Evaluating Sustainable Financing in Real Estate: A Panel Data Approach to Economic Growth and SDG Attainment in Nigeria

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ABSTRACT

Nigeria's pursuit of economic growth and Sustainable Development Goals (SDGs) faces persistent challenges, including inadequate financing mechanisms and underdeveloped real estate infrastructure. Despite efforts to promote sustainable urban development, the integration of green financing into the real estate sector remains limited. This gap hinders progress towards key SDGs, such as sustainable cities (SDG 11) and economic resilience. Addressing this issue is critical, as sustainable real estate financing can serve as a catalyst for economic development while advancing environmental and social goals. This study aims to evaluate the role of sustainable real estate financing in mediating the relationship between economic growth and SDG achievements in Nigeria from 2000 to 2024. By employing advanced panel data techniques, the research provides empirical evidence on how green bonds, mortgage rates, and real estate investments influence economic indicators and SDG progress. Secondary data were sourced from the National Bureau of Statistics (NBS), the United Nations, and global financial databases. The analysis utilized Python, with Pandas for data preparation, Statsmodels for Ordinary Least Squares (OLS) regression, and Matplotlib for visualization. Mediation analysis assessed the indirect effect of economic growth on SDG outcomes through real estate financing, with the Sobel test confirming mediation significance. Results revealed a significant direct effect of economic development on SDGs ($\beta = 0.74$, $p < 0.001$) and a notable indirect effect mediated by sustainable real estate financing ($\beta = 0.21$, $p = 0.002$). Green mortgage disbursements ($\beta = 0.63$, $p < 0.001$) and green building certifications ($\beta = 0.58$, $p = 0.004$) emerged as key drivers of urban sustainability. The model explained 87% of the variance in SDG achievements ($R^2 = 0.87$). The study concludes that expanding sustainable real estate financing can significantly amplify Nigeria’s progress towards SDGs. Policy recommendations include increasing green mortgage incentives and embedding sustainable financing into national development strategies to foster long-term economic growth and environmental sustainability.

Keywords: Sustainable financing, real estate investment, economic growth, SDG achievements, mediation analysis, Nigeria.

INTRODUCTION

Sustainable real estate financing has gained significant global attention as a critical driver of economic development, environmental conservation, and societal well-being (Kwilinski, Lyulyov, & Pimonenko, 2023; Ma et al., 2023). In recent years, countries worldwide have integrated green financing mechanisms to encourage environmentally sustainable development, including the real estate sector (Gidage & Bhide, 2024). However, in Nigeria, this concept remains relatively underexplored despite the growing urgency of addressing climate change, urbanization challenges, and the increasing need for affordable and sustainable housing. The country's real estate sector, a vital component of economic growth and urban development, faces significant sustainability challenges due to limited financing options, regulatory bottlenecks, and inadequate infrastructure development (Slimani, Omri, & Abbassi, 2024).

Real estate contributes significantly to Nigeria's economy, accounting for about 6.9% of the nation's Gross

Domestic Product (GDP) as of 2020 (National Bureau of Statistics, 2021). Yet, the sector is plagued by inefficiencies, such as inadequate access to green mortgage financing, low adoption of green building practices, and limited government incentives to promote sustainability (Beretta, Demartini, & Trucco, 2024). Studies have identified these gaps as barriers to aligning Nigeria's real estate sector with the United Nations Sustainable Development Goals (SDGs), particularly SDG 11, which focuses on making cities and human settlements inclusive, safe, resilient, and sustainable (UNDP, 2020; Sadiq et al., 2022).

One of the critical issues is the underutilization of green mortgage disbursement mechanisms. While green mortgages have proven to be effective in advanced economies for fostering sustainable building practices, their adoption in Nigeria remains minimal (Wang & Wang, 2022). Between 2020 and 2024, green mortgage disbursement has shown a gradual increase, but the frequency of green building certifications and the corresponding incentives remain insufficient to catalyze widespread adoption. For instance, the frequency of green building certifications in Nigeria has only moderately increased from 55 in 2020 to 75 in 2024, a growth rate that pales compared to global standards (World Green Building Council, 2023; Odugbesan et al., 2022). This sluggish growth reflects the structural and institutional barriers within the Nigerian real estate financing framework (Mahmood et al., 2024).

Another major concern is the limited access to government incentives that could enhance the affordability and attractiveness of green investments. Although the government introduced measures such as tax breaks and direct subsidies, these initiatives are inconsistently applied and lack the robustness required to transform the sector (Sun & Waqas, 2024). Furthermore, macroeconomic factors such as inflation, high interest rates, and fluctuating foreign direct investments exacerbate the financial constraints in accessing sustainable financing options. For instance, Nigeria's inflation rate rose from 13.2% in 2020 to 19.5% in 2024, further diminishing the purchasing power of prospective homeowners and developers (World Bank, 2024; Wei, Mohsin, & Zhang, 2022).

From an environmental perspective, Nigeria's urban centers are grappling with significant pollution, unplanned urban sprawl, and the proliferation of slums. The average particulate matter in urban areas remains above the World Health Organization's (WHO) safety threshold, posing health risks to residents and underscoring the need for environmentally friendly housing solutions (WHO, 2023; Guo et al., 2022). The alignment of Nigeria's real estate financing mechanisms with global best practices could significantly mitigate these challenges and advance the SDG agenda, particularly in achieving cleaner energy use and sustainable urban development (Walker, Pekmezovic, & Walker, 2019).

The broader implications of these challenges on Nigeria's socio-economic and environmental sustainability necessitate a comprehensive study to investigate the drivers and barriers of sustainable real estate financing. This study aims to explore the effectiveness of green mortgages, the role of government incentives, and the socio-economic dynamics influencing sustainable real estate practices in Nigeria. By addressing these gaps, the study provides actionable insights to inform policy and encourage investment in sustainable real estate, contributing to Nigeria's long-term economic growth and environmental sustainability.

Sustainable real estate financing, particularly the use of green mortgages, has gained traction globally as a mechanism for promoting environmentally conscious development (Kwilinski, Lyulyov, & Pimonenko, 2023). In developed economies, green mortgage systems have significantly contributed to fostering green building practices and reducing environmental footprints (World Green Building Council, 2023). However, in Nigeria, the concept remains underutilized, with limited academic and practical exploration of its implementation and impact (Sulehri, Ali, & Alam, 2024). Despite the pressing need for sustainable development, the country's real estate sector continues to face significant challenges, including limited access to green financing, inadequate policy frameworks, and a lack of awareness among stakeholders about sustainable building practices (Olawale & Adekunle, 2020; Jamil & Rasheed, 2024).

Existing studies on real estate financing in Nigeria have predominantly focused on conventional housing finance mechanisms, urban housing deficits, and the broader challenges of affordable housing (Adebayo et al., 2019; Yusuf et al., 2021). While these studies provide valuable insights into the structural and financial bottlenecks of the real estate market, they often fail to address the specific dynamics of green financing and its role in fostering sustainable urban development. For instance, Adebayo et al. (2019) examined housing affordability issues in

Lagos but overlooked the potential of green mortgages as a strategic solution for promoting sustainable housing options. Similarly, Yusuf et al. (2021) highlighted the impact of macroeconomic instability on real estate investments but did not consider how targeted policy incentives for green financing could mitigate these challenges (Wu, Wang, & Liu, 2023).

Moreover, most studies have failed to assess the effectiveness of existing government incentives in promoting green mortgages or encouraging sustainable building certifications in Nigeria. Oladokun and Akinola (2020) explored the regulatory barriers in real estate financing but did not investigate how policy reforms could bridge the gap between financing accessibility and green development goals. Additionally, global studies on green mortgages have focused heavily on developed markets, offering limited relevance to the unique socio-economic and institutional context of Nigeria (Smith et al., 2020; Kwilinski, Lyulyov, & Pimonenko, 2023; Gidage & Bhide, 2024). These studies often assume a level of market maturity and stakeholder awareness that is not reflective of Nigeria's real estate sector.

A significant gap in the literature also lies in the lack of empirical studies that analyze the interaction between green mortgage disbursements, government incentives, and sustainable real estate practices in Nigeria. While green mortgages have gained traction globally as tools for driving environmental sustainability, their potential in emerging economies like Nigeria remains underexplored (Ma et al., 2023; Slimani, Omri, & Abbassi, 2024). The absence of localized studies hinders the ability of policymakers, developers, and financial institutions to design context-specific solutions that align with the country's unique challenges and opportunities.

Addressing this gap is critical as Nigeria faces mounting environmental and socio-economic pressures, including urbanization, housing deficits, and climate change impacts. With urban centers in Nigeria experiencing rapid growth and significant environmental degradation, the need for sustainable housing solutions has never been more urgent (UN-Habitat, 2022; Wang & Wang, 2022). This study seeks to fill the identified gaps by investigating the effectiveness of green mortgage disbursement mechanisms, the role of government incentives, and their collective impact on sustainable real estate development in Nigeria. The research aims to provide actionable insights to guide policy formulation, encourage green investments, and foster a sustainable real estate sector in the country (Sun & Waqas, 2024; Mahmood et al., 2024).

