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Tourism-Driven Rural Development and Environmental Sustainability in Cross River State, Nigeria: Assessing Infrastructure development and Poverty Alleviation Programmes in Cross River State

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Abstract

The study accessed Tourism-Driven Rural Development and Environmental Sustainability in Cross River State, Nigeria: Assessing Infrastructure Policies and Poverty Alleviation Programmes in Cross River State. The study examined key rural development interventions including rural infrastructural development and poverty alleviation, with particular emphasis on their relevance to tourism development and environmental conservation. The target population comprised residents of selected communities across the three education zones of Cross River State, while a sample was drawn using stratified and accidental sampling techniques to ensure adequate representation of respondents. A survey research design was adopted, and data were collected using a structured questionnaire titled "Rural Development Programmes and Environmental Sustainability Questionnaire (RDPESQ)". Data obtained were analyzed using simple regression at 0.05 level of significance. Findings from the study revealed that all the rural development programme variables exhibited relatively high mean values, indicating widespread implementation and perceived relevance within the study area.. Hypothesis testing results revealed that there is a significant relationship between tourism-oriented rural development programmes such as Infrastructure development and Poverty Alleviation and environmental sustainability in Cross River State. These findings imply that effective implementation of rural development programmes can enhance environmental quality, preserve natural attractions, and support sustainable tourism development in the study area. The study concluded that tourism-oriented rural development programmes such as Infrastructure development and Poverty Alleviation play a critical role in promoting environmental sustainability and enhancing the viability of tourism resources in Cross River State, Nigeria. Based on the findings, the study recommended among other that poverty alleviation initiatives should incorporate environmental sustainability components, such as

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training on sustainable livelihoods and environmental conservation, to empower rural communities. This can help reduce poverty while promoting environmental sustainability
Keywords: Tourism-Driven, Rural Development, Environmental Sustainability, Infrastructure development, Poverty Alleviation Programmes.

Introduction

Like in most developing countries of the world, Nigeria and indeed Cross River State recognizes the importance of sustainable development in its rural areas and has implemented various programs and initiatives to promote rural development and environmental sustainability. These efforts are not only aimed at developing the rural communities but also preserving the state's rich biodiversity and improving the livelihoods of rural communities while ensuring a greener, more resilient future. One of the key policy frameworks driving environmental sustainability in Cross River State is the Nigerian Biodiversity Action Plan (BAP) which the Cross River State Government has also adopted and carved out the Cross River State Biodiversity Strategy and Action Plan. This plan, developed in collaboration with local communities and stakeholders, focuses on conserving and sustainably managing the state's unique biodiversity. It emphasizes the protection of the Cross River tropical forest resources including the National Park, the Afi and Mbe Mountain Sanctuaries and other pristine natural landscape rich in biodiversity that are crucial habitats for numerous plant and animal species (Oke & Oyetagum, 2018).

Developmental challenges remain a persistent reality across the globe, particularly in rural communities where a significant proportion of the population resides, many of which possess rich tourism potentials. These areas are often situated far from urban centres and are characterized by limited access to basic infrastructure and essential social services needed to support tourism development. As a result, rural livelihoods largely depend on the immediate natural and cultural resources, many of which also serve as attractions for tourism activities. However, the lack of adequate infrastructure such as accessible roads, quality accommodation, safe water supply, sanitation, healthcare, and security significantly constrains both rural development and tourism growth. In many rural communities, these limitations reduce their capacity to attract tourists and to harness tourism as a viable tool for economic diversification and livelihood improvement. Furthermore, as global attention shifts toward sustainable tourism and environmental conservation, rural areas are increasingly recognized as both key destinations and vulnerable ecosystems. The dependence on natural attractions for tourism, when not properly managed, can intensify environmental degradation and resource depletion, thereby undermining sustainability efforts (United Nations, 2021).

