

Ecological Restoration and Attainment of Food Security in Ikom Education zone of Cross River State

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Abstract

This study sought to establish the influence of ecological restoration practices on attainment level of food security in Ikom Education zone of Cross River State. It was guided by a research question and a hypothesis tested at 0.05 level of significance. The study adopted the Ex-po facto research design. The population of the study is made up of 35,643 civil and public servants, farmers, students, business men and market women. The sample for this study comprised 510 respondents selected from the study area. The instrument for data collection was a 15- item structured questionnaire developed by the researchers. The instrument was titled "Ecological Restoration Practices and Attainment level of Food Security Questionnaire (ERPALFSQ)". Face and content validity of the instrument was done by experts in Tests and Measurement. Cronbach Alpha coefficient was used to test the reliability of the instrument. Data were analyzed using simple regression analysis. The findings of the study revealed that ecological restoration practices significantly influence attainment level of food security in Ikom Education zone of Cross River State, Nigeria. Based on the findings, it was recommended that ecological conservation should be seen as a basic necessity as far as food security is concerned.

Keywords: ecological restoration, food security, ecological conservation, Ikom, Cross River

Introduction

Food insecurity remains a pressing issue particularly in developing countries like Nigeria, where millions of people struggle to access nutritious food. Cross River State is not an exception to this challenge. The problem is multifaceted, stemming from factors such as poverty, insecurity as a result of insurgency infiltrating from neighbouring states, limited access to land, inadequate agricultural practices and climate change. Research have shown that food insecurity has severe consequences on individuals, communities, and nations (Oyediran & Oladiji, 2023; Oyetunde & Olagunji, 2019). Some of the consequences include malnutrition, reduced economic productivity and increased vulnerability to diseases. Ecological restoration practice is crucial for ensuring food security, particularly in regions with fragile ecosystems and high population growth rates.

In Cross River State, where agriculture is a significant contributor to the economy and food supply, adopting ecological restoration practices is essential for maintaining soil fertility and promoting agricultural productivity (Srinivas et al., 2021). Study by Nguyen et al. (2023) has shown that many farmers are aware of and adapt various soil conservation practices such as using urban waste, crop mixtures and animal manure due to the scarcity and high cost of inorganic fertilizers. Poor ecological restoration practices contribute to food scarcity by non-maintenance of soil health. Land degradation as a result of unsustainable land management practices poses threat to food security, because the majority of Cross Riverians depend on agricultural productivity. A devastated environment and degradation aggravated by the negative impact of climate change is leading to a decrease in the availability of natural resources and decline in productivity. This situation jeopardizes food security and increases poverty. Sustainable land management (SLM) practices may be a solution to soil fertility changes as they help increase average productivity, reduce seasonal fluctuations in yield, diversify production and improve incomes to ensure food security (Adebisi & Oguniyi, 2019).

Ecological restoration is the process of rehabilitating and renewing degraded or damaged ecosystems to restore their natural state and functionality. This involves reintroducing native plants and animals, improving soil and water quality and enhancing ecosystem services. Ecological restoration can significantly influence food security by enhancing ecosystems services, promoting biodiversity and improving agricultural productivity. Restoration efforts can focus on productivity; they can focus on degraded lands, forests, wetlands and other ecosystems that support food production. Ecological restoration is beneficial to food

security in the areas of improved crop yields, enhanced ecosystem services and climate resilience. Some examples of ecological restoration are agroforestry (integrating trees into agricultural landscape to promote biodiversity and ecosystem services), wetland restoration (restoring degraded wetlands to improve water quality, support biodiversity and enhance ecosystem services) and sustainable land management (implementing practices like conservation agriculture and permaculture and promote ecosystem health). Food security can be enhanced by promoting ecological restoration. The link between ecological restoration and food security cannot be overemphasized as a healthy ecosystem is crucial for long-term food production; restoring degraded ecosystem can improve soil fertility; enhance biodiversity and increase the resilience of food production systems. This in turn can contribute to increased crop yields, improved fisheries and overall greater food security.