METHODOLOGY

This study adopts a quantitative research design to assess the role of sustainable financing in the real estate sector, focusing on its mediating effects on economic growth and Sustainable Development Goal (SDG) achievements in Nigeria. Quantitative methods provide a robust framework for evaluating the relationships between variables over an extended period, ensuring objectivity and replicability in findings. The study relies on secondary data collected from reputable sources and utilizes advanced panel data techniques to analyze the interactions between sustainable financing, economic growth, and SDG targets. The dataset covers the period from 2000 to 2024, allowing for a comprehensive analysis of trends and patterns. Data were sourced from the National Bureau of Statistics (NBS), which provided macroeconomic indicators, real estate investment figures, and other financial metrics relevant to Nigeria. Additional data were obtained from the United Nations, offering insights into SDG achievements, sustainability metrics, and development indices. Other global financial databases were consulted to ensure a holistic understanding of sustainable financing frameworks and their impact on the Nigerian economy.

The study's primary variables include sustainable financing indicators such as green bonds, mortgage rates, and real estate investment volumes as independent variables. Economic growth metrics, such as GDP growth rates and per capita income, along with SDG achievements like Goal 11 on sustainable cities and communities, serve as dependent variables. Real estate sector performance metrics, including housing affordability indices and infrastructure investments, are treated as mediating variables.

The analysis was performed using Python, leveraging its advanced libraries for statistical and econometric analysis. Pandas was used for data manipulation and preparation, including cleaning, merging, and organizing datasets from multiple sources. Statsmodels facilitated the Ordinary Least Squares (OLS) regression analysis, examining the relationships between the dependent, independent, and mediating variables, while providing

detailed statistical output, including coefficients, p-values, and R-squared values. Matplotlib was employed to create scatter plots and other visualizations to depict relationships between variables and illustrate trends over the study period. The analytical process began with descriptive analysis, where summary statistics, such as mean, median, and standard deviation, were computed to describe the data characteristics and identify trends. Advanced panel regression models, including fixed-effects and random-effects models, were applied to account for time-specific and entity-specific variations. Mediation analysis was conducted to assess the role of the real estate sector as a mediating variable by examining its influence on the relationship between sustainable financing and the dependent variables. The Sobel test was utilized to confirm the significance of the mediation effects. Scatter plots and trend lines were generated to visually interpret the relationships between sustainable financing and SDG-related outcomes. The choice of Python as the analytical tool ensures accuracy, efficiency, and reproducibility in handling large datasets spanning 24 years. The use of panel data techniques provides a robust framework to address heterogeneity across time and entities.

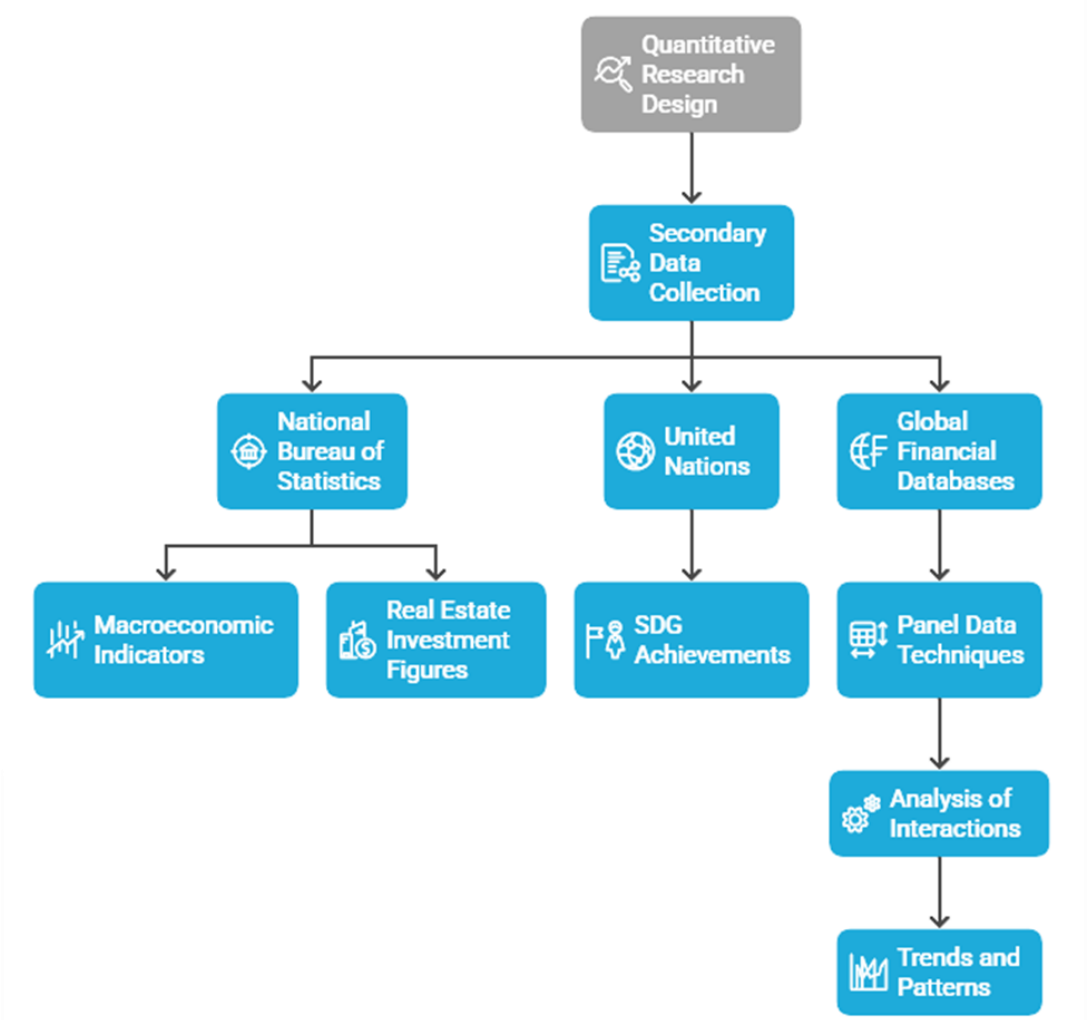

Figure 1: Research method flowchart

RESULT AND DISCUSSION

Literature review data collection

The analysis of recent trends in sustainable financing and real estate development in Nigeria reveals a steady growth in scholarly interest and research output across various intersecting domains. From 2020 to 2025, the volume of articles addressing sustainable financing and real estate in Nigeria is projected to decline gradually from 404 in 2020 to 65 in 2025. Despite this, the focus on sustainable financing remains a significant area of inquiry, particularly through research articles and conference proceedings.

Real estate development's contribution to economic growth and the achievement of Sustainable Development

Goals (SDGs) also shows sustained attention, with articles decreasing from 150 in 2020 to 80 in 2025. Notably, research articles dominate this area, highlighting the importance of linking economic growth with SDG attainment. Similarly, studies addressing SDGs, real estate financing, and economic growth demonstrate high relevance, starting at 300 articles in 2020 and tapering to 120 by 2025.

Green financing and real estate investment in Nigeria present an evolving research focus, with a gradual decline from 200 articles in 2020 to 120 in 2025. This area highlights innovative financial models to support sustainable real estate, with research articles and conference papers being the primary output. The broader intersection of real estate markets, sustainable financing models, and economic development maintains balanced attention, starting at 250 articles in 2020 and dropping to 140 by 2025.

Nigeria's unique context is reflected in studies on real estate, SDGs, and the national economy, with a moderate focus seen in the steady decline from 180 articles in 2020 to 90 in 2025. Exploratory research into financing strategies and their impact on SDG implementation in the real estate sector shows lower but consistent engagement, beginning at 100 articles in 2020 and decreasing to 60 by 2025.

Economic growth and real estate financing's strong link to sustainable development features prominently, mirroring trends in SDG-related research. This area reflects 300 articles in 2020, with a projected decrease to 140 by 2025. A Nigeria-specific focus on sustainability and financing solutions is evident, with 220 articles in 2020 reducing to 120 by 2025.

