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Research Article

Effects of Coal Mining on Agriculture and Rural Livelihood: Evidence from Iwollo Communities in Enugu State, Nigeria

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Abstract

Coal is said to be the foundation and the dirty secret of the world's economy, it is cheap, abundant and reliable source of energy that powers electricity, drives industrial production processes, sustains economic growth, create jobs and exports for many countries across the world. Despite the impressive contribution of the mining sector to national government revenue, foreign reserves and other infrastructural development many stakeholders still argue that the adverse effects of mining erodes the benefits of mining. This study seeks to investigate the economic effects of coal mining activities in Iwollo communities, Ezeagu Local Government of Enugu State. The study employed both primary and secondary sources of data collection to elicit information for the study. The study population comprised of the household heads, community leaders, women leaders, youth leaders and market leaders. Information from the questionnaire survey and interview sessions revealed that the people of Iwollo communities are predominantly farmers with major interests in cassava farming. The study also revealed that in recent times (2025), there have been 75% reductions in farming activities which have significantly affected the volume of cassava outputs within the area and that factors such as cattle rustling, coal mining activities, insecurity challenges were the main reasons for the observed reduction in farming activities and farmers outputs within the area. The result revealed that 72% of residents were engaged in farming in 2021, which dropped to 28% by 2025, 97% of respondents indicated that mining depleted the natural environment, 100% reported that coal mining reduced agricultural yield, 92% indicated no improvement in infrastructural development due to mining, 88% of the respondents agreed that coal mining displaced traditional farmers and livelihoods. Further investigations revealed that coal mining activities within the area had the highest negative impacts on the economy of the local people as most of the local people had lost their farmlands to the mining activities and hence lost their major source of livelihood. Based on the findings, the study suggests that adequate livelihood alternative such as greenhouse farming should be put in place for the host communities to help sustain the traditional and primary livelihood of the people.

Keywords

Economy, Host Communities, Farming Activities, Natural Resources, Enugu State

1. Introduction

Mining is a global phenomenon with severe effects on natural resources including loss of vegetation, agricultural lands and domestic water sources [27]. Coal is an important contributor for power development. However, it deteriorates the environment by polluting air, water and soil. It also pollutes the surrounding agricultural land that limits the production of crops [30].

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Minerals play significant roles in boosting the manufacturing sector and creating jobs for a sizeable proportion of the world population [41]. Mining activities have negative effect on the environmental, which may constrain the achievement of other sustainable development goals such as good health and clean water [11]. This sector has detrimental effects on the environment and health of the people [2, 22, 24]. Mining of minerals like Gold, Tantalite, Tin and Columbite affect the sustainable utilization of natural resources which in turn affects household livelihood [13, 58]. For example, mining of minerals affect the environment and socioeconomic lives of people and communities involved directly or indirectly in it [3, 9, 19]. Environmental problems associated with mining of minerals are soil erosion, loss of vegetation, soil fertility and decline in biodiversity and pollution [65]. This affects agriculture and other sources of livelihood.

Land is vulnerable in different parts of the world due to mining [62]. Water pollution, low soil fertility and vegetation induced by mining makes it challenging to ensure environmental sustainability and sustainable use of the natural resource base [58] which reduces forest cover.

Coal mining affects the local environment and associated biota through the removal of vegetation and topsoil [13, 67], the displacement of fauna, the release of pollutants, and the generation of noise particularly where the diversion of forest land for mining takes place [28, 61]. Declined in vegetation causes invasive species to occupy the area, and as a result, posing severe threats to biodiversity and household sources of livelihood [5, 67].

In Nigeria, mining contributes very little income to the national economy despite the abundant deposits of minerals such as tin and columbite, iron ore, coal, lead and gold. For example, the sector accounted for only 0.18% of GDP in 2022, and today, the activity is mainly poverty-driven and supports the livelihoods of at least 500,000 people [12]. Coal has been a major means of fuel used in electricity generation. It has played a huge role in the development drive of several nations. Industrial revolutions had been powered by coal and the energy it supplied. In many countries, coal is the primary source of energy [21], and globally it provides around 27% primary energy need [17], generates about 36% of the world electricity [15]. Hence, coal contributes to economic development, promoting high standard of living of people. Today however, coal is viewed by many as a menacing evil that threatens the environment, hence must be discarded. But, most of the developing world still views coal as a means to economic growth [23] and addressing energy generation and supply deficiency. However, this is, in most cases without balancing economic and environmental considerations [18].

