

Original Research Article

Perceived Environment and Socioeconomic Impact of Quarrying Activities on Residents in Abeokuta, Nigeria

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Abstract: Quarrying is an important economic activity that supplies construction materials and creates employment opportunities. However, its environmental and socioeconomic consequences on nearby communities remain a growing concern in many developing countries. This study assessed the perceived impacts of quarrying activities on residents living around selected quarry sites in Abeokuta, Ogun State, Nigeria. Specifically, the study examined the socioeconomic characteristics of residents, evaluated the environmental and socioeconomic impacts of quarrying, and assessed the coping strategies adopted by affected households. A mixed-method research design integrating household surveys, key informant interviews, field observations, and Geographic Information System (GIS) analysis was adopted. Four active quarry sites were purposively selected, and 816 questionnaires were administered using a multistage sampling technique. Data were analyzed using descriptive statistics, Relative Importance Index (RII), and thematic analysis. The findings revealed that most residents were low-income earners and had resided in quarry communities for several years despite environmental challenges. Noise and vibration resulting from blasting constituted the most severe perceived environmental impact, followed by structural damage to buildings, dust pollution, and declining property values. Residents remained in these communities mainly because of affordable housing, family ties, and proximity to employment opportunities. Common coping strategies included reinforcing residential buildings, regular environmental cleaning, medical treatment for quarry-related illnesses, and community engagement with quarry operators. The study concludes that while quarrying contributes significantly to economic development, inadequate environmental management has increased the vulnerability of surrounding communities. It recommends stricter enforcement of environmental regulations, improved land-use planning, continuous environmental monitoring, and stronger corporate social responsibility initiatives to enhance sustainable development in quarry-host communities.

Keywords: Quarrying, Environmental Impact, Socioeconomic Impact, Residents, Sustainable Development, Abeokuta, Nigeria.

1.0 Introduction

Rapid urbanization and increasing demand for construction materials have intensified quarrying activities across many developing countries. Quarrying provides essential materials such as granite, limestone, gravel, and sand that support housing development, transportation infrastructure, and industrial expansion. Consequently, the industry contributes significantly to national economic growth through employment generation, government revenue, and industrial development.

Despite these economic benefits, quarrying has generated considerable environmental and public health concerns. Quarry operations involving blasting, crushing, excavation, and transportation produce dust emissions, excessive noise, ground vibration, and landscape degradation. These environmental disturbances frequently affect nearby residential communities by reducing environmental quality, damaging buildings, degrading ecosystems, and increasing the prevalence of respiratory and stress-related illnesses.

In Nigeria, particularly in Ogun State, quarrying has expanded rapidly because of abundant granite deposits and increasing construction activities. Abeokuta has become one of the country's major quarrying centres, hosting numerous quarry companies operating close to residential settlements. The proximity of these operations to human settlements has intensified concerns regarding environmental pollution, declining housing quality, reduced property values, and deteriorating living conditions.

Although previous studies have examined either the environmental or socioeconomic consequences of quarrying, relatively few have integrated both dimensions while also considering residents' adaptive responses. Furthermore, limited empirical evidence exists on how socioeconomic realities influence residents' decisions to remain in environmentally vulnerable quarry communities despite persistent exposure to environmental hazards.

This study, therefore, investigates the perceived impacts of quarrying activities on residents in Abeokuta, Nigeria. Specifically, it examines the socioeconomic characteristics of residents, evaluates the environmental and socioeconomic impacts associated with quarry operations, and assesses the coping strategies adopted by affected households. The findings provide evidence for policymakers, environmental regulators, urban planners, and quarry operators to formulate sustainable strategies that balance mineral resource development with environmental protection and community well-being.

1.1 Aim and Objectives

The aim of this study is to examine the impacts of quarry activities on residents' health and livelihood with a view to providing information that could enhance sustainable

environmental management in the study area. To achieve this, aim the specific objectives are to:

- i. Identify the different quarry sites in Abeokuta, Ogun State;
- ii. Determine the socioeconomic characteristics of the residents in the study area;
- iii. Examine the specific effects of quarry operations on the residents in the study area;
- iv. Examine the factors that influence residents' choice of residential location; and
- v. Evaluate the coping strategies adopted by the residents within the study area.

2.0 Literature Review

Quarrying is an important extractive activity that supplies aggregates for road construction, housing development, and other infrastructure projects. The industry contributes substantially to economic growth through employment creation, revenue generation, and the supply of construction materials. However, quarry operations have also been associated with significant environmental degradation and adverse socioeconomic consequences for surrounding communities.

2.1 Environmental and Socioeconomic Impacts of Quarrying

The environmental impacts of quarrying include air pollution, dust emission, excessive noise, ground vibration, landscape alteration, vegetation loss, and water contamination. Dust generated during blasting, crushing, and transportation reduces air quality and increases the incidence of respiratory illnesses among residents. Similarly, repeated blasting produces vibrations that weaken building foundations and result in cracks in residential structures.