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Cross River State, located within the south-south geopolitical region of Nigeria, the state like every other state within the tropical forest belt is endowed with rich biodiversity and natural resources. The state is known for its lush rainforests, diverse wildlife, and unique ecosystem, making it one of the most ecologically sensitive regions in West Africa. However, rapid population growth, inadequate infrastructure, and unsustainable agricultural practices have led to increased pressure on the environment and biodiversity of the state. Despite these natural and cultural assets, the state faces numerous challenges in its rural areas, including limited access to basic services and infrastructural facilities, high levels of poverty, and food insecurity (Bonsarts, 2019).

According to FAO, (2015) rural development programplay a crucial role in promoting environmental sustainability and addressing critical issues such as poverty, food security, and access to basic amenities, social welfare and improved rural livelihoods. In the context of Cross River State, Nigeria, this is to assess the effectiveness of rural development policies in achieving environmental sustainability, with a specific focus on rural infrastructural development, poverty alleviation, food security, and access to water sanitation and hygiene (WASH).

Olagunju & Ajiboye, (2010)In order to achieve rural development to meet the yearnings and aspiration of the rural dwellers, most rural development policies have been put in place, while some have been implemented, others are still on the pages of those policy documents. The efforts of various successive governments at different times to reduce poverty and hunger promote rural development and also improve human livelihoods and wellbeing within the rural setting has not gone unnoticed. Okoli et al, (2016) observed that some rural development programs initiated by various government to improve the living standards of most rural communities in Nigeria include: Agricultural Development Projects (ADP), River Basin Development Authority, Operation Feed the Nation (OFN), Green Revolution (GR), Directorate of Food, Roads and Rural Infrastructure (DFRRI),National Directorates of Employment (NDE), National Food Basket Program, Family Economic Advancement Program (FEAP), Family Support Program (FSP), National Poverty Eradication Program (NAPEP), National Economic Empowerment and Development Strategy (NEEDS). After all these, came the Millennium Development Goals (MDGs) and presently Sustainable Development Goals (MDGs). The MDGs and SDGs are global partnership to tackle global hunger, poverty and environmental sustainability. Other current programs of government include Youwin,

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Rural Infrastructural Development Program, Conditional Cash Transfer, Water, Sanitation, and Hygiene Program (WASH), Micro, Small, and Medium Scale Entrepreneurship Program (MSMEs), Rural Electrification Programme (REA) Despite these attempts, sustainable development in rural regions remains a distant reality in the perspective of the public due to the continual rise in poverty levels and other associated human sufferings. All of these programs attempt to transform rural villages into urban or semi-urban communities, complete with the minimum facilities required to make living comfortable in rural areas (Ajadi, 2010). Most of these rural community development policies are targeted at reducing human population in urban centers where a plethora of problems accompany urban developments. Within the urban centers, there are housing deficits, traffic congestion, unemployment, high rates of crimes, hunger and poverty, environmental pollution, shortage of portable water, sanitation facilities and unhygienic environment and the spread of contagious diseases within the urban sprawl. Authors like Eneji et al. (2015) posited that the development of the rural communities should be a priority for governments; this will make adequate allowance for able bodied young men to remain in their rural communities and development the communities instead of migrating to urban centers with its attendant problems. For these reasons, most governments of the world are committed to making their rural communities most attractive to reduce urban migration pressure.

Madu (2022) stated Rural infrastructural policies have come a long way with Nigerian history of nation building, rural infrastructure looks at all physical projects that can be brought to the rural setting to help in changing the lives of the rural communities, they include rural electrification, roads, hospitals, schools, market, water and food storage facilities like silos among others. Some policy documents on rural infrastructures looked at the issues bedeviling rural infrastructure and observed that the rural areas are in dire need of infrastructures like road network, telecommunication, electricity, schools, safe access to functional drinking water within the shortest possible distance, good health care, functional education system and security among others.