In spite of the role coal plays, there are strong evidences of coal's impact on human health and the environment during every stage of its mining, use, and post-combustion disposal. Air pollution generated by coal mining and combustion in power plants [10] can affect the environment and human health, especially the respiratory and cardiovascular systems, and cause poor growth of the fetus before birth, cancer, abnormal neurological development in children and pneumoconiosis. Major pollutants from coal mining and burning that negatively impacts the environment and health [14] include Sulphur dioxide (SO2), oxides of nitrogen, particulate matter, and carbon dioxide (CO2), which contribute immensely to climate change [25]. More so, coal associated heavy metals [26] even at low concentration pollute the environment [29]. Coal mining impact the environment adversely by causing interference with groundwater quantity and quality, impacts on river flows and consequential impact on other land uses, land subsidence, issues associated with mining wastes disposal, creation of geological hazards and visible and esthetical issues [36].

Mining is an extractive activity, which has to do with withdrawing the raw materials, creates anthropogenic land forms such as mine pits, soil tips and subsided lands which lead to land degradation [34, 56]. Coal mining significantly impacts agricultural activities by disrupting soil, water, and air quality, leading to decreased crop yields and potential health problems for farmers and residents [53, 57]. This impact is particularly pronounced in areas with overlapped coal and crop production. Coal mining negatively impacts agricultural activities by reducing productivity and yield [54]. Mining activities can lead to land degradation, affecting crop health and nutritional quality. This shift can also lead to changes in livelihoods for those dependent on agriculture [38, 63, 64].

Enugu State is blessed with abundance of coal in commercial quantities. However, presence of coal in Enugu State has attracted mining activities in different parts of the State [1, 7, 8, 25, 55, 66]. Coal mining causes environmental degradation through erosion and deforestation [50, 66]. The aim of this study was to investigate the implication of coal mining in Ogodoma Iwollo on agricultural activities and rural livelihood of the people of Iwollo communities of Ezeagu Local Government Area, Enugu State, Nigeria.

2. Statement of Research Problem

Natural resources such as vegetation, agricultural lands, biodiversity and grazing land are primary sources of livelihoods that coal mining has degraded and displaced. Rural residents have suffered a lot of losses in the form of their farmland and livelihoods and as such, there is need to carry out a study that would look at the effects of coal mining on agricultural activities and rural livelihood. However, this study assessed the effects of coaling mining on agricultural activities and rural livelihood in Ogodoma Iwollo, Enugu State, Nigeria and aimed to provide information for sustainable livelihood and management of natural resources. The study bridged the knowledge gap by establishing the direct and indirect effects of coal mining on agriculture. The findings of this study are therefore essential in the development of sustainable strategies that can balance resource extraction with agricultural preservation to ensure that mining activities do not undermine rural livelihoods.

3. Objective of the Study

The study examined the effect of coal mining on agricultural activities and rural livelihood of the people of Iwollo communities, Ezeagu Local Government Area of Enugu State, Nigeria. In order to achieve the aim, the study adopted the following specific objectives to:

1) Examine the effect of the coal mining activities on the agricultural activities in the area.
2) Examine the rural livelihood pattern of Iwollo people before and after the commencement of coal mining activities within the community.
3) Investigate the effect of coal mining activities on the socio-economic characteristics of the local residents of Iwollo communities.

4. Literature Review

4.1. Overview of Coal Mining Activities in Enugu State

Enugu, a densely populated metropolitan city, southeastern Nigeria, owes its urban status primarily to the existence of very large deposits of coal (mainly of sub-bituminous grade) [37, 39, 47]. The city has served as the administrative capital of the old Eastern region of Nigeria. The population of Enugu has continued to rise due to the existence and sitting of large numbers of industries, factories and Government Secretariat that have attracted large number of workers and their dependents to the city. A lot of coal mining activities have been done in Enugu area of Nigeria. Some of the coal mines established in Enugu include Udi Mines, Onyeama Mines, Okpara Mines, Iva-Vally Mines and Ribadu Mines [9]. Coal mining activities gave rise to a lot of mine waste which are dumped in landfills and surface dumps. The siting of these dumps was chosen for convenience and proximity to waste source rather than for environmental, geologic or engineering considerations, resulting in environmental degradation and potential groundwater contamination.