Beyond environmental degradation, quarrying affects the socioeconomic well-being of host communities. Continuous exposure to noise and dust reduces residents' quality of life, lowers property values, disrupts livelihoods, and increases household expenditure on healthcare. Although quarrying generates employment opportunities, these benefits are often outweighed by environmental costs experienced by nearby residents.

2.2 Residents' Coping Strategies

Residents living near quarry sites employ several coping strategies to reduce their exposure to environmental hazards. These include reinforcing residential buildings against vibration, planting vegetation around homes to reduce dust, frequent cleaning of houses, seeking medical attention for respiratory illnesses, and engaging community leaders to negotiate with quarry operators. However, many of these strategies provide only temporary relief because they do not address the underlying environmental problems associated with quarry operations.

2.3 Research Gap

Although numerous studies have investigated the environmental consequences of quarrying, relatively few have adopted an integrated approach that simultaneously examines socioeconomic characteristics, environmental impacts, and residents' coping strategies within the same study. Furthermore, evidence from Abeokuta remains limited

despite the rapid expansion of quarry operations in the area. This study fills this gap by providing a comprehensive assessment of residents' perceptions and adaptive responses to quarry-related environmental challenges.

3.0 Methodology

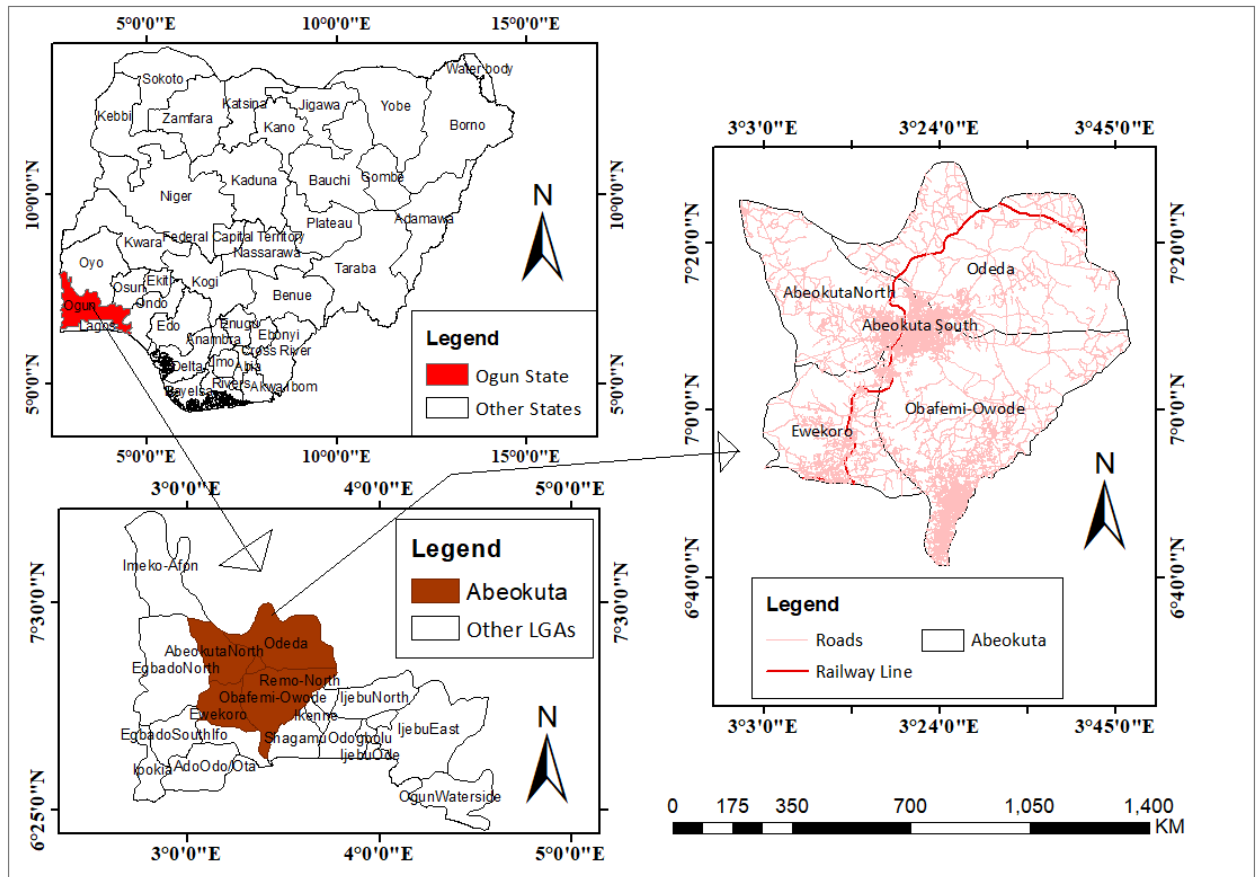
3.1 Study Area

The study was conducted in Abeokuta, the capital city of Ogun State, Nigeria. Abeokuta is one of the country's major granite-producing centres and hosts numerous quarry companies because of its abundant rock deposits. Rapid urban expansion has resulted in residential developments located close to quarry sites, thereby exposing many households to quarry-related environmental hazards.