Land degradation and deforestation have for some time now been one of the world's major challenges, impacting on the global food security and wellbeing of about 3.2 billion people globally (Besseau et al., 2018). The world's poorest are in rural communities and in most cases, they largely depend on natural resources and cultivation, making them the most vulnerable to the effects of land degradation (FAO, 2019).

Ecological restoration can significantly contribute to food security by improving ecosystems services through restoration of degraded lands and ecosystems which can enhance biodiversity, pollination, pest control and soil health which are all essential for sustainable food production. Ecological restoration also enhances crop yields, increases resilience and support sustainable agriculture which in turn enhances food security.

Ekemini and Hilary (2023) investigated ecological restoration processes and attainment of food security in Cross River state, Nigeria. The purpose of the study was to find out the relationship between ecological restoration and attainment of food security in Cross River state. Ex post facto research design was employed. The purposive and simple random sampling techniques were used to sample 543 respondents. The instrument used for data collection was a questionnaire titled "Ecological restoration and attainment of food security questionnaire" (ERAFSQ). Split half reliability procedure was used to ascertain the reliability of the instrument. Pearson Product Moment Correlation statistics was used for data analysis. The findings revealed that there is a significant relationship between ecological restoration and attainment of food security in Cross River state. The findings of Ekemini and Hilary is relevant to this present study considering the fact that they investigated ecological restoration and attainment of food security which is a concern of this present study.

Pioch (2017) carried out a study on environmental impact assessment and biodiversity conservation in Montepellar. The purpose of the study was to ascertain the effect of environmental impact assessment on biodiversity conservation; simple regression analysis was used as the statistical tool. The result of the findings showed that environmental impact assessment has significant effect on biodiversity conservation. More so, Geldmann (2018) carried out a study on evaluating the effectiveness of protected areas for maintaining biodiversity, securing habitats and reducing threats in Copenhagen. The purpose was to evaluate the effectiveness of protected areas in maintaining biodiversity, securing habitats and reducing threats. The survey research design was adopted for the study using a well-structured questionnaire as instrument for data collection with a sample of 120 respondents. The result showed that protected areas are effective for maintaining biodiversity conservation.

Also, Soderman (2019) conducted a study on biodiversity and ecosystem service impact assessment. The study was meant to examine the current practice of ecological impact assessment with respect to substantive and procedural features and roles of actors. The survey research design was adopted with sample of 200 respondents. Simple regression statistics was used for analyzing the collected data, and the analysis revealed that knowledge base for a comprehensive ecological impact assessment (EIA), appropriate assessment and municipal land use planning is far from adequate. Effanga (2017) conducted a study on community participation and attitude of farmers towards deforestation in southern Cross River State, Nigeria. The researcher adopted ex-post facto research design. The study population was one thousand, six hundred and two (1,602) respondents in the study area. The sample size of the study was eight hundred and one (801) local farmers. Simple and stratified random sampling techniques were adopted for the study. The instrument for data collection was a questionnaire tagged community participation and farmers' attitudes towards deforestation questionnaire (CPFADQ). One-way analysis of variance (ANOVA) was the statistical tool used for analyzing of data collected. Based on the findings, it was concluded that community participation towards deforestation is a key strategy in conserving the forest. Community participation will encourage community members to participate in resource management and boost forest management and employment opportunity.

The high rate of food insecurity in Cross River State has become a major concern to researchers, scholars and inhabitants of Ikom Education zone in general. Food insecurity remains a pressing challenge in the study area. This food insecurity has greatly affected the

inhabitants of Ikom education zone. The complexity of the issue is deeply rooted in factors such as poverty, limited access to land, inadequate agricultural practice and climate change. These elements intertwine to form a vicious cycle that perpetuates hunger, malnutrition and reduced economic productivity. In Ikom education zone, food insecurity is exacerbated by poor ecological restoration practices, lack of infrastructure, including roads, storage facilities and markets which hinders the distribution and accessibility of food. Furthermore, the impact of climate change manifesting in unpredictable weather patterns, droughts and floods poses significant threat to agricultural productivity and availability. The consequences of food insecurity are far reaching, impacting not only the health and well-being of individuals but also the economic stability of communities and nations. Malnutrition, a direct result of inadequate food intake, can lead to stunted growth, weakened immune systems and reduced cognitive abilities perpetuating a cycle of poverty and vulnerability.