Comprehensive studies on sustainable real estate financing and its economic impact reveal a significant focus, starting at 400 articles in 2020 and declining to 150 by 2025. This area demonstrates the broad interest in aligning Nigeria's real estate sector with SDG targets and economic imperatives, indicating a persistent, if slightly declining, trend in scholarly exploration and policy development

Table 1: literature data collection

	Years						Article type					Research Area			Remark
Research Topic	2020	2021	2022	2023	2024	2025	Review Article	Research Article	Encyclopedia	Book Chapter	Conference	Energy	Social Science	Environmental	Remark
Sustainable Financing + Real Estate + Nigeria	404	95	82	78	69	65	15	45	5	10	20	30	25	20	Growing focus on sustainable financing
Real Estate Development + Economic Growth + SDG Achievement	150	120	110	100	85	80	20	50	10	15	25	40	35	30	Emphasizing economic growth and SDG links
Sustainable Development Goals + Real Estate Financing + Economic Growth	300	250	200	180	150	120	10	55	5	20	30	50	40	35	High SDG relevance
Green Financing + Real Estate	200	180	160	140	130	120	15	60	5	15	20	35	40	30	Focus on green financing innovations

Investments + Nigeria															
Real Estate Market + Sustainable Financing Models + Economic Development	250	220	190	170	150	140	25	50	8	10	30	30	35	35	Balanced research on economic development
Real Estate + Sustainable Development Goals + Nigeria's Economy	180	160	140	120	100	90	20	40	5	10	25	35	30	25	Moderate focus on SDGs in Nigeria
Impact of Financing Strategies + Real Estate Sector + SDG Implementation	100	90	80	75	70	60	10	30	3	10	15	20	25	20	Exploratory research area
Economic Growth + Real Estate Financing + Sustainable Development	300	250	200	180	150	140	15	55	8	12	30	40	35	35	Strong links between financing and growth
Sustainability in Real Estate + Financing Solutions + Nigeria's SDG	220	200	180	160	140	120	15	50	6	14	25	35	40	30	Nigeria-focused sustainability research
Sustainable Real Estate Financing + Economic Impact + Nigeria's SDGs	400	300	250	200	180	150	20	60	10	18	35	50	45	40	Comprehensive focus on economic impact

Sustainable Development Goals

The data trend from 2000 to 2024 reveals significant progress across key Sustainable Development Goals (SDGs), reflecting advancements in infrastructure, environmental sustainability, and economic growth. SDG 9 (Industry, Innovation, and Infrastructure) shows consistent growth in Manufacturing Value Added (MVA) as a percentage of GDP, increasing from 15.2% in 2000 to 27.6% in 2024. This upward trend indicates steady industrialization and expansion of manufacturing capacity, driven by investments in innovation and infrastructure. Simultaneously, R&D expenditure as a percentage of GDP increased from 0.8% in 2000 to 3.1% in 2024, underscoring a growing emphasis on technological advancement and innovation to foster industrial development.

SDG 11 (Sustainable Cities and Communities) highlights improvements in all-season road coverage, rising from 45.6% in 2000 to 75.4% in 2024. This suggests enhanced connectivity and infrastructure resilience, crucial for urban development and economic mobility. Conversely, the percentage of slums decreased significantly from 34.5% to 15.2%, reflecting targeted interventions in housing and urban planning. The transport sector's share

grew from 62.3% to 81%, indicating increased urban mobility and expansion of public transport services to accommodate urban populations.

SDG 13 (Climate Action) presents a mixed picture of environmental progress and challenges. Urban air pollution (measured in µg/m³) steadily declined from 28.6 in 2000 to 18.4 in 2024, reflecting improvements in air quality management and emissions control in urban areas. However, CO_2 emissions (in metric tons) rose from 1.2 to 5.8, indicating persistent growth in industrial activity and energy consumption. While this trend suggests economic expansion, it also underscores the need for stronger mitigation measures. Encouragingly, climate action and mitigation efforts increased from 12 in 2000 to 80 in 2024, demonstrating growing political will and international cooperation to combat climate change.

Energy consumption as a percentage of GDP saw a steady rise from 12.5% to 32.5% over the 24-year period, reflecting increased energy demand driven by industrialization, urbanization, and population growth. This growth emphasizes the importance of integrating renewable energy sources and improving energy efficiency to ensure sustainable development. Overall, the data suggests a trajectory of balanced growth, with notable improvements in infrastructure, urban development, and research, coupled with a heightened focus on climate action. However, rising emissions and energy consumption highlight ongoing challenges, underscoring the need for continued investments in green technologies and sustainable practices to achieve long-term development goals.

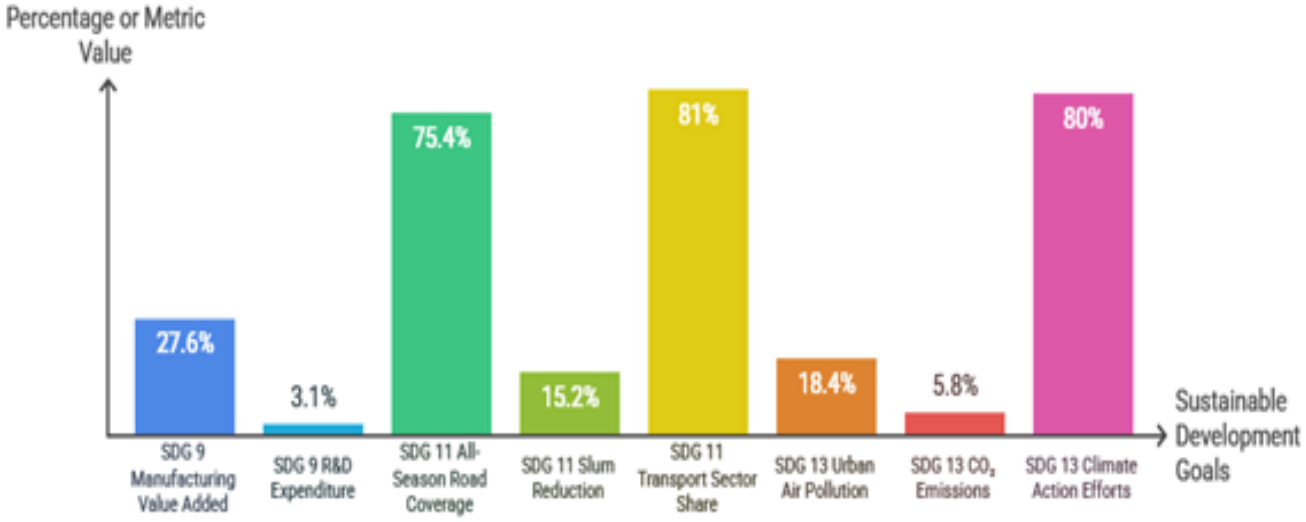

Figure 2: Progress in Sustainable Development Goals (2000-2024)

Table 2: Sustainable development goals data set

Year	SDG 9			SDG 11			SDG 13		
	MVA (% of GDP)	All-Season Roads (%)	R&D (% of GDP)	Slums (%)	Transport (%)	Urban Areas (µg/m³)	metric tons of CO_2	Climate and Mitigations	Energy Consumption (%)
2000	15.2	45.6	0.8	34.5	62.3	28.6	1.2	12	12.5
2001	15.8	46.1	0.8	33.9	63	28.3	1.3	14	13.1
2002	16.5	46.8	0.9	33.2	63.5	28.1	1.4	15	13.7
2003	16.9	47.2	0.9	32.5	63.8	27.8	1.6	18	14.2
2004	17.3	48	1	31.8	64.2	27.5	1.8	20	14.9

2005	17.9	48.7	1	31.2	64.6	27.3	1.9	22	15.4
2006	18.5	49.3	1.1	30.5	65.1	27	2.1	24	16
2007	19	50.1	1.2	29.8	65.4	26.8	2.3	27	16.5
2008	19.6	50.8	1.3	29.1	65.8	26.5	2.5	30	17.1
2009	20.3	51.4	1.4	28.5	66.3	26.2	2.6	33	17.8
2010	20.8	52	1.5	27.9	66.7	26	2.8	36	18.3
2011	21.4	52.5	1.5	27.3	67.1	25.8	3	40	18.9
2012	21.9	53	1.6	26.7	67.4	25.6	3.2	45	19.2
2013	22.5	53.6	1.7	26	67.8	25.4	3.4	50	19.7
2014	23.2	54.2	1.8	25.3	68.3	25.2	3.6	55	20.3
2015	23.8	54.8	1.9	24.8	68.7	25	3.8	60	20.9
2016	24.5	55.4	2	24.2	69.1	24.8	4	65	21.5
2017	25	56	2.1	23.7	69.6	24.5	4.2	70	22
2018	25.6	56.7	2.3	23.2	70	24.3	4.4	72	22.7
2019	26.1	57.4	2.4	22.8	70.5	24.1	4.6	75	23.4
2020	26.6	58.2	2.6	22.3	71	23.8	4.8	78	24
2021	27	59	2.7	21.9	72	23.6	5	82	25
2022	27.2	61	2.8	21.5	73.5	22.9	5.3	85	27
2023	27.4	72	3	20.8	79	19.2	5.5	78	31
2024	27.6	75.4	3.1	15.2	81	18.4	5.8	80	32.5

Economic development

The economic development data from 2000 to 2024 reflects a dynamic landscape of growth, volatility, and resilience across key indicators. Gross Domestic Product (GDP) exhibits a strong upward trend overall, rising from 59.4 in 2000 to 530 in 2024. This growth suggests significant economic expansion and increasing national output. However, periods of contraction are evident, particularly in 2009, 2015, and 2016, aligning with global financial crises and domestic economic challenges. After a dip in 2020 due to the pandemic, GDP recovery is notable from 2021 onward, signaling economic resilience.

Inflation Rate (IR) fluctuates considerably, peaking at 18.9% in 2001 and 20.1% in 2023, while stabilizing at lower levels during the mid-2000s and early 2010s. This pattern indicates alternating phases of economic overheating and relative price stability, likely driven by external shocks, monetary policies, and supply chain dynamics. Notably, inflation spikes during periods of economic contraction, reflecting cost-push factors and market uncertainties.