3.2 Physical Characteristics

The city is established on an elevation of 157 meters above the sea level. The most recognizable feature is the Olumo Rock (172.8 meters) which depicts the geological wealth of the region and the reason why it is popular to quarrying companies. The Ogun River that divides the city is another remarkable geographic feature that determines the use of the land and settlement arrangements.

The climate of Abeokuta is hot and humid tropical climate having average annual rain of around 963.3 mm. The derived savanna vegetation in the area is largely influenced by the underlying soil type. However, human activities, particularly quarrying, have resulted in deforestation, the regeneration of secondary bush and disruption of the ecosystem in the communities located near quarry sites, the degradation of natural vegetation and soil erosion are highly evident.



Ogun State in Nigeria Content

3.3 Study Population

The target population of this study comprised households residing within quarry sites in Abeokuta, Ogun State, South Western Nigeria. The list of quarry sites in Abeokuta, Ogun State were obtained and presented in Table 3.2. However, a quarter (4) of the quarry sites were purposively selected based on their functionality, accessibility and proximity for this study. The selected quarry sites for this study were: Ratcon Construction Company Quarry, AIA Granite Supplier and Haulage, Western Quarry Limited, and CCECC Quarry. Presented in Table 3.3 are the selected quarry sites and their locational coordinates. Geographic coordinates of four selected quarry sites were obtained using GPS receiver through field survey and the coordinates were loaded on the Google Earth imagery to map out buildings within a 20-kilometer radius to the quarry sites.

Table 3.1: List of Quarry Sites in Abeokuta

S/N	Quarry Site Name	Location/Community	Operator (Where Available)
1	CNC Engineering Co. Limited	Owojo Village, Obafemi-Owode LGA	CNC Company
2	CNBM Mining Investment Limited	Obafemi-Owode LGA	Zeberced Group

S/N	Quarry Site Name	Location/Community	Operator (Where Available)
3	Western Quarry Limited	Abeokuta	Western Quarry Limited
4	AIA Granite Supplier and Haulage	Efon Road, opposite Fanimora Filling Station, Gbagura, Abeokuta	AIA Granite Supplier and Haulage
5	HOY Mining Company (Nig) Limited	Obafemi-Owode LGA	Mining Company
6	A&B Global Service Limited	Obafe Village, Obafemi-Owode LGA	A&B Company
7	Zhi Yoan Global Nig Ltd	Odeda, Odeda LGA	Zhi Yoan Global Ltd
8	HOY Mining Company Ltd	Odeda, Odeda LGA	HOY Mining Company
9	XVC GAO Nig Limited	Odeda, Odeda LGA	XVC GAO Limited
10	Dove Quarries Limited	Akija Village, Obafemi-Owode LGA	Dove Quarries Limited
11	Zeberced Quarry Nig Limited	Kobape, Obafemi-Owode LGA	Zeberced Group
12	Raton Construction Company	Awayin Village, Odeda LGA	Construction and Mining Company
13	CCECC Quarry	Ajebo, Village Obafemi-Owode LGA	China Civil Engineering Construction Corporation

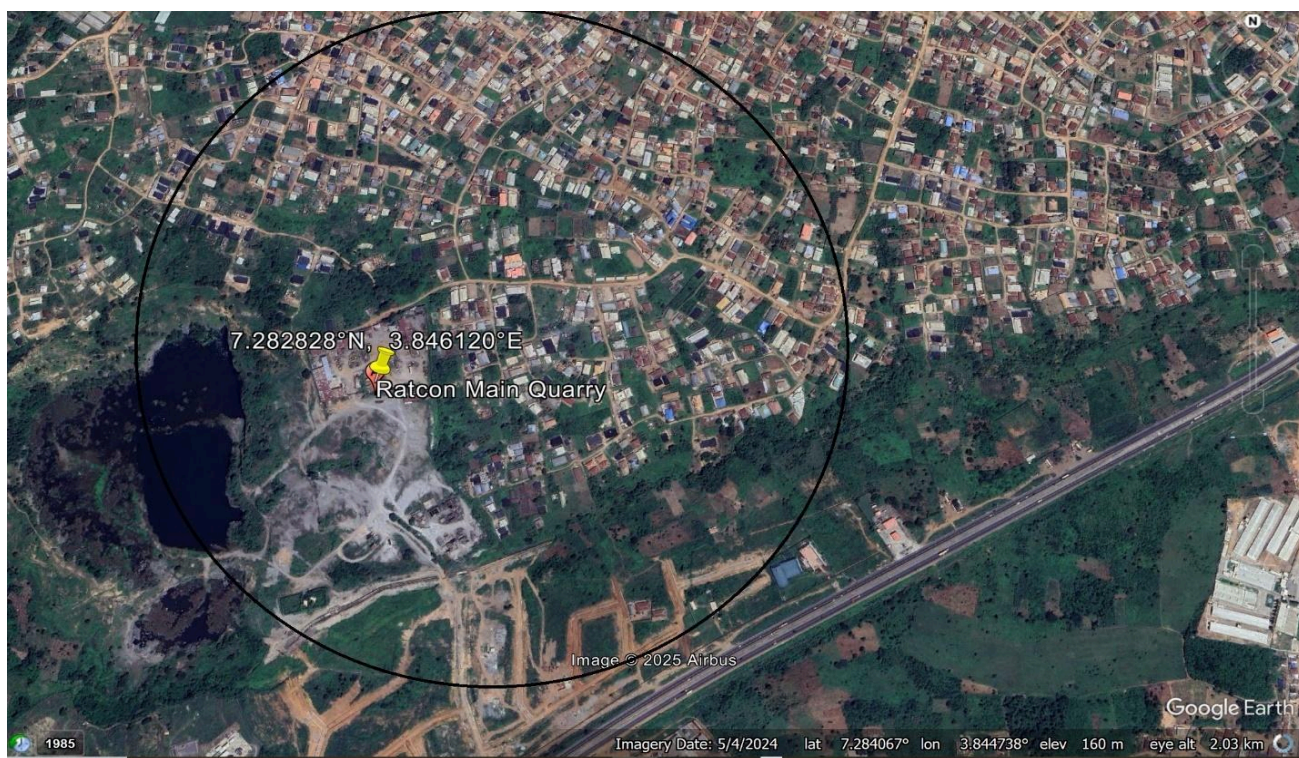
Source: Ministry of Solid Minerals Development