Fasanya, (2018) and Larder, Sippel and Argent, (2018) stated that with the construction of some new road networks in most rural communities, there is improved transportation, enabling subsistent farmers to move their farm produce to markets where they could be sold more efficiently and fast too. Projects providing safe access to clean drinking water for most communities have also improved the living standards of most of these rural communities thereby reducing incidence of waterborne diseases and improving their longevity. Where infrastructural projects like electricity projects are implemented, rural business and economy are improved because artisans and other cottage industries can now work, helping to provide

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services and also generate income and revenue to the family, the communities and government. Electricity provision also fosters schools. Economic growth are enhanced and improving economic and businesses opportunities within the rural communities.

Oyaniran, (2020) found that maintaining and sustaining rural infrastructure in most rural remote communities remains another challenge government and development partners must urgently addressed, this is because rural infrastructural development in Nigeria is crucial for the holistic growth and development of these communities. While Oyeniran,(2021), saw the challenges to rural infrastructural development as impediment to rural development, Madu, (2023) posited that through collaborative efforts, successful projects have resulted in improved transportation, access to clean water, and reliable electricity, this author went further to posit however, that there are challenges which persist, and ongoing supports are required to ensure the sustainability of these infrastructural projects in the long run.

Onyebuchi, (2023) stated that people resort to do all manners of things that will put food on their table, provide income for their pockets and manage their health. their last resort becomes the environment and their available natural resources. Most resort to indiscriminate timber exploitation, other to the exploitation of non-timber forest products, others to sand mining, illegally mining mineral resources within their community like the mining of kraolite in Biase, while others resort to bush burning to hunt games and rodents for sales and few left for consumption. Those who engage in farming, clear and cultivate fragile ecosystems for their farming activities, some resort to market gardening, where they cultivate vegetables like okra, pepper, green vegetables, pumpkin, scent leaves, curry among others by the streams and river banks which are fragile watershed ecosystem.

In a bid to improve their crop productivity, most begin to use inorganic fertilizers to make more profit out of their farming activities. These chemicals have deleterious adverse effects on the already fragile environment and the sustainability of the ecosystem becomes a problem confronting man. As they clear the fragile ecosystem, they expose the surface soil to harsh environmental conditions, contributing to reduce evaporation and transpiration, reducing the amount and volume of rainfall, increasing the amount of temperature and reducing the relative humidity of the area. All these are drivers of climate change. Where game hunting becomes an alternative choice of earning a living, most species are already endangered, so hunting without considering the species, sizes, age and abundance of some species make them become endangered or threatened. In some cases, these species go extinct either locally or in the regions. These and many more do not encourage environmental sustainability. Poverty is both a moral, social and economic scourge which people should avoid as much as possible.

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Poverty is a deprivation of any kind that people face in their rural settings. Poverty can be seen as a lack, deprivation or the inability to have what one needs at a particular tim

Environmental sustainability is the extent to which these rural development policies and their implementations have influenced environmental quality and standard coupled with the abundance of the resources, soil and water quality within the rural communities. Rural infrastructural development programs are geared towards the development of rural infrastructures; some examples include road constructions, school buildings, markets, airports, stadia, rural electrification infrastructures, portable drinking water facilities, public toilets among others. While implementing these policies to bring about rural development how does infrastructural development impact on the environmental sustainability of these rural communities? For example, during road construction, forest land that the roads cuts across how do they respond to the stress meted on them. It is a known fact that during road construction, airport, stadia, residential houses among others, fragile ecosystems are tempered with, development must continue, but the extent to which these rural infrastructural development projects affect the environmental sustainability of this ecosystem is worrisome