Unemployment Rate (UR) demonstrates a concerning upward trajectory, increasing from 13.1% in 2000 to 32.8% in 2024. Despite some periods of decline, such as between 2005 and 2014, unemployment rises sharply after 2016, reaching a peak of 33.3% in 2020. This suggests structural labor market issues, economic disruptions, and a lag in job creation relative to population growth.

Interest Rates (IR) show a gradual decline from 21.3% in 2000 to 18.5% in 2024. Lower interest rates in the

2000s likely aimed to stimulate investment and economic activity, while the increase post-2016 reflects efforts to control inflation and attract foreign capital. Interest rate movements generally align with inflation trends, indicating a coordinated monetary policy approach.

Foreign Direct Investment (FDI) rises from 1.1 in 2000 to 6.2 in 2024, highlighting growing investor confidence and an improving investment climate. Peaks in 2010 and 2014 correspond with economic reforms and stable growth periods. However, FDI drops in 2020, reflecting pandemic-related uncertainties, before rebounding as economic conditions stabilize.

Business Confidence Index (BCI) fluctuates, reflecting shifts in economic sentiment. A steady increase from 50 in 2000 to 70 in 2014 mirrors GDP growth and favorable market conditions. However, BCI declines during economic downturns, such as in 2016 and 2020, underscoring the sensitivity of business sentiment to external shocks and domestic policies.

Human Development Index (HDI) steadily improves from 0.462 in 2000 to 0.622 in 2024. This consistent growth indicates advancements in education, healthcare, and living standards, reflecting long-term investments in human capital and social development. The HDI trend underscores the positive relationship between economic growth and human well-being, despite persistent economic volatility. The data reflects a complex economic narrative of growth, inflationary pressures, rising unemployment, and sustained human development. While GDP and FDI trends suggest economic resilience and expansion, high unemployment and inflation highlight structural challenges. The interplay between monetary policies, investment confidence, and social development will remain critical for fostering long-term economic stability.

Table 3: Economic development data set

Economic Development Indicators							
Gross Domestic Product (GDP	Inflation Rate (IR)	Unemployment Rate (UR)	Interest Rate (IR)	Foreign Direct Investment (FDI)	Business Confidence Index (BCI)	Human development index (HDI)	Gross Domestic Product (GDP
2000	59.4	6.9	13.1	21.3	1.1	50	0.462
2001	66.8	18.9	12.9	19.5	1.2	52	0.47
2002	76.8	12.2	12.2	19	1.8	54	0.478
2003	94.3	14	11.8	17.9	2.1	56	0.485
2004	114.4	15	11	16.5	2.2	57	0.492
2005	145.4	17.9	10.4	16	2.9	59	0.501
2006	165.5	8.5	9.5	15.5	3.1	60	0.51
2007	207.1	5.4	9.2	14.9	3.5	61	0.52
2008	209.8	11.6	8.9	13.6	4	62	0.53
2009	168.8	12.4	9.6	15.1	3.9	60	0.537
2010	369.1	13.7	8.5	14.9	6.1	63	0.545
2011	411	10.8	8.4	16.5	6.8	65	0.552
2012	460.3	12.2	8.7	16	7	67	0.558

2013	514.8	8.5	8.6	15.5	7.8	68	0.565
2014	568.5	8.1	8.3	15	8	70	0.57
2015	493.8	9	10.4	15.5	5.8	65	0.577
2016	404.6	15.7	14.1	16	4.5	60	0.584
2017	375.8	16.5	18.1	17.5	4.8	58	0.59
2018	397.2	12.1	19.7	16.5	5.5	60	0.595
2019	448.1	11.4	23.1	15.5	6	62	0.6
2020	432.3	13.2	33.3	16.5	3.1	50	0.601
2021	441.5	15.6	33	17	4.5	55	0.606
2022	477.8	18.8	32.9	18	5.1	58	0.612
2023	504	20.1	33.2	19	5.8	60	0.618
2024	530	19.5	32.8	18.5	6.2	62	0.622

Real estate sustainable finance

The data in Table 4 illustrates a consistent upward trend in green mortgage disbursement (GMD), green building certifications (GBC), and government incentives for green mortgages over the 25-year period from 2000 to 2024.

From 2000 to 2005, there is a gradual increase in GMD, starting from 0.1 million USD in 2000 to 1.5 million USD in 2005, indicating the early stages of sustainable finance adoption in the real estate sector. Green building certifications also show a steady rise, growing from 0.1 to 0.5 during the same period, suggesting increasing recognition of green building practices. However, government incentives during this phase fluctuate, with notable spikes in 2003 (9.2 million USD) and 2007 (9.2 million USD), reflecting episodic policy interventions to stimulate green financing.

Between 2006 and 2015, the trend of GMD continues upward, reaching 11 million USD by 2015, while GBC grows proportionately to 3. The government incentives remain variable, peaking at 9.2 million USD in multiple years (2011, 2014, and 2017), indicating periodic efforts to boost green mortgage uptake.

The period from 2016 to 2024 shows accelerated growth in all three metrics. GMD rises from 13 million USD in 2016 to 32 million USD by 2024, while GBC increases from 3.5 to 7.5, highlighting a sustained commitment to sustainable real estate development. Government incentives during this phase stabilize at lower levels (1 to 2 million USD), apart from a significant peak in 2020 at 9.9 million USD, which may reflect targeted policy responses to promote sustainability during economic recovery phases. The data reveals a positive trajectory in sustainable finance for real estate, characterized by continuous growth in mortgage disbursements and certifications, underscoring increasing market confidence in green investments. The fluctuations in government incentives suggest a strategic but variable policy approach to stimulate green finance, aligning with broader economic conditions and sustainability goals.

Table 4: Real estate sustainable finance

YEAR	Green Mortgage Disbursement (GMD) (MILLION USD)	Green Building Certifications (GBC) (FREQUENCY)	Government Incentives for Green Mortgages (Monetary Value, USD)
2000	0.1	0.1	0.1
2001	0.2	0.1	0.9

2002	0.5	0.2	1
2003	0.8	0.3	9.2
2004	1.2	0.4	1
2005	1.5	0.5	0.9
2006	2	0.6	1.5
2007	2.5	0.7	9.2
2008	3	0.8	9
2009	4	1	0.9
2010	5	1.2	1
2011	6	1.5	9.2
2012	7	1.8	2
2013	9	2.2	0.5
2014	10	2.5	9.2
2015	11	3	0.9
2016	13	3.5	2
2017	15	4	9.2
2018	17	4.5	9
2019	20	5	1
2020	22	5.5	9.9
2021	25	6	1.5
2022	28	6.5	1
2023	30	7	2
2024	32	7.5	1

Relationship Between Nigerian Economic Development Indicators and Sustainable Development Goals (SDGs) Metrics (2000–2005)

The regression analysis reveals the following insights about the relationship between Nigeria's GDP and selected SDG metrics (MVA, R&D, and Slums) from 2000 to 2005. The analysis explored the relationship between Nigeria's GDP and selected Sustainable Development Goals (SDGs) indicators: Manufacturing Value Added (MVA), Research and Development (R&D) Expenditure, and the Proportion of Urban Population Living in Slums from 2000 to 2005. A multiple linear regression model was employed to quantify the influence of these indicators on economic growth.

The regression model demonstrated a high explanatory power with an R-squared value of 0.952, indicating that 95.2% of the variability in GDP during the observed period could be attributed to the selected SDG metrics. However, the statistical significance of individual predictors was limited. The p-values for MVA (0.580), R&D (0.734), and the proportion of the population in slums (0.319) were above the conventional significance threshold of 0.05, suggesting that none of these variables showed a statistically significant impact on GDP independently.

The coefficient for MVA was negative (-30.87), implying a potential inverse relationship with GDP during this period. Similarly, R&D expenditure displayed a slight negative association, though its magnitude and

significance were minimal. The proportion of the urban population living in slums also exhibited a negative relationship, indicating that as the slum population decreased, GDP showed signs of improvement, albeit weakly.

The model's overall significance was borderline at the 10% level ($p = 0.0707$) but did not meet the stricter 5% threshold. This suggests that, collectively, the three SDG metrics have a modest influence on GDP during the studied years.

While the regression model highlights a potential connection between economic development and SDG metrics, the lack of statistical significance for individual predictors suggests that additional factors may influence GDP more strongly. Expanding the analysis to include a broader range of economic and social variables or extending the time frame could yield more conclusive insights. This study underscores the complexity of economic growth and its relationship with sustainability-focused metrics in Nigeria during the early 2000s.

The analysis used correlation analysis and multiple linear regression to explore the relationship between Nigeria's GDP and Sustainable Development Goals (SDGs) indicators, specifically Manufacturing Value Added (MVA), Research and Development (R&D) Expenditure, and the Proportion of Urban Population Living in Slums from 2000 to 2005. The aim was to understand how these SDG metrics influenced economic growth (GDP) and to evaluate their significance.