Table 3.2: List of Selected Quarry Sites in Abeokuta

S/N	Quarry Site Name	Location/Community	Operator (Where Available)	Latitude (°N)	Longitude (°E)	No. of Buildings
1	Ratcon Construction Company Quarry	Awayin Village, Odeda LGA	Ratcon Construction Company	7.258905° N	3.712215° E	635402
2	AIA Granite Supplier and Haulage	Efon Road opposite Fanimora Filling Station Gbaguru Abeokuta	AIA Granite Supplier and Haulage	7.178701° N	3.352796° E	261135
3	Western Quarry Limited	Abeokuta	Western Quarry Limited	7.147320° N	3.361301° E	262625

4	CCECC Quarry	Ajebo Village, Abeokuta	China Civil Engineering Constructio n Corporation	7.138560° N	3.406879° E	263690
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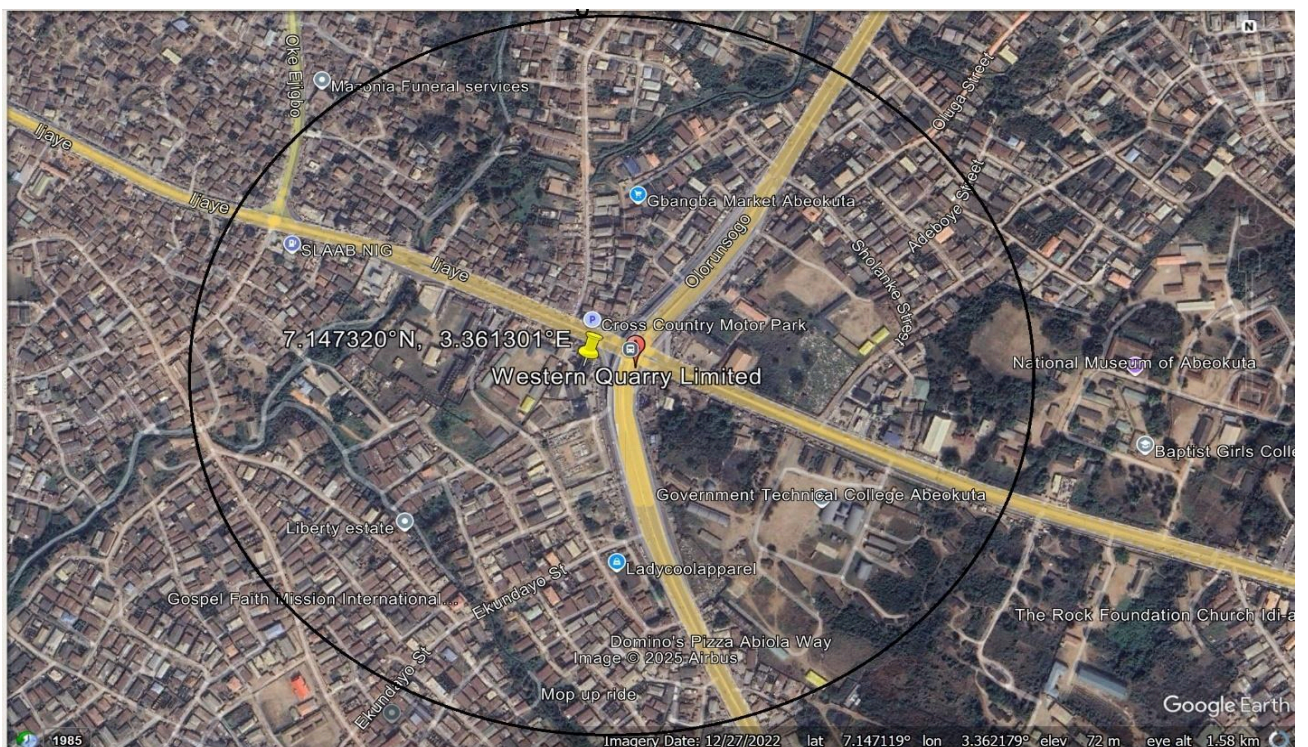
Source: Author Compilation 2025