Most of the locals depend on the exploitation of groundwater through boreholes and shallow (hand-dug) well as well as the few surface water bodies in the area for domestic, agricultural and industrial purposes posits that it is important to investigate the mine waste contaminant seepage pathways and the effects of mine sites and spatial distribution of mine waste dumps on the environment, hence, information on the water resources in the area will provide background information for proper planning of future dump sites. This is important as increased demand for alternative energy sources and Nigeria's quest for improved power supply has caused interest to be directed increasingly to the exploitation of the abundant coal resources in the country especially in the Enugu area.

4.2. Geology and Occurrence of Coal in Enugu State

The coal deposit in Enugu area is mainly of sub-bituminous grade, black to brownish black in colour and is estimated at over 80 million tonnes [49]. The coal outcrops along the Enugu escarpment, road cut, mine sites and gullies. The coal bearing formations in the Anambra Basin are the Mamu Formation and the Nsukka Formation formally referred to as the lower coal measures and upper coal measures, respectively [3, 52]. The Mamu Formation consists essentially of fine-grained sandstone, shale, mudstone and sandy shale with several coal seams. The thickness of the coal seam varies from a few centimeters to about 2m. The Mamu Formation marks the regressive phase of the Upper Campano-Maastrichtian transgressive cycle [40, 42]. Palaeo-environmental studies indicate that the formation was deposited in shallow fresh water to paralic, medium to low-energy environment [31, 44].

4.3. Effects of Coal Mining on the Environment

Coal mining industry generates a large volume of gangue wastes, from which a considerable number of toxic heavy metals could be released during weathering of the waste under the joint effects of water, microorganisms, vegetation, sunlight radiation and heat [19, 20]. These hazardous substances enter the ecosystem by a variety of pathways where they could be detrimental to crops and animals, and might be taken up by human through direct contact (ingestion, dermal absorption and inhalation) or food chains [58, 59]. Coal mining activities are unavoidably linked with the excavation of huge amounts of dump rocks, which are of great environmental concern due to the potential for production of acidic and metal-rich drainage [43, 45]. Burning coal gives rise to airborne compounds such as fly ash and bottom ash, which contain heavy metals that settle down or wash out from the atmosphere into the land and thus contaminate soil [68]. This, in turn, degrades the chemical and microbiological quality of soil [16, 23] and subsequently creates a threat to humans and the ecosystem through direct contact with contaminated soils and the food chain because trace elements can be transferred from soil to plants and impact on crop growth and food safety. Environmental studies of coal mining areas were conducted by many researchers from USA [64], and China [21]. Knowledge of the spatial distribution of toxic elements in soil in the entire mining area is necessary [32, 35].

4.4. Effects of Coal Mining on the Livelihood of the Host Community

Coal mining often enhances the overall well-being of the local community in nearby areas of the mining site [44, 48]. The study conducted by [33, 66] determined that small-scale mining had a positive impact on social income and well-being.

The presence of a coal mining enterprise is anticipated to enhance profitability in the farming industry via greater demand and higher prices for agricultural products [46, 51]. Furthermore, there is a growing endorsement of workers in the workforce and a guarantee that agricultural regions would not be converted for other purposes. The economic aspects are assessed based on the conversion of agricultural land, which might have an impact on the welfare of farmers [60].

5. Methodology

5.1. Study Area

Iwollo in Ezeagu local Government Area (LGA) of Enugu State comprises of four autonomous communities (Iwollo town, Aguobu Iwollo, Owolloti Iwollo and Amagu Iwollo. It lies on latitude 6º41^{l}N and 6º42^{l}N of the Equator and longitude 7º21^{l}E and 7º22^{l}E of the Greenwich Meridian. It has a population of 60,760 people (projected from 2006 National Population Commission (NPC) census) [4, 5]. Ogodoma Iwollo formerly a farmland communally owned by the people of the four autonomous communities (Iwollo Omasi, Aguobu Iwollo, Owolloti Iwollo and Amagu Iwollo) and coal mining activities commenced within Iwollo communities in 2022.