Statement of the problem

Rural development remains central to the achievement of the Sustainable Development Goals (SDGs), particularly in enhancing livelihoods, promoting environmental sustainability, and supporting tourism development in resource-rich rural areas. Across the world, governments have made concerted efforts to improve rural living conditions, especially in developing countries where rural communities serve as custodians of natural and cultural tourism assets. In Nigeria, several rural development programmes have been introduced since the 1960s to stimulate economic growth and improve quality of life. These include initiatives such as Operation Feed the Nation (OFN), Green Revolution, National Poverty Eradication Programme (NAPEP), Rural Electrification Programme (REA), Directorate for Food, Roads and Rural Infrastructure (DFRRI), Better Life for Rural Women, Conditional Cash Transfer schemes, afforestation and reforestation programmes, Water, Sanitation and Hygiene (WASH) initiatives, National Fadama Programmes, and soil restoration programmes. While these programmes were primarily designed to improve rural livelihoods, they also have implications for tourism development, particularly in areas endowed with natural attractions and cultural heritage.

Despite these efforts, many rural communities continue to face developmental challenges, raising concerns about the effectiveness of these programmes in transforming rural economies and sustaining the environment. Human needs are unlimited, while environmental resources

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remain finite, leading to increasing pressure on land, forests, water bodies, and biodiversity many of which constitute the backbone of rural tourism. In many cases, rural dwellers exploit natural resources for survival without adequate consideration for conservation, resulting in environmental degradation that threatens both sustainability and tourism potential. The rate of resource exploitation often exceeds the rate of regeneration, thereby posing serious risks to ecological balance and the long-term viability of tourism attractions. This situation raises critical questions about the sustainability of ongoing rural development efforts, especially in the face of increasing demand for food security, poverty reduction, infrastructure development, and tourism expansion.

Furthermore, while programmes such as rural infrastructural development, poverty alleviation, efforts are expected to support both environmental sustainability and tourism development, their actual impact remains unclear. There is limited empirical evidence on how these programmes have influenced environmental sustainability and enhanced tourism potential in rural communities of Cross River State. The persistence of environmental degradation, poor infrastructure, and underdeveloped tourism facilities suggests a possible gap between policy intentions and actual outcomes. Consequently, it becomes necessary to critically examine the extent to which these rural development programmes have contributed to environmental sustainability and tourism development in the study area. It is against this backdrop that this study seeks to assess the influence of tourism-oriented rural development programmes such as Infrastructure development and Poverty Alleviation Programmes on environmental sustainability in Cross River State, Nigeria.

Purpose of the study

In line with this broad aim, the study specifically sought to:

1. Assess the relationship between rural infrastructural development program policies (roads, railways, electricity etc.) and environmental sustainability.
2. investigate the extent to which poverty alleviation programmes relate with environmental sustainability.

Research hypotheses

The following hypotheses were formulated to guide the study:

1 There is no significant relationship between rural infrastructural development programs and the environmental sustainability

2 There is no significant relationship between poverty alleviation programs and the environmental sustainability.

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Methods

This study adopted a survey research design to answer the research questions of this study. To successfully carry out the study, two hypotheses were formulated in line with the objectives of the study. The study examined key rural development interventions including rural infrastructural development and poverty alleviation, with particular emphasis on their relevance to tourism development and environmental conservation. The target population comprised residents of selected communities across the three education zones of Cross River State, while a sample was drawn using stratified and accidental sampling techniques to ensure adequate representation of respondents. A survey research design was adopted, and data were collected using a structured questionnaire titled "Rural Development Programmes and Environmental Sustainability Questionnaire (RDPESQ)". Data obtained were analyzed using simple regression at 0.05 level of significance.

Results

This section presents the results of statistical analysis of the research questions and hypotheses during the study. In doing so, each research question and hypotheses was first stated in its original form, this was followed by the presentation of the statistical analysis technique, before the final interpretation of the results. Each interpretation was done under .05 level of significance with 85 degrees of freedom.