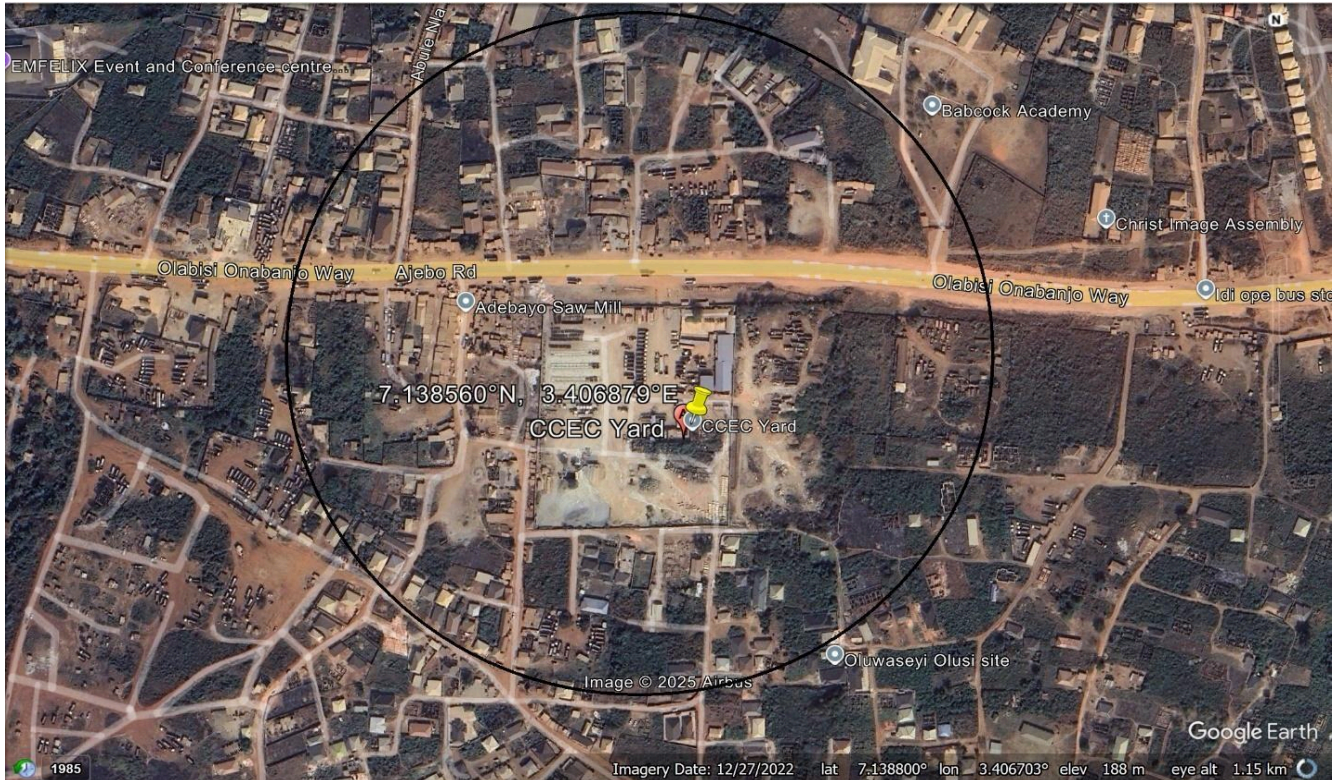
Ratcon Main Quarry.



AIA Granite Supplier and Haulage



Western Quarry Limited



CCECC Quarry.

3.4 Sample Technique and Size

This study adopted a multi-stage sampling technique. Four quarry sites were purposely selected based on their accessibility, functionality, proximity to Abeokuta, Ogun State, and within a 20-kilometre radius of the residents (Table 3.2). Buildings that fell within a 20-kilometre radius were mapped, and those above a 20-kilometre radius were not considered for this study for the selection of the sample size. Consequently, the Overpass API returned a total of approximately 1,422,852 building features within 20 km of the four selected quarry sites. These counts reflect all OSM-mapped building footprints (residential, commercial, institutional, and industrial structures). The large values are consistent with the inclusion of the urban core of Abeokuta within the buffer zones.

Also, Yamane's (1967) formula in equation 3.3 was applied to determine sample size for the study, using populations derived from the number of buildings within 20 km of each quarry site. At the conventional 5% margin of error, the required sample was approximately 1,598 households. However, given the constraints of time and resources, and to maintain statistical reliability while ensuring feasibility, a 7% margin of error was adopted. This yielded a sample size of approximately 204 households per quarry site (816 in total). This level of precision is widely acceptable in field-based social science research.

$$n = \frac{N}{1+N(e^2)}$$

Where n is the sample size per quarry site, N is the estimated number of buildings within 20km of the quarry sites, and e = 7% margin of error.

$$\text{Site 1} = \frac{635402}{1+635402(0.07^2)} \approx 204$$

$$\text{Site 2} = \frac{261135}{1+261135(0.07^2)} \approx 204$$

$$\text{Site 3} = \frac{262625}{1+262625(0.07^2)} \approx 204$$

$$\text{Site 4} = \frac{263690}{1+263690(0.07^2)} \approx 204$$

Hence, 204 respondents will be sampled per quarry site making a total of 816 respondents in all the four selected quarry sites.