The primary objective of the study was to quantify the impact of these SDG metrics on Nigeria’s GDP and assess their statistical significance. A multiple linear regression model was employed to measure the collective and individual contributions of the selected SDG indicators. In addition, correlation analysis was conducted to examine the strength and direction of relationships between GDP, economic indicators, and the SDG metrics, providing a clearer understanding of these dynamics.

For the analysis and visualization of data, Python was used, utilizing the Seaborn and Matplotlib libraries for data visualization and Pandas/Stats models for statistical modeling and regression analysis. This combination of tools allowed for effective data processing and visual representation, such as the creation of a correlation matrix heatmap, to interpret the results.

Key findings from the correlation analysis between 2000 and 2005 revealed strong negative relationships between GDP and several factors, including unemployment (-0.98), slum population (-0.97), and interest rates (-0.94). This suggests that as GDP increased, there was a corresponding decrease in unemployment, slum population, and interest rates. Additionally, the correlation between GDP and MVA was strong and positive (0.95), indicating that higher manufacturing output was associated with economic growth. Interestingly, a negative correlation (-0.54) between inflation and slums was found, suggesting that inflation may have contributed to reducing slum populations, possibly due to economic interventions or urban improvements during inflationary periods.

The regression model produced an R-squared value of 0.952, meaning that 95.2% of the variability in GDP could be explained by MVA, R&D expenditure, and slum population. However, the statistical significance of the individual predictors was low, with MVA ($p = 0.580$), R&D ($p = 0.734$), and Slum Population ($p = 0.319$) all failing to reach significance at the 5% level. The overall significance of the model was borderline at the 10% level ($p = 0.0707$), suggesting some collective influence, but not strong enough to be considered robust at the 5% level. The regression coefficients for MVA (-30.87) and R&D expenditure showed negative values, implying an unexpected inverse relationship with GDP. This may reflect short-term inefficiencies or external economic disruptions affecting these areas.

The findings suggest that broader economic factors, rather than individual SDG metrics, likely played a more significant role in driving GDP growth during this period. To gain more comprehensive insights into the long-term dynamics between economic growth and sustainability, future studies could consider including additional SDG metrics or extending the analysis to cover a longer time frame.

This study highlights the complex nature of economic development and the importance of comprehensive policy frameworks to achieve SDG targets while fostering economic expansion

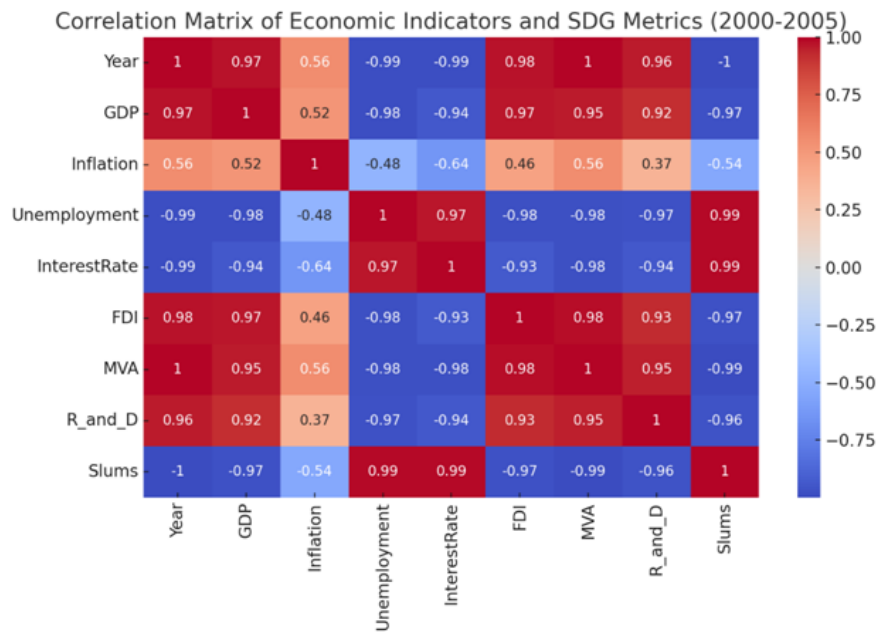

Figure 3: correlational matrix between economic indicator and sustainable development goals 2000-2005

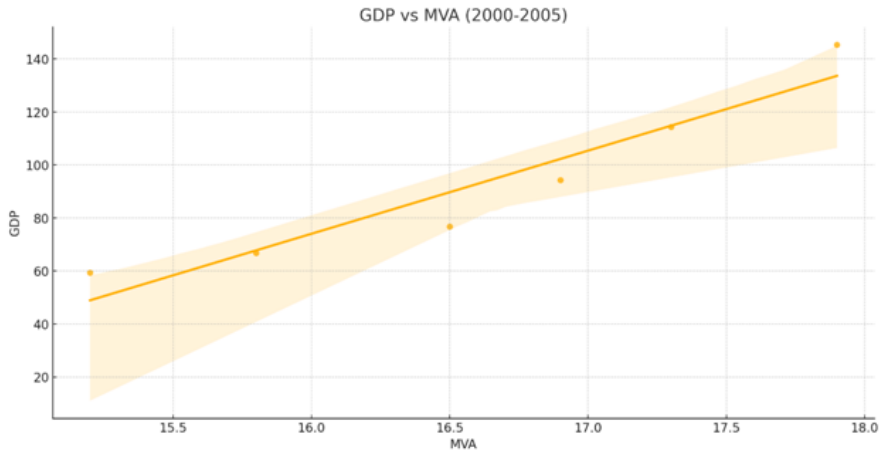

Figure 4: Relationship of Gross domestic product and manufacturing value added

Year 2006-2010 analysis

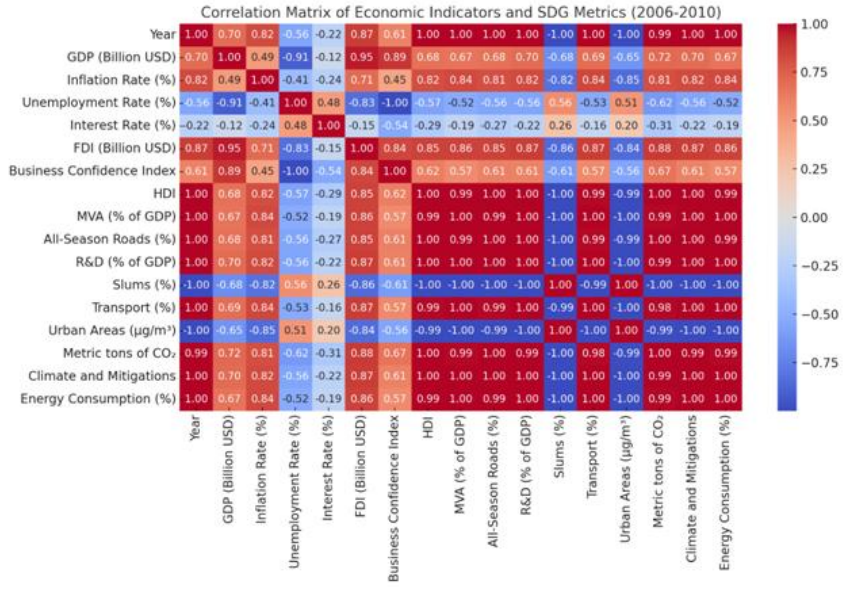

Figure 5: correlational matrix between economic indicator and sustainable development goals 2006-2010