Enugu State itself has a rich history of coal mining, dating back to the colonial era when coal was a major energy resource for Nigeria. The area is characterized by hilly terrain, tropical climate, and fertile land, making it suitable for both mining and agricultural activities [6, 8].

The coal mining site is situated at Ogodoma Iwollo and the mining operations in the area have raised concerns about loss of rural livelihood which could impact local agricultural productivity. The local people are predominantly farmers who rely wholly on the land for crop cultivation, hunting and palm-wine tapping. The disruption and displacement of livelihood caused by the coal mining activities could affect food availability and economic stability of the rural people of Iwollo communities [7].

5.2. Research Design

The study adopted survey research design with the aim of establishing the relationship that exists among variables. The study investigated the impact of coal mining activities on the agricultural economy and livelihood of the local residents of Iwollo communities. The survey research design allowed the examination of the independent variables and their possible relationship to the dependent variable [1, 3]. Hence, the survey design enabled the researcher select samples from the communities that comprised the study area and described the relationship among the variables and then generalised the findings to the entire population of the study. The study compared the host community's rural livelihood characteristics before and after the commencement of the coal mining activities in Iwollo, Ezeagu Local Government Area of Enugu State, Nigeria. The study covered activities between the years, 2021 and 2025 because 2021 was a year before the commencement of the coal mining activities in the area while 2025 represents, three years after the commencement of the coal mining activities in the area.

5.3. Data Collection

Primary and secondary sources of data collection was employed to obtain data for the study. The primary sources comprised the use of questionnaire, interviews, and direct field observations. The secondary sources comprised information from textbooks, journals and the internet.

5.4. Questionnaire Survey

The study employed the use of a well-structured questionnaire to elicit information on the effects of the mining activities on agricultural activities and livelihood pattern of the local host community people before commencement of the coal mining activities (2021) and after the commencement of the coal mining activities (2025) in Iwollo and also the socio-economic characteristics of the rural residents of Iwollo communities. The study also purposively employed the use of household heads for the study since the study primarily tried to examine the rural livelihood of the people between 2021 and 2025 and the household heads are the bread-winners of their families and are majorly involved in economic activities in the process of fending for the families. The entire study area recorded a household population of one thousand and six hundred (1600) and the study purposively adopted 20% of the entire number of households which represents three hundred and twenty (320) respondents (household heads) which represents 20% of the total existing household heads in the four autonomous communities (Iwollo Omasi, Aguobu Iwollo, Owolloti Iwollo and Amagu Iwollo) that makes up the host communities (Enumeration from a field survey held in 2025). The choice to adopt twenty percent (20%) of the total existing households for the study is to ensure precision and accuracy of derived data and quality representation of the study population. A structured questionnaire was prepared and used to elicit or derive information on the socio-economic and livelihood characteristics of the host communities.

5.5. Interview Sessions

The study carried out interview sessions with focal persons of the communities such as traditional rulers, community heads, women leaders, youth leaders and market leaders to further understand and affirm some specific findings from the questionnaire survey.

5.6. Techniques for Data Analysis

Data obtained from the field survey were presented with the aid of tables, graphs and charts; and analyzed with simple percentage.

6. Results and Discussion of Findings

6.1. Occupational Distribution of Respondents in the Study Area

In a bid to investigate and understand the occupational pattern of the people/residents of Iwollo before the commencement of coal mining activities in Iwollo, the study carried out investigation to examine the occupational pattern of residents in 2021 and 2025. Information on Table 1 revealed that the people/ residents of the area were involved in multiple economic activities; consequently, in 2021 (before the commencement of coal mining activities in the area); the highest economic activity was farming with 262 and 102 farmers in 2025 representing a percentage difference of 72% and 28% respectively, followed by traders with 45 persons in 2021 and 98 persons in 2025 representing a percentage difference of 31% and 69% respectively. The least recorded livelihood with palm-wine tappers and hunters having 12 persons in 2021 and 6 persons involved in 2025 representing a percentage difference of 67% and 33% respectively.