Table 3.3 Yamane's Sample Size Estimation at Different Error Margins

Quarry Site	Name	N (Buildings)	Sample @5%	Sample @7%	Sample @10%
1.	Ratcon	635,402	400	204	100
2.	AIA Granite	261,135	400	204	100
3.	Western Quarry	262,625	399	204	100
4.	CCECC	263,690	399	204	100
Total		1,422,852	1,598	816	400

Source: Author Compilation, 2025

3.5 Sampling Procedure

Four active quarry sites were purposively selected for investigation based on their operational status and proximity to residential communities. These included Ratcon Construction Company Quarry, AIA Granite Supplier and Haulage, Western Quarry Limited, and China Civil Engineering Construction Corporation Quarry. A total of 816 household questionnaires were administered using a multistage sampling procedure.

3.6 Data Collection

Primary data were collected through structured questionnaires, key informant interviews, and field observations. Secondary data were obtained from published literature, government reports, planning documents, and spatial datasets relevant to quarry operations and land-use planning.

3.7 Data Analysis

Quantitative data were analyzed using descriptive statistics and the Relative Importance Index (RII) to rank residents' perceptions of quarry impacts. Qualitative responses were analyzed using thematic content analysis, while GIS techniques were applied to map quarry locations and evaluate proximity-related environmental vulnerability.

3.8 Research Design

The study adopted a mixed-methods research design combining quantitative and qualitative techniques. Household questionnaires provided quantitative information, while

key informant interviews and field observations supplied qualitative evidence that complemented the survey findings. Geographic Information System (GIS) analysis was also employed to assess the spatial distribution of quarry sites and residential settlements.

4.0 Discussions and Findings

4.1 Socioeconomic Characteristics of Respondents

The socioeconomic profile of respondents indicates that residents of quarry-host communities were predominantly within the economically active age group and had lived in the communities for several years particularly 31–40 years (56.1%) and 41–50 years (21.8%), indicating that over three-quarters of the population were within active workforce. Income distribution indicates that 72.8% of the respondents earned below ₦50,000 monthly, reflecting widespread low-income conditions and limited economic resilience among the residents. Most respondents earned relatively low monthly incomes, demonstrating that economically disadvantaged households are more likely to reside near quarry sites where housing costs are comparatively lower. Residents' Length of stay reveal that 77.8% of them lived in the area for more than 6 years, with 39.6% residing for 11–20 years, indicating long-term exposure to quarrying activities. The long duration of residence further suggests prolonged exposure to quarry-related environmental hazard. Educational qualification shows that 56.1% of respondents indicated non-formal education, while 43.9% indicated formal education, suggesting moderate human capital development but limited access to technical and environmental knowledge. Low formal education levels are often associated with reduced environmental awareness, limited community participation in regulatory processes, and weak risk perception, which has been documented in mining and quarrying regions across sub-Saharan Africa.

Occupational distribution indicates a dominance of trading (33.2%), farming (25.5%), and civil service (24.1%), with only 0.4% directly engaged in mining. This indicates that quarrying impacts are largely externalized onto non-mining livelihoods, meaning communities bear environmental costs without directly benefiting economically from quarry operations. The interaction between socio-economic structure, livelihood dependence, settlement permanence, and quarry proximity increase environmental risk and underlines the necessity for integrated spatial planning, regulatory enforcement, and community-based environmental governance frameworks.

Table 4.6: Socioeconomic Characteristics of the Respondents

Attributes	Frequency	Percentage
Gender		
Male	501	61.4
Female	315	38.6
Total	816	100
Age (in years)		
< 20	75	9.2
21-30	92	11.3
31-40	458	56.1
41-50	178	21.8

51 and above	13	1.6
Total	816	100
Marital Status		
Single	115	14.1
Married	645	79.0
Widowed	56	6.9
Total	816	100
Educational Status		
Non-formal	458	56.1
Formal	358	43.9
Total	816	100
Occupation		
Farming	208	25.5
Trading	271	33.2
Civil Service	197	24.1
Artisanship	125	15.3
Schooling	12	1.5
Mining	3	0.4
Total	816	100
Monthly Income		
<₦20,000	176	21.6
₦20001-₦50000	418	51.2
₦50001-₦100000	136	16.7
₦100001 and above	86	10.5
Total	816	100
Length of Stay (in Years)		
<5	116	14.2
6-10	312	38.2
11-20	323	39.6
> 20	65	8.0
Total	816	100

Author's Field work, 2025

The findings also reveal that affordability, proximity to employment opportunities, and family or ancestral ties were the principal factors influencing residential location. It was established that family ties, affordability of housing and proximity to workplaces accounted for 91.9%, 86.2%, and 85.3% respectively. These were identified as the prevalent underlying determinants of residents' locational choices. These factors outweighed concerns about environmental pollution and health risks, indicating that economic realities significantly shape residential decisions in quarry-affected communities.