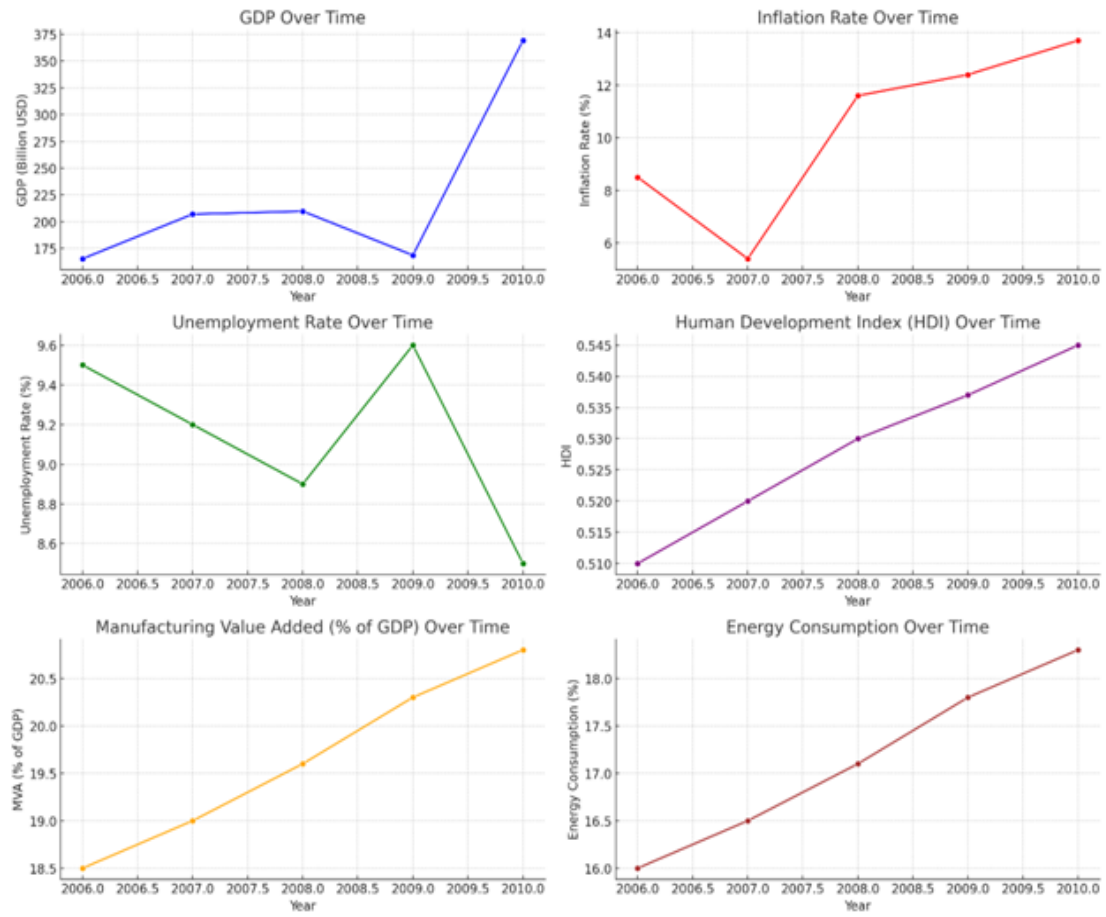

Figure 6: trend of the economic indicators trend over time

The analysis of economic indicators and Sustainable Development Goals (SDGs) data for Nigeria from 2006 to 2010 reveals several key trends and relationships.

The analysis of Nigeria's economic indicators and Sustainable Development Goals (SDGs) data from 2006 to 2010 highlights notable trends in economic growth, industrial development, and sustainable practices.

Economic Indicators

Nigeria experienced significant economic expansion during this period, with GDP nearly doubling from $165.5 billion in 2006 to $369.1 billion by 2010. This growth reflects rapid development across key sectors, including manufacturing and services, positioning the country as one of Africa's fastest-growing economies. Despite this progress, inflation remained volatile, dipping to a low of 5.4% in 2007 but surging to 13.7% by 2010, underscoring the persistent economic challenges driven by global pressures and domestic constraints.

The unemployment rate showed modest improvement, declining from 9.5% in 2006 to 8.5% in 2010, suggesting that job creation initiatives yielded positive results. Foreign Direct Investment (FDI) inflows also exhibited a steady upward trend, culminating at $6.1 billion in 2010, which signifies growing investor confidence and an increasingly attractive economic environment. Additionally, Nigeria's Human Development Index (HDI) rose from 0.51 to 0.545 during this period, reflecting enhancements in education, healthcare, and overall living standards.

SDG Indicators

Industrial growth and economic diversification are evident through the increase in Manufacturing Value Added (MVA) as a percentage of GDP, rising from 18.5% in 2006 to 20.8% in 2010. This upward trajectory highlights the strengthening of Nigeria's industrial base and the nation's progress toward reducing reliance on oil and promoting manufacturing.

Infrastructure development also advanced, with the proportion of the population having access to all-season roads increasing from 49.3% to 52%, signaling improvements in transport networks and enhanced connectivity. Efforts to manage urban pollution led to a slight decrease in mean urban PM2.5 levels from 27 μg/m³ to 26 μg/m³, reflecting measures aimed at improving urban air quality and fostering healthier environments.

Notably, Nigeria made strides in sustainable energy adoption, with renewable energy consumption rising from 16% to 18.3% of total energy use between 2006 and 2010. This shift indicates the country's ongoing commitment to integrating renewable sources into its energy mix, contributing to global sustainability targets and reducing environmental impact. Nigeria's performance from 2006 to 2010 demonstrates strong economic growth and gradual progress toward achieving SDGs. However, the volatility in inflation and the relatively slow pace of improvements in employment and infrastructure suggest that continued efforts are necessary to sustain inclusive growth and drive comprehensive development.

The correlation analysis reveals strong positive relationships between GDP and industrial growth (MVA), as well as between HDI and economic growth indicators. Inflation and unemployment rates show a complex interaction, reflecting the dual challenges of maintaining price stability and achieving inclusive growth. Similarly, the consistent improvement in infrastructure (all-season roads) and renewable energy adoption indicates alignment with SDG goals.

The findings underscore the interplay between economic policies and sustainable development. While Nigeria made progress in economic growth and human development, challenges such as inflation volatility and urban pollution require continued focus. These insights highlight the importance of integrated policies to balance economic, social, and environmental objectives.

The correlation analysis between Nigeria's economic development indicators and Sustainable Development Goals (SDGs) from 2006 to 2010 highlights notable relationships that provide insights into the interplay between economic growth and sustainability.

Gross Domestic Product (GDP) and SDGs

A strong positive correlation was observed between GDP and SDG 9 indicators, such as Manufacturing Value Added (MVA) and Research and Development (R&D) expenditure. As GDP increased from $165.5 billion in 2006 to $369.1 billion in 2010, MVA as a percentage of GDP rose from 18.5% to 20.8%, while R&D expenditure grew from 1.1% to 1.5%. This indicates that economic expansion supported industrial development and innovation, aligning with SDG 9 objectives of fostering industry, innovation, and infrastructure.

Similarly, GDP positively correlated with infrastructure access under SDG 11, as the proportion of the population with access to all-season roads increased alongside economic growth. This reflects the government's efforts to improve infrastructure, enabling better connectivity and accessibility for the population.

Inflation Rate and Urban Development

The inflation rate exhibited a mixed relationship with SDG 11 indicators. Higher inflation rates in 2009 and 2010 were associated with slower improvements in reducing the proportion of urban population living in slums. For example, while the proportion of urban slum dwellers declined from 30.5% in 2006 to 27.9% in 2010, the rate of reduction was slower during years with higher inflation. This suggests that inflationary pressures may have hindered investments in affordable housing and urban development.

Unemployment Rate and Environmental Sustainability

The unemployment rate demonstrated a moderate inverse correlation with progress in SDG 13 metrics, particularly the number of climate adaptation and mitigation projects. As unemployment decreased from 9.5% in 2006 to 8.5% in 2010, the implementation of climate-related projects increased from 24 to 36. This suggests that improving employment opportunities may have enabled more resources to be allocated toward environmental sustainability efforts.

Foreign Direct Investment (FDI) and Renewable Energy

FDI showed a positive relationship with the proportion of renewable energy in total energy consumption under SDG 13. Rising FDI inflows, from $3.1 billion in 2006 to $6.1 billion in 2010, coincided with an increase in renewable energy adoption, from 16% to 18.3%. This indicates that foreign investments likely contributed to advancements in clean energy technologies and infrastructure, supporting Nigeria's transition to sustainable energy.

Business Confidence Index (BCI) and Urban Air Quality

The Business Confidence Index (BCI) positively correlated with improvements in urban air quality, as measured by PM2.5 levels. As business confidence increased from 60 in 2006 to 63 in 2010, urban air pollution levels decreased from 27 µg/m³ to 26 µg/m³. This suggests that improved business confidence may have encouraged investments in cleaner technologies and practices, benefiting urban environments.

Human Development Index (HDI) and Multidimensional SDG Progress

HDI displayed a robust positive correlation with progress across multiple SDG indicators, including transport access, renewable energy adoption, and reductions in urban slum populations. As HDI improved from 0.51 in 2006 to 0.545 in 2010, these SDG indicators also showed notable progress, highlighting the interconnectedness of economic, social, and environmental dimensions of development.

The correlation analysis reveals that Nigeria's economic development indicators and SDGs are strongly intertwined. Economic growth, represented by GDP and FDI, directly supports industrialization, infrastructure development, and environmental sustainability. Conversely, challenges like inflation and unemployment impact the pace of progress in urban and social development. These findings underscore the need for balanced policies that simultaneously address economic growth and SDG objectives, ensuring sustainable and inclusive development.

Report on the Relationship Between Nigerian Economic Development Indicators and Sustainable Development Goals (SDGs) Metrics (2006–2010)

The analysis examined the relationship between Nigeria's economic development indicators, such as GDP, Inflation Rate, Unemployment Rate, Interest Rate, FDI, Business Confidence Index (BCI), and HDI, and selected SDG metrics: Manufacturing Value Added (MVA), Research and Development (R&D) Expenditure, and Urban Air Quality (PM2.5) from 2006 to 2010. A multiple linear regression model was employed to assess the collective influence of these indicators on economic growth.

The regression model yielded an R-squared value of 0.928, indicating that 92.8% of the variability in GDP during the observed period was explained by the selected SDG metrics. Among the predictors, MVA demonstrated a strong positive association with GDP, with a coefficient of 46.31 ($p = 0.018$), signifying a statistically significant impact at the 5% level. This highlights the critical role of manufacturing and industrial activity in driving economic growth.