Table 1. *Occupational characteristics of residents in the study area (2021 and 2025).*

Occupation/Year	2021	(%)	2025	(%)	Total
Traders	45	31	98	69	143
Transporters	36	38	59	62	95
White cola jobs	16	16	82	84	98
Farmers	262	72	102	28	364
Palm-wine Tapper	12	67	6	33	18
Hunters	12	67	6	33	18
Artisans	28	37	48	63	76
Security men	10	36	18	64	28
Total	421	50	419	50	840

Source: Field Survey, 2025

6.2. Effects of Coal Mining on Rural Livelihood

In a bid to be more specific in the effect of the coal mining activities on the livelihood of the host community, the study examined the economic activities that had direct impacts of the coal mining activities by differentiating the economic activities of the people into land-based economic activities and non-land based economic activities. The land-based economic activities had farming, palm-wine tapping and hunting while non-land based economic activities had trading, transporting, white-collar jobs, artisans and security watchmen.

Information on Table 2 shows that out of the total of 840 participants in economic activities in the area, we had 400 participants for those involved in land-based occupation representing 47% of the entire participants in economic activities in the area and 440 participants involved in non-land based occupation representing 53% of the total respondents. The table further revealed that in 2021; we had 286 responses representing 68% participants involved in land-based occupation and 135 responses representing 32% participants involved in non-land based occupation. Information on Table 2 also shows that 114 responses, representing 27% involvement in land-based occupation and 305 responses representing 73% participation in non-land occupation in the area. This clearly shows that there was a decrease in the number of people involved in land-based occupation and a corresponding increase in the number of those involved in non-land based occupation between 2021 and 2025 (Figure 1), with clear emphasis of the state of participation in agricultural activities by the residents of the study area between 2021 and 2025 (Figure 2).

Table 2. *Classification of the economic activities in the area (2021 and 2025).*

Occupation/Year	2021	(%)	2025	(%)	Total
Land-based economic activities					

Occupation/Year	2021	(%)	2025	(%)	Total
Farmers	262	72	102	28	364
Palm-wine tappers	12	67	6	33	18
Hunters	12	67	6	33	18
Total	286	72	114	28	400
Non-land-based economic activities					
Traders	45	31	98	69	143
Transporters	36	38	59	62	95
White-collar jobs	16	16	82	84	98
Artisans	28	37	48	63	76
Security men	10	36	18	64	28
Total	135	31	305	69	440
Land-based occupation	286	68	114	27	400 (47)
Non-land occupation	135	32	305	73	440 (53)
Grand total	421	100	419	100	840

Source: Field Survey, 2025

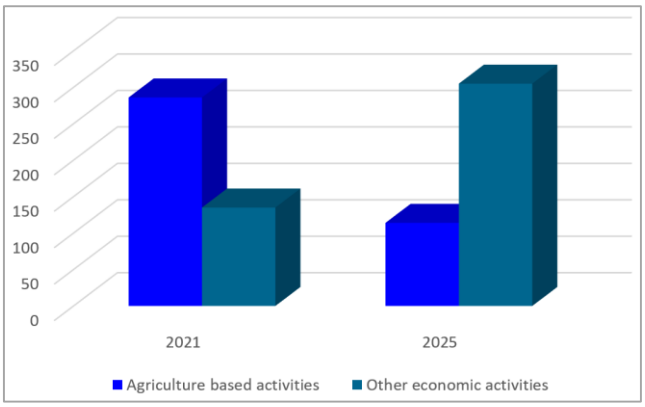


Figure 1. *Analysis of involvement in farming and other economic activities between 2021 and 2025.*

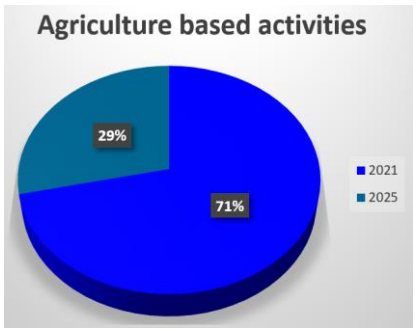


Figure 2. *Difference in participation in agricultural activities between 2021 and 2025 in the area.*

In a bid to examine the effects of the coal mining activities on the traditional rural livelihood of the people, information on Table 3 reveals that the land based economic activities (farming, palm-wine tapping and hunting) had a total number of 286 participants in 2021 representing 72% of the total involvement in land-based occupation but the number of participants decreased to 114 in 2025 representing 28% of involvement in land-based economic activities in the area. The Table further revealed that the number of farmers decreased from 262 in 2021 to 102 in 2025; palm-wine tappers decreased from 12 to 6 and hunters from 12 in 2021 to 6 in 2025. It was therefore concluded that since there was a decrease in the local people's traditional livelihood between 2021 before the commencement of the coal mining activities and 2025 after the coal mining activities in the area, it is therefore confirmed that the coal mining activities have negative effects on the traditional livelihood pattern of the host community residents or people.