These findings demonstrated the trade-offs residents make between the environmental hazards and livelihood needs, which is imperative for developing policies and interventions sought to mitigate the quarry-associated impacts without social structure disruption.

Table 4.8: Locational Choice Factor

Variable	Frequency	Percentage
Affordability of housing	703	86.2
Proximity to workplace	696	85.3
Family ties	743	91.9

Availability of land	456	55.9
Lack of better alternatives	112	13.7
Inherited property	66	8.1
Nearness to social amenities (e.g., school, market)	262	32.1
Author's Fieldwork 2025		

4.2 Perceived Environmental and Socioeconomic Impacts of Quarrying

The Relative Importance Index (RII) was used to describe the various effects from most to least importance. Findings revealed that noise and vibration from blasting was perceived by the respondents as the most significant impact of quarry activities on residents (mean = 3.21, RII = 0.64). This corroborated with earlier studies conducted in Nigeria and other developing world, where blasting-induced vibrations were observed to cause discomfort, structural damage to buildings, and mental stress among proximate residents^{13,16, 27,28}. Structural damage to buildings was ranked second (mean = 2.83, RII = 0.57), signifying widespread concern about cracks and deterioration caused by quarry blasts. The reduction of land and property values (mean = 2.67, RII = 0.53) aligned with findings from earlier study, who reported that proximity to quarries adversely affects property marketability

Residents identified several environmental impacts associated with quarry operations. Among these, noise and vibration from blasting emerged as the most severe impact (RII = 0.64). Respondents reported that repeated blasting disrupted daily activities, caused psychological stress, and resulted in cracks in residential buildings.

The second most significant impact was structural damage to buildings (RII = 0.57). Residents observed cracks in walls, damaged roofs, and weakened foundations, which they attributed to continuous blasting and ground vibrations.

Table 4.7: Effect of Quarry Operation on Residents

Statements	Frequency of Response*					Σf	Σfx	Mea n $(\bar{x})$	RII	Position
	(1)	(2)	(3)	(4)	(5)					
Quarry operations generate excessive dust that affects air quality.	13 2	37 9	90	19 9	16	81 6	203 6	2.50	0.5 0	5 th
Noise and vibrations from Blasting disturbs residents.	77	16 8	12 5	40 2	44	81 6	261 6	3.21	0.6 4	1 st
Quarry activities have caused cracks/damage to buildings.	72	28 8	18 1	25 9	16	81 6	230 7	2.83	0.5 7	2 nd
Quarry operations pollute local water sources.	14 0	37 5	12 3	15 9	19	81 6	199 0	2.44	0.4 9	6 th

Quarry activities negatively affect residents' health (cough, asthma, stress, etc.).	13 7	41 7	48	19 5	19	81 6	199 0	2.44	0.4 9	6 th
Quarry activities reduce land/property values.	10 1	31 3	16 9	21 7	16	81 6	218 2	2.67	0.5 3	3 rd
Quarry operations disrupt daily life (farming, schooling, trade).	12 2	38 0	75	21 0	29	81 6	209 2	2.56	0.5 1	4 th

Likert Scale Key: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5).

Source: Author's Fieldwork (2025)

Another important impact was the decline in property values (RII = 0.53). The environmental nuisance associated with quarry operations reduced the attractiveness of surrounding neighbourhoods, thereby lowering rental and market values of residential properties. Dust emissions, traffic congestion caused by heavy trucks, and landscape degradation were also identified as important environmental concerns affecting residents' quality of life.

The GIS analysis further demonstrated that environmental risks decrease with increasing distance from quarry sites. Settlements located closest to quarry operations experienced the highest levels of environmental exposure and vulnerability, whereas communities located farther away experienced comparatively lower impacts.

4.3 Coping Strategies Adopted by Residents

Residents employed several strategies to reduce the impacts of quarry operations. The results suggest that the most used coping mechanism is the act of closing windows and doors (43.5%), an attempt by the residents to reduce the entry of dusts in their houses and to minimize noise exposure to the quarry activity. This aligned with earlier study that communities tend to rely on simple physical measures to minimize the direct environmental effects in the case of structural interventions being limited. Both individual-level and community-level adaptive strategies were evident as a considerable percentage of residents stated that they had either used protective masks or noise insulation (15.7%), petitioned quarry operators or government authorities (14.3%).

Other less common approaches are tree/shrub placement to control dust (1.8%), regular cleaning or moistening of the environment (9.9%), and temporary movement during blasting (5.9%), which show that they have little capacity to alter the environment or move around to respond to impacts of the quarry. It is interesting to note that 27.9% of residents were reported not using any coping strategy, which could be due to the lack of awareness, low resources, or perception of futility in managing quarry-related hazards. This is in

agreement with the earlier findings that the element of resource limitations usually restricts the capacity of residents of mining-affected communities to implement protective measures.