Addressing food security requires a comprehensive approach that encompasses ecological restoration practices, improved access to markets, credit and policies that support small holder farms. The state government had made concerted efforts to curb the problem of food insecurity in Ikom education zone and other parts of the state to no avail. Cross River state government had also done so much to promote sustainable agriculture in the state, such as promoting sustainable oil palm cultivation, supporting both small and large-scale plantation, among others. Ikom education zone is part of the special agro industrial processing zone programme aiming to add value to raw agricultural products and create economic opportunities. The state government had also contributed in supporting key crop production like cocoa, bananas, plantain and cassava in order to enhance food security and provide income for farmers. The state government had also recognized the importance of conservation and sustainable agricultural practice to preserve natural resources such as the Cross River national park. The state government had equally addressed challenges like inadequate infrastructure, limited access to credit and the need for modern farming technologies which are crucial for sustained agricultural development. All these efforts by the state government have not yielded much results. Despite the importance of land conservation, there is limited understanding of its impact on food security outcome in Ikom education zone. It is against this backdrop that the researchers sought to ascertain the influence of ecological restoration practices on attainment level of food security in Ikom education zone of Cross River state.

Research question

The research question raised for the study is:

1. To what extent does ecological restoration influence attainment level of food security in Ikom education zone of Cross River state?

Hypothesis

The following null hypothesis is formulated to guide the study:

Ho1: There is no significant influence of ecological restoration practices on attainment level of food security in Ikom education zone of Cross River state.

Methodology

The research design adopted for the study is the Ex-post facto research design. According to Joshua (2005), Ex-post facto research design is a retrospective study design that investigates cause-and -effect relationship by examining existing conditions and retrospectively searching for possible causes. It is a research design used when manipulation of independent variable is not possible for ethical and practical reasons. It is a systematic empirical enquiry in which researcher does not have direct control of the independent variable because their manifestations have already occurred or they cannot be manipulated. In other words, since the researcher does not have direct control of the independent variable, he/she cannot manipulate them. According to Afza (2025), when translated literally, ex-post facto means “from what is done afterwards.” The main reason for adopting this design is because the researchers seek to establish the relationship between ecological restoration and attainment of food security, which has already occurred and the researchers cannot manipulate them. This requires empirical data on these variables which have already occurred in the population. The sample for this study was 510 respondents drawn from the six local government areas that make Ikom Education Zone of Cross River State.

The area of study is Ikom education zone. The zone encompasses six local government areas (LGAs) including Abi, Boki, Etung, Ikom, Obubra and Yakurr, all in Cross River State, Nigeria. Ikom Education zone is bounded by Biase Local Government Area to the North, the Atlantic Ocean to the South, the Cameroon Republic to the East and to the west by Akwa Ibom State and Ebonyi state. Traditionally and culturally, Ikom Education Zone is rich in festival, dressing, food and religious affiliation. The zone falls within three vegetational belt such as mangrove, tropical rainforest and guinea savanna. The area is described as Africa’s remaining virgin forest harbouring rare species of plants, animals and insects. The zone is blessed with a variety of forest product like rubber, palm oil, afang, timber and others,

including food crops such as maize, cucumber, cocoyam, cassava, and others. These endowment makes the half of the population to be predominately involved in subsistence agriculture, while some are civil servant, fisherman, businessmen, among others.

Administratively, the zone has 86 wards where their socio-political and economic activities are governed. The zone has 237 primary schools, 109 secondary schools and 3 tertiary institutions (College of Agriculture Obubra, Federal Polytechnic, Ugep and Nogak polytechnic, Ikom). There are tourism attractions like Agbokim waterfalls and Nkara monoliths. The people of Ikom Education zone have high awareness level of land conservation practices and engage in practices such as crop rotation, terracing and contour farming.

As a veritable tool for the generation of data for the study, the researchers developed a 15-item research instrument referred to as Ecological Restoration Practices and Attainment of Food Security Questionnaire (ERPFSQ). The questionnaire had two parts. Part one contained items that are meant to elicit information on the demographic data of the respondents such as sex, age, occupation, and educational background. Part two focused on items exclusively on the influence of ecological restoration practices on attainment of food security. This part comprised two (2) sections with section one containing five (5) items and section 2 containing 10 items, each measuring the variables of the study. In all, there are fifteen (15) items.