Table 3. *Occupation differentials in land-based economic activities (2021 and 2025).*

Occupation/Year	2021	2025
Farmers	262	102
Palm-wine tappers	12	6
Hunters	12	6
Total (%)	286 (72)	114 (28)

Source: Field survey, 2025

In a bid to examine the overall effects of the coal mining activities on the socio-cultural and economic characteristics of the host people, information on Table 4 shows that in terms of the socio-economic impacts of coal on the people, it was revealed that 75% of the respondents were of the opinion that the coal mining activities didn't have positive impacts on their economy, 74% of the respondents reported that the coal mining activities did not in any way improve the living conditions or standards of the people, 100% of the responses shows that coal mining activities didn't support the growth of agricultural activities in the area, 92% of the responses revealed that coal mining activities did not support infrastructural growth or development in the area and 85% of the responses revealed that the coal mining activities did not attract community developmental projects to the area. In terms of socio-cultural development, information on the Table also revealed that 88% of the people were displaced from their original tradition sources of livelihood in the area. In terms of environmental sustainability, information on Table 4 also revealed that 97% of the respondents were of the opinion that the coal mining activities had seriously depleted their natural environment and its resources.

Table 4. *Effects of coal mining on host communities.*

S/N	Effects of coal mining activities on the study area	Responses	
		Yes (320) (%)	No (320) (%)
1	Coal mining have displaced the traditional rural livelihood of the host communities	280 (88)	40 (12)
2	Coal mining have depleted the environment of the area	310 (97)	10 (3)
3	Coal mining have increased the economic activities in the area	80 (25)	240 (75)
4.	Coal mining have improved the local people's standard of living	82 (26)	238 (74)
5.	Coal mining activities have increased agricultural yield of the people	0 (0)	320 (100)
6.	Coal mining have brought economic growth to the area	12 (4)	308 (96)
7	Coal mining have attracted much infrastructural projects to the area	26 (8)	294 (92)
8	Coal mining activities have introduced some community development projects in the host communities	48 (15)	272 (85)

Source: Field survey, 2025

Having established that there was a shift from the people's traditional livelihood pattern which was basically rooted in agricultural activities and now to business and other economic activities, the study also tried to examine all existing challenges that contributed to the shift from agricultural based livelihood to trading and other economic activities. Information on Table 5 revealed that 310 persons representing 97% of the entire study respondents were of the opinion that displacement of farmers for coal mining was the major reason for the shift from the people's traditional livelihood pattern, followed by 240 response representing 75% of the entire study respondents with the opinion that kidnapping and cattle herders attack (insecurity) on farmers and farm inputs were part of the major reasons for the shift in the people's livelihood pattern, followed by 180 persons representing 56% who were of the opinion that getting involved in other types of livelihood activities such as trading was more rewarding than agriculture, and the least group with 100 persons representing 31% of the entire respondents with the opinion that the young men who made up the basic manpower for agricultural activities had migrated to the city. This informed that the coal mining activities in the communities had serious effect on agriculture and the people's traditional livelihood.

Table 5. *Reasons for the changes in livelihood pattern of the people (2021 and 2025).*

S/N	Reason	Yes (%)	No (%)
1	Kidnapping	240 (75)	80 (25)
2	Cattle herders attack	240 (75)	80 (25)
3	Displacement by coal mining	310 (97)	10 (3)
4	Migration to the city by young men	100 (31)	220 (59)
5	Business opportunities	180 (56)	140 (44)

Source: Field survey, 2025

In a bid to find the specific challenges that caused the shift

from the people's traditional livelihood pattern which was agricultural based economy to the recently adopted livelihood activities such as trading and white-collar jobs etc, information on Figure 3 revealed that 62% of the respondents traced the change in the livelihood pattern to the displacement caused by the coal mining activities in the area, followed by the recently observed insecurity issues, kidnapping and cattle herder's attack with 15% and 10% respectively, followed by the emerging business opportunities and migration of youthful population to the city with 7% and 6% respectively. Further probe into the root cause of the change in the rural livelihood pattern of the people revealed during the interview session that the fundamental reason for the observed change in livelihood prompted by the displacement of farmers, hunters and palm-wine tappers for coal mining activities and this made the displaced people and their family members adopt new sources of livelihoods.