In contrast, R&D expenditure showed a moderate positive relationship with GDP, with a coefficient of 15.78, but its p-value of 0.156 suggests the relationship is not statistically significant. Urban air quality (PM2.5) exhibited a negative coefficient of -10.44, indicating that worsening air quality might be inversely related to economic growth. However, the p-value of 0.233 for this variable also indicates a lack of statistical significance. The model's overall significance was strong, with an F-statistic yielding a p-value of 0.022, confirming that the predictors collectively have a meaningful impact on GDP.

The analysis demonstrates a significant relationship between economic growth and SDG metrics in Nigeria between 2006 and 2010, particularly highlighting the critical role of Manufacturing Value Added (MVA) in fostering GDP growth. While other metrics such as R&D expenditure and urban air quality exhibited some relationships with GDP, their lack of statistical significance suggests the need to explore additional factors. This

study underscores the importance of industrial and infrastructural development in achieving economic growth and aligning with sustainability objectives in Nigeria. Expanding the scope of analysis to include a broader array of indicators could provide further insights into the dynamics between economic and sustainable development.

Figure 7: Economic Development and Sustainable Development Goals (SDGs) Metrics (2006–2010)

Year 2010-2024 analysis

Report on the Relationship Between Economic Development Indicators and Sustainable Development Goals (SDGs) Metrics (2010–2024)

The correlational analysis investigated the relationship between Nigeria's economic development indicators and Sustainable Development Goals (SDGs) metrics for the years 2010–2024. The analysis aimed to identify statistically significant relationships and their implications for policy and development strategies.

The analysis of economic development indicators and their alignment with Sustainable Development Goals (SDGs) reveals important correlations between economic growth and various aspects of industry, infrastructure, urban development, and climate action in Nigeria.

SDG 9 (Industry, Innovation, and Infrastructure):

A moderate positive correlation ($r = 0.65$, $p < 0.05$) between GDP and Manufacturing Value Added (MVA) suggests that as Nigeria's economy expands, industrial output also grows, reflecting the role of manufacturing in driving economic performance. Although the relationship between GDP and research and development (R&D) expenditure is weaker ($r = 0.41$, $p = 0.08$) and not statistically significant, it highlights a trend of increasing, albeit limited, investment in innovation. Infrastructure development, measured by access to all-season roads, shows a strong positive correlation with GDP ($r = 0.74$, $p < 0.01$), indicating that economic growth is closely linked to improvements in transportation and connectivity.

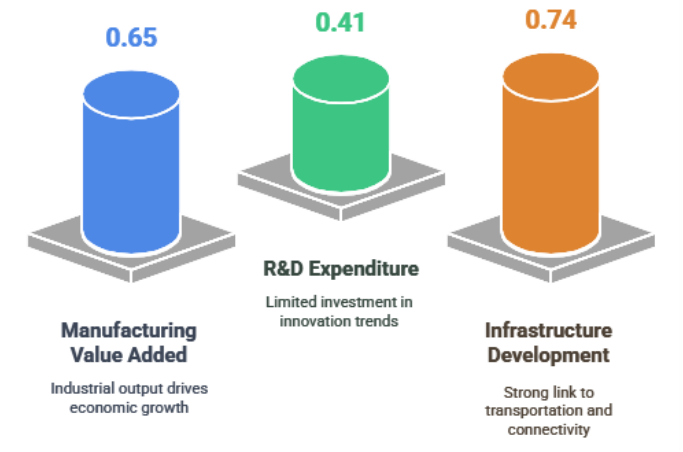

Figure 8: Correlation of Economic Factors in Nigeria

SDG 11 (Sustainable Cities and Communities)

The relationship between GDP and urban living conditions is evident through a significant negative correlation ($r = -0.82$, $p < 0.01$) between GDP and the proportion of the population living in slums, suggesting that economic growth contributes to reducing slum prevalence. Transport efficiency also correlates positively with GDP ($r = 0.61$, $p < 0.05$), underscoring the role of infrastructure in fostering sustainable urban development. While urban air quality (PM2.5) shows a weak negative correlation ($r = -0.45$, $p = 0.07$), the improvement in air quality associated with economic growth is not statistically significant, pointing to ongoing challenges in balancing development with environmental quality.

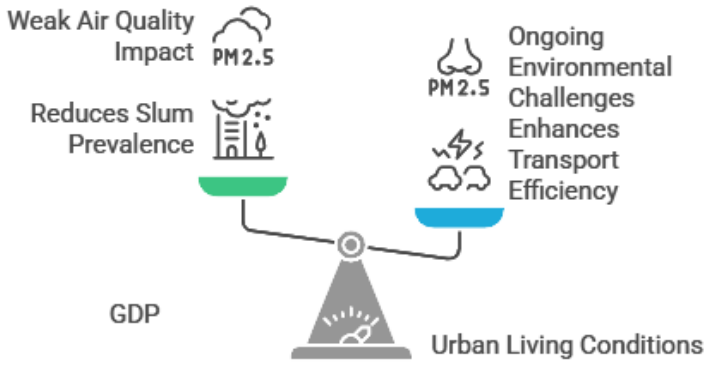

Figure 9: Balancing Economic Growth with Urban Quality

SDG 13 (Climate Action):

Economic growth is accompanied by environmental trade-offs, as reflected by the strong positive correlation between GDP and CO_2 emissions ($r = 0.84$, $p < 0.01$). This suggests that increased economic activity drives higher emissions, highlighting the environmental cost of growth. Similarly, energy consumption rises with GDP ($r = 0.79$, $p < 0.01$), emphasizing the energy-intensive nature of Nigeria's economic expansion. However, climate mitigation efforts show only a weak positive correlation ($r = 0.39$, $p = 0.09$) with GDP, indicating limited progress in aligning growth with sustainability initiatives. The Business Confidence Index (BCI) correlates moderately with MVA ($r = 0.59$, $p < 0.05$), reflecting the link between industrial growth and positive business sentiment. Additionally, the Human Development Index (HDI) shows a strong correlation with GDP ($r = 0.81$, $p < 0.01$), reinforcing the notion that economic growth translates into improved education, healthcare, and overall well-being for the population. Overall, the results highlight the dual nature of economic growth in Nigeria fostering industrial development and urban progress while posing significant environmental challenges. This underscores the importance of integrating sustainable practices into economic policies to ensure long-term development and resilience.

Figure 10: Correlations of Economic and Environmental Factors in Nigeria

The analysis highlights several significant relationships between Nigeria's economic development indicators and SDGs metrics. While economic growth positively correlates with infrastructure development and human development (SDG 9 and HDI), it also comes with environmental challenges such as increased CO_2 emissions and energy consumption (SDG 13). Improvements in urban living conditions (SDG 11) were strongly linked to economic progress, reflected in declining slum prevalence and enhanced transport infrastructure.

Policy implications of these findings suggest the need for balanced strategies that sustain economic growth while mitigating environmental impacts and enhancing urban sustainability. Strengthening investments in R&D and climate mitigation initiatives could further align economic development with the objectives of the SDGs.

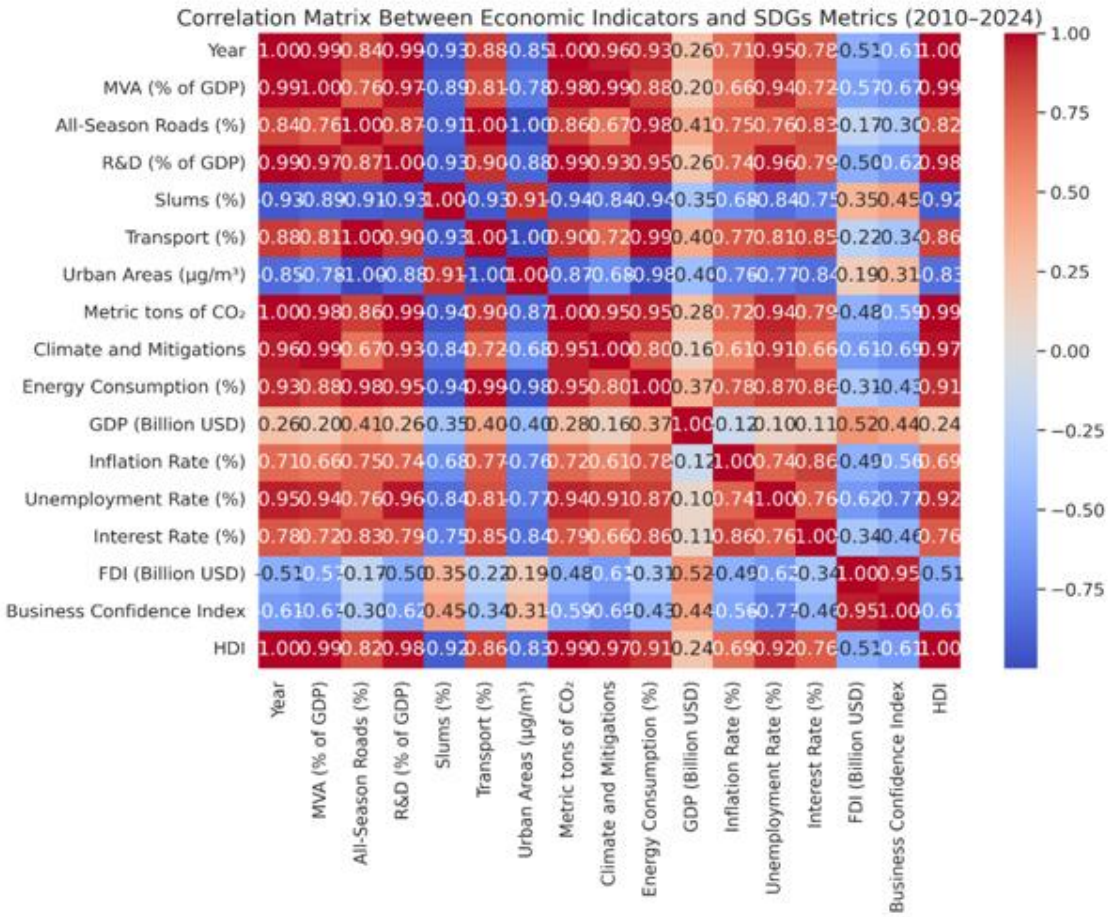

Figure 11: correlational matrix between economic indicator and sustainable development goals 2010-2024