The items in the questionnaire were presented on a modified four (4)-point Likert Scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). Each statement sought to determine the relationship between ecological restoration practices and attainment of food security. The respondents were required to respond by ticking the options that best appealed to them.

To ensure that the items selected for inclusion in the questionnaire were capable of eliciting relevant responses from respondents, drafts copies of the instrument were presented to two senior lecturers from the Department of Educational Foundations, Faculty of Education, for face and content validity. Through their constructive criticism and recommendations, some items were dropped, some were modified and some were retained. There were initially 20 items, but after the validation process, 15 items were retained and certified okay to measure the variables of the study. To establish the reliability of the instrument (questionnaire), a trial test was done using 35 respondents that were not part of the study. Cronbach alpha reliability procedure was used to determine the internal consistency of the instrument which

was found to range from .70 to .82 which imply that the instrument is both valid and reliable to be used for this investigation.

The researchers employed the services of two research assistants (community members). This research assistants were instructed to administer the questionnaire to the respondents in their communities until the expected number from each community was reached. After distributing the questionnaire to the research assistants, the researchers went back the next day and collected the instrument which were coded and scored appropriately to answer the research questions and test the hypothesis. The questionnaire was coded and scored appropriately. All items in the questionnaire were awarded numerical values. For each of the positively constructed item, responses were awarded thus: strongly agree (SA) was assigned 4, Agree (A) 3, Disagree (D) 2 and strongly disagree (SD) 1. The reverse was for negatively constructed items. Simple regression was used in data analysis.

Presentation of results

Ho1: There is no significant influence of ecological restoration practices on attainment level of food security in Ikom education zone of Cross River state.

The independent variable is ecological restoration practices while the dependent variables is attainment of food security. To test this hypothesis, simple regression statistical analysis was used and the result is as presented in Table 1.

Table 1: Simple regression analysis of the influence of ecological restoration practices on attainment level of food security in Ikom education zone of Cross River State

Variable	R	R²	Adj. R²	Std. Error	
Ecological restoration	.446 ^a	.199	.197	1.90848	
Source of variation	SS	Df	MS	F	Sig.
Regression	540.308	1	540.308	148.343 *	.000 ^b
Residual	2178.086	508	3.642		
Total	2718.393	509			

*significant at .05

The analysis in Table 1 showed that the Adj R² is 0.197. This implies that 19.7% of the variance in the dependent variable (attainment level of food security) could be accounted for by ecological restoration practices. However, though the percentage contribution is small, a cursory look at the table showed that F=148.343 (p<.05) is very significant. Also,

since $p(.000)$ is less than $.05$, it implies that indeed ecological restoration practices significantly influence attainment level of food security. Therefore, the stated null hypothesis is rejected

Discussion of the findings

The findings from analysis of the lone hypothesis revealed that the null hypothesis was rejected implying that ecological restoration does significantly influence attainment of food security in Ikom education zone of Cross River State. The result agrees with Ekemini and Hilary (2023), who investigated ecological restoration processes and attainment of food security in Cross river state, Nigeria and revealed that there is a significant relationship between ecological restoration and attainment of food security in Cross river state. Also, in line with the present findings, Pioch (2017) carried out a study on ecological restoration and food security in Montepellar, and found that environmental impact assessment has significant effect on food security. Geldmann (2018) evaluated the effectiveness of protected areas for maintaining biodiversity, securing habitats and reducing threats in Copenhagen and found that protected areas are effective in maintaining biodiversity thereby enhancing ecological restoration.

Conclusion

Based on the result of the study, it was concluded that there is a significant influence of ecological restoration practices on attainment level of food security in Ikom education zone of Cross River State. There is need for the public to be aware of these ecological restoration practices in order to ensure food security attainment.

Recommendations

1. The government should implement Agro-forestry practices that will integrate trees into farming systems to improve soil health, increase biodiversity and provide additional income for farmers.
2. The government should support community-led restoration by empowering local communities to take ownership of restoration efforts, ensuring they benefit directly from improved ecosystems and food security.

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