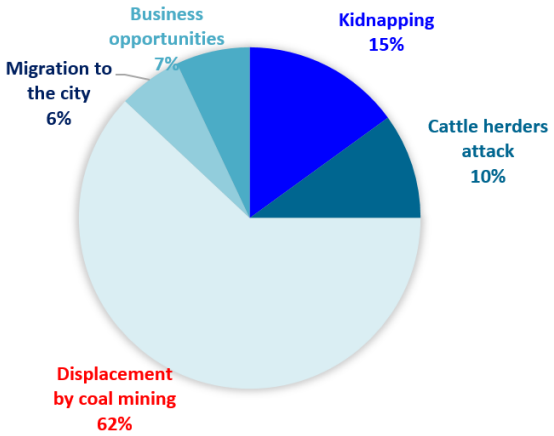


Figure 3. *Specific reasons for the shift from the people's traditional livelihood pattern (2021-2025).*

7. Summary

The research employed a survey design involving 320 respondents drawn from the four autonomous communities of Iwollo. Data were collected through questionnaires, interviews, and field observations, and analyzed using descriptive and inferential statistics to understand changes in occupational patterns and socio-economic conditions between 2021 and 2025.

Findings revealed a sharp decline in land-based occupations such as farming, hunting, and palm wine tapping, coupled with an increase in non-land-based occupations like trading, white-collar job, transport, and security jobs. The study also found that coal mining has degraded the local environment by destroying the forested areas, depleted natural resources by cutting down and destroying economic and medicinal trees and bio-diversities, and reduced agricultural production by displacing farmers from the traditional farming area. This finding is in conformity with the findings of [10, 14, 44, 62]. The study also discovered that apart from the displacement by the coal mining activities, there was also the issue of insecurity which also contributed to the decline in agricultural activities in the area. This is in conformity with the findings by [11, 15, 66, 67].

The background of the study focused on the socio-economic implications of coal mining in Ogodoma Iwollo, Ezeagu Local Government Area (LGA), Enugu State. The study highlighted that mining, although economically important, contributes significantly to environmental degradation, loss of farmlands, and depletion of natural resources that sustain rural livelihoods. The study identified that coal mining in Enugu, particularly at Ogodoma Iwollo, has led to degradation of agricultural lands and displacement of local livelihoods.

8. Conclusion

The study concludes that coal mining in Ogodoma Iwollo has had profound negative effects on rural livelihood and the natural environment. While coal remains an important energy resource, its extraction without proper environmental management has disrupted traditional occupations, degraded farmland, reduced agricultural output, and diminished the overall well-being of the rural populace.

Coal mining has caused deforestation, destruction of natural resources, destruction and displacement of biodiversity and displacement of farmer. These challenges and changes have long-term ecological consequences that threaten food security, ecosystem stability, and sustainability of the natural environment.

The shift from agriculture-based to non-agriculture-based occupations for livelihood has created economic instability and dependency among local residents. Traditional livelihoods that sustained the people for generations are being lost, leading to increased poverty, rural-urban migration, and reduced community cohesion.

The absence of tangible infrastructural and community development projects from mining companies shows a lack of sufficient Corporate Social Responsibility (CSR) in the area. Without sustainable management and community benefits, mining could further deepen socio-economic inequality and environmental injustice.

The findings imply the urgent need for integrated land use planning, adoption and encouragement of green-housing farming, environmental regulations enforcement, and community-inclusive mining policies. Government and corporate entities must balance economic gains from mining with the preservation of rural livelihoods and ecological sustainability.

Abbreviations

NPC	National Population Commission
LGA	Local Government Area
CSR	Corporate Social Responsibility

Author Contributions

Titus Amalu: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing

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Conflicts of Interest

The author declares no conflicts of interest.

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