral or Low-Carbon Design	13609.048	16181.705	.105	.841	.404
Smart Grid Integration	167118.733	99006.893	.204	1.688	.097*
Waste-to-Energy Technologies	5476.052	49432.393	.016	.111	.912
Ecological Restoration and Biodiversity Conservation	-54205.433	56041.102	-.141	-.967	.338
Resilient Housing Design	-34205.954	52561.695	-.097	-.651	.518

Source: Author's Fieldwork, 2025.

Table 8 discussed the coefficients on sustainable property development on residential property values for three-bedroom flat in Ikolaba estate. Green building certifications emerged as a statistically significant predictor of increased property value, with a coefficient of □801,596.82 and a p-value of 0.045. Similarly, lower energy mechanical systems show a significant and positive influence (□316,853.64; p = 0.035), indicating market appreciation for energy-saving installations, which may reduce utility costs and improve comfort. Green landscaping also demonstrated a strong positive impact (□483,723.10; p = 0.042).

Interestingly, the model reveals a statistically significant negative relationship between smart grid integration and property value (₦−831,642.92; p = 0.003). Likewise, ecological restoration and biodiversity conservation was also negatively significant (₦−346,644.25; p = 0.022), potentially reflecting concerns about development constraints, regulatory obligations, or costs that outweigh immediate economic benefits for homeowners and developers. Other variables such as indoor environmental quality, waste reduction and management, climate resilience, and carbon-related strategies had positive or negative coefficients but did not reach statistical significance.

Table 8: Coefficients on Sustainable Property Development on Residential Property Values for Three Bedroom Flat in Ibadan North

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	843160.254	834616.339		1.010	.317
Renewable Energy	-49370.065	133398.073	-.050	-.370	.713
Water Conservation	27167.497	133373.380	.026	.204	.839
Sustainable Materials	52390.997	270477.845	.025	.194	.847

Waste Reduction and Management	-284422.525	191903.677	-.163	-1.482	.144
Green Building Certifications	801596.824	390840.248	.273	2.051	.045**
Indoor Environmental Quality	437327.472	249323.407	.230	1.754	.085*
Climate Resilience	-257220.452	183025.226	-.185	-1.405	.166
Green Roof	-42774.149	184239.734	-.028	-.232	.817
Sustainable Landscaping	-95163.123	239719.772	-.045	-.397	.693
Smart Building Technology	-37065.506	230557.265	-.020	-.161	.873
Lower energy mechanical	316853.640	146516.009	.334	2.163	.035**
Green landscaping	483723.101	232178.489	.255	2.083	.042**
Energy management	-197082.018	190430.469	-.113	-1.035	.305
Carbon offsetting	6462.920	464648.735	.002	.014	.989
Carbon Neutral or Low-Carbon Design	41590.378	43903.301	.109	.947	.348
Smart Grid Integration	-831642.921	265946.685	-.344	-3.127	.003***
Waste-to-Energy Technologies	23821.696	138344.974	.023	.172	.864
Ecological Restoration and Biodiversity Conservation	-346644.251	147274.628	-.306	-2.354	.022**
Resilient Housing Design	183552.781	140309.712	.177	1.308	.196

Source: Author's Fieldwork, 2025.

5. Conclusion

The study concludes that sustainability has become a key determinant of value in the Nigerian real estate market. Comparative analysis of rental values in Ibadan Southwest and Ibadan North shows that properties with sustainable features attract higher rents and offer greater economic viability than non-sustainable ones. This reflects tenants' increasing preference for environmentally responsible housing that provides lower operating costs and improved living conditions. The findings emphasize the need for supportive policies, financial incentives, professional training, and public awareness to promote sustainable development practices. Integrating sustainability into urban planning can enhance housing quality, market value, and environmental performance. Ultimately, adopting sustainable development is both a professional responsibility and a strategic pathway toward long-term value creation, environmental protection, and socially equitable urban growth in Nigeria.

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