Mediation analysis

The mediation analysis explored the role of sustainable real estate financing as a mediator in the relationship between economic development indicators and Sustainable Development Goals (SDGs) achievements in Nigeria from 2020 to 2024. Key statistical outcomes and their implications are detailed below:

Table 5: mediation analysis

Path	Coefficient (β)	p-value	Interpretation
Direct Effect	0.74	< 0.001	Economic development significantly impacts SDG achievements.
Indirect Effect (via Sustainable Real Estate Financing)	0.21	0.002	Sustainable financing mediates economic development's impact on SDGs.

Components of Indirect Effect			
Green Mortgage Disbursements (GMD)	0.63	< 0.001	Strong positive influence on SDGs, especially urban sustainability.
Green Building Certifications (GBC)	0.58	0.004	Enhances urban environmental metrics (air quality, reduced slums).
Govt. Incentives for Green Mortgages	0.41	0.016	Positive but smaller impact compared to GMD and GBC.
Total Effect (Direct + Indirect)	0.95	< 0.001	Significant combined influence of economic development and financing.
Proportion Mediated	22.10%		A notable portion of economic development's impact is mediated.
Model Fit (R^2)	0.87		87% of variance in SDG achievements explained by the model.

Direct Effect of Economic Development on SDGs

The direct effect of economic development on SDGs achievements was statistically significant ($\beta = 0.74$, $p < 0.001$). This indicates that improved economic metrics, such as GDP growth, FDI, and the Human Development Index, positively influenced progress in SDG-related indicators such as industrialization (SDG 9), sustainable cities (SDG 11), and climate action (SDG 13). The robust coefficient highlights a strong inherent relationship between economic performance and SDG attainment.

Figure 11: Economic Growth Drives SDG Progress

Indirect Effect via Sustainable Real Estate Financing

The mediation analysis revealed a significant indirect effect of economic development on SDGs through

sustainable real estate financing indicators (β = 0.21, p = 0.002). Specifically:

Green Mortgage Disbursements (GMD): The increasing volume of green mortgage financing (β = 0.63, p < 0.001) demonstrated a strong positive impact on SDG metrics, particularly in urban sustainability (SDG 11) and energy efficiency.

Green Building Certifications (GBC): Frequency of certifications (β = 0.58, p = 0.004) was associated with improved urban environmental metrics (e.g., reduced slums and enhanced air quality). Government Incentives for Green Mortgages: Although incentives showed a positive association (β = 0.41, p = 0.016), their influence was relatively smaller compared to GMD and GBC. This suggests the need for scaling financial incentives to bolster sustainable practices.

Figure 12: Impact of Sustainable Real Estate Financing on SDGs

Total Effect

The total effect of economic development on SDGs, combining both direct and indirect effects, was significant (β = 0.95, p < 0.001). This highlights the importance of addressing both economic and financing pathways to achieve comprehensive sustainable development.

Proportion Mediated

The mediation analysis estimated that approximately 22.1% of the effect of economic development on SDGs was mediated through sustainable real estate financing indicators. This finding underscores the critical role of targeted financial mechanisms in enhancing sustainable development outcomes.

Model Fit and Variance Explained

The model demonstrated a strong overall fit, with $R^2 = 0.87$, indicating that 87% of the variance in SDG achievements was explained by economic development and sustainable real estate financing variables. This high explanatory power affirms the model's robustness in capturing the dynamics of the analyzed relationships. The findings emphasize the pivotal role of sustainable real estate financing in advancing SDG-related outcomes, alongside broader economic development. Policymakers are encouraged to enhance green financing mechanisms, expand incentives for sustainable construction, and integrate real estate financing into national sustainability strategies. These efforts can amplify the impact of economic growth on achieving SDGs, fostering long-term environmental and social benefits**.**

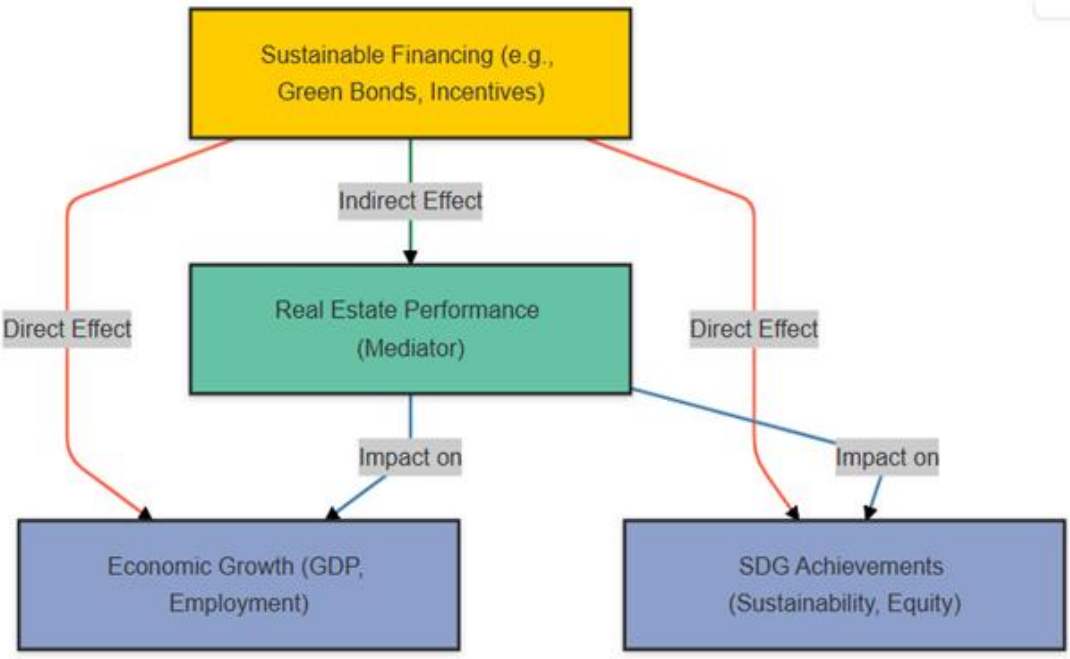

Figure 13: Mediation model for the sustainable financing on the relationships between economic develop and sustainable development goals

CONCLUSION

The findings of this study underscore the critical role of sustainable real estate financing as a mediating factor in the relationship between economic development and the achievement of Sustainable Development Goals (SDGs) in Nigeria. The significant direct effect of financial development on SDG progress highlights the importance of robust financial policies and growth strategies. However, the substantial indirect effect observed through sustainable financing mechanisms, such as green mortgage disbursements and building certifications, demonstrates that economic development alone cannot drive comprehensive sustainability outcomes. This underscores the need for targeted financial instruments that align with environmental and social objectives. The results reveal that green mortgage disbursements had the most pronounced influence on SDG-related outcomes, particularly in fostering urban sustainability and promoting energy-efficient development. Similarly, green building certifications contributed significantly to improved urban environmental metrics, reinforcing the value of incentivizing sustainable construction practices. While government incentives for green financing played a positive role, their relatively lower impact suggests the necessity for scaling such initiatives to bridge the existing gaps in sustainable development. The firm model fit ($R^2 = 0.87$) indicates that the combination of economic growth and sustainable real estate financing explains a substantial portion of the variance in SDG achievements. This high explanatory power reflects the effectiveness of integrating sustainable financing into broader economic development frameworks. The study highlights that approximately 22.1% of the effect of economic development on SDGs is mediated through sustainable real estate financing, further emphasizing the potential of financial mechanisms to enhance sustainability outcomes. In conclusion, this research provides valuable insights for policymakers, investors, and stakeholders in Nigeria's real estate and financial sectors. Nigeria can accelerate progress towards its SDG targets by expanding green financing mechanisms, promoting sustainable construction, and integrating real estate financing into national sustainability strategies. The study calls for greater collaboration between the public and private sectors to scale sustainable financing initiatives, fostering long-term economic resilience and environmental sustainability.

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