Table 4.10: Adopted Strategies to Cope with Quarry-Related Impact

Variables	Frequency	Percentage
Planting trees/shrubs for dust control	15	1.8
Using protective masks/ noise insulation /coverings	128	15.7
Frequently cleaning or wetting surroundings	81	9.9
Seeking medical attention frequently	16	2
Keeping windows/doors closed	355	43.5
Relocating temporarily during blasting	48	5.9
Seeking medical treatment	16	2
Petitioning quarry operators/government	117	14.3
None	228	27.9

Source: Author's fieldwork, 2025

Despite these efforts, respondents generally considered these coping strategies inadequate because they addressed only the symptoms rather than the underlying causes of environmental degradation. Many residents indicated that financial limitations prevented relocation to safer neighborhoods, leaving them vulnerable to continued environmental exposure.

5.0 Discussion

The findings demonstrate that quarrying presents a complex balance between economic benefits and environmental costs. While quarry operations generate employment and contribute to local economic development, nearby residents continue to experience substantial environmental and socioeconomic challenges.

The predominance of low-income households within quarry communities supports the proposition of Rational Choice Theory that residential decisions are largely influenced by perceived economic benefits. Affordable housing and proximity to employment encourage residents to remain in environmentally hazardous locations despite being aware of associated risks. This finding aligns with previous studies that identified poverty and limited housing alternatives as major determinants of residential location in mining and quarry communities.

The high ranking of noise, vibration, and structural damage confirms that blasting activities remain the principal environmental challenge affecting host communities. Continuous exposure to these hazards not only damages physical infrastructure but also contributes to psychological stress, reduced well-being, and declining residential satisfaction. These findings are consistent with Human–Environmental Interaction Theory, which explains how human activities alter environmental conditions and subsequently affect human health and settlement patterns.

The coping strategies adopted by residents demonstrate considerable resilience but also expose institutional shortcomings. Household adaptations, such as reinforcing buildings and frequent cleaning, reduce immediate exposure but cannot eliminate

environmental risks. Sustainable mitigation, therefore, requires coordinated interventions involving government agencies, environmental regulators, urban planners, and quarry operators.

Overall, the findings suggest that environmental management around quarry sites should extend beyond regulatory compliance to include participatory planning, regular environmental monitoring, community engagement, and improved enforcement of setback regulations. Such measures would reduce residents' vulnerability while promoting environmentally sustainable quarry operations.

6.0 Practical Recommendations

Based on the findings, the study recommends that:

- Environmental regulations governing quarry operations should be strictly enforced.
- Residential developments should not be approved within statutory buffer distances of active quarry sites.
- Quarry operators should install modern dust-control technologies and vibration monitoring systems.
- Periodic environmental audits should be conducted by regulatory agencies.
- Compensation mechanisms should be established for residents whose buildings suffer verified blasting-related damage.
- Community participation should be incorporated into environmental decision-making processes affecting quarry operations.
- Sustainable rehabilitation of exhausted quarry sites should be made compulsory.

7.0 Policy Implications

The findings have several implications for environmental management and urban planning. First, regulatory agencies should strengthen enforcement of Environmental Impact Assessment (EIA) requirements and statutory setback distances between quarry sites and residential developments. Continuous monitoring of blasting activities, dust emissions, and environmental quality should become mandatory. Second, state and local planning authorities should integrate quarry buffer zones into development plans to prevent further residential expansion into environmentally vulnerable areas.

Third, quarry companies should strengthen their Corporate Social Responsibility (CSR) programmes by providing community infrastructure, healthcare services, dust suppression measures, and regular structural assessments of nearby buildings. Fourth, environmental awareness campaigns should educate residents about quarry-related health risks and promote practical mitigation measures at the household and community levels.

Finally, the government should promote affordable housing schemes and livelihood diversification programmes that reduce residents' dependence on environmentally hazardous settlements.

8.0 Conclusion

This study assessed the perceived environmental and socioeconomic impacts of quarrying activities on residents in Abeokuta, Ogun State, Nigeria. The findings demonstrate that although quarrying contributes significantly to local economic development through employment generation and the supply of construction materials, it also imposes considerable environmental and social costs on host communities.

The study established that residents living closest to quarry sites are disproportionately exposed to dust pollution, blasting noise, ground vibration, and structural damage to buildings. These environmental hazards adversely affect public health, property values, and overall quality of life. Despite these challenges, many households continue to reside in quarry-affected communities because of affordable housing, proximity to employment opportunities, and long-standing family or ancestral ties. Residents have adopted several coping mechanisms, including reinforcing buildings, frequent environmental cleaning, seeking medical care, and engaging with community leaders. However, these strategies provide only limited protection against the long-term impacts of quarry operations.

Overall, the findings underscore the need to balance mineral resource development with environmental sustainability and social well-being. Effective environmental governance, improved land-use planning, and stronger collaboration among government agencies, quarry operators, and host communities are essential to achieving sustainable quarry development.

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