HO_1

Rural infrastructural development has no significant relationship with environmental sustainability in Cross River State. The independent variable is Rural infrastructural Development while the dependent variable is environmental sustainability in Cross River State. To test this hypothesis, simple regression statistical analysis was used and the result as presented in Table 1. The analysis in Table 6 showed that the Adj R^2 is 0.046. This implies that 4.6% of the variance in the dependent variable (environmental sustainability) could be accounted for by Rural infrastructural development. However, though the percentage contribution is small, a cursory look at the table showed that the F=32.311 (p<.001) is significant at .05 level and 1 and 808 degrees of freedom. And since p (.001) is smaller than p (.05), it implies that Rural infrastructural development has a significant relationship with environmental sustainability in Cross River State. Hence the null hypothesis is rejected.

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Table 1: Simple regression analysis of relationship between rural infrastructural development and environmental sustainability in Cross River State(N=810)

Source of variation	SS	Df	MS	F	Sig.
Regression	102.643	1	102.643	32.311	.001[b]
Residual	3226.184	808	4.479		
Total	3328.827	8909			

*Significant at .05 level; R=.218; R^2=.048; R^2Adj=.046

HO_2

Poverty alleviation has no significant relationship with Environmental sustainability in Cross River State. The independent variable is poverty alleviation while the dependent variable is environmental sustainability in Cross River State. To test this hypothesis, simple regression statistical analysis was used and the result as presented in Table 2. The analysis in Table 6 showed that the Adj R^2 is 0.049. This implies that 4.9% of the variance in the dependent variable (environmental sustainability) could be accounted for by poverty alleviation. However, though the percentage contribution is small, a cursory look at the table showed that F=44.312 (p<.05) is significant at .05 level and 1 and 808 degrees of freedom. Also, since p(.000) is less than p(.05), it implies that Poverty alleviation has a significant relationship with Environmental sustainability in Cross River State. Therefore, the stated null hypothesis is rejected.

Table 2: Simple regression analysis of relationship between poverty alleviation and environmental sustainability in Cross River State (N=400)

Source of variation	SS	Df	MS	F	Sig.
Regression	195.256	1	195.246	44.312	.000[b]
Residual	3133.580	808	4.217		
Total	3328.827	809			

*Significant at .05 level; R=.226; R^2=.051; R^2Adj=.049

Discussion of findings

The results and findings of the study is discussed in these sections. Effort was made by the researcher to do this based on the variables under study hypothesis-by-hypothesis.

Rural infrastructural development program policies and environmental sustainability.

The result of hypothesis one showed that rural infrastructural development has a significant relationship with environmental sustainability in Cross River State. The conclusion was based on the fact that that the Adj R^2 is 0.046. This implies that 4.6% of the variance in the

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dependent variable (environmental sustainability) could be accounted for by Rural infrastructural development. The F=32311 (p<.001) is also significant. And since p(.001) is smaller than p (.05), it implies that Rural infrastructural development has a significant relationship with environmental sustainability in Cross River State. Hence the null hypothesis is rejected.

The present result is in line with, the study of Madu (2022) who stated Rural infrastructural policies have come a long way with Nigerian history of nation building, rural infrastructure looks at all physical projects that can be brought to the rural setting to help in changing the lives of the rural communities, they include rural electrification, roads, hospitals, schools, market, water and food storage facilities like silos among others. Some policy documents on rural infrastructures looked at the issues bedeviling rural infrastructure and observed that the rural areas are in dire need of infrastructures like road network, telecommunication, electricity, schools, safe access to functional drinking water within the shortest possible distance, good health care, functional education system and security among others.

The result equally affirms the studies of like Fasanya, (2018) and Larder, Sippel and Argent, (2018) that stated that with the construction of some new road networks in most rural communities, there is improved transportation, enabling subsistent farmers to move their farm produce to markets where they could be sold more efficiently and fast too. Projects providing safe access to clean drinking water for most communities have also improved the living standards of most of these rural communities thereby reducing incidence of waterborne diseases and improving their longevity. Where infrastructural projects like electricity projects are implemented, rural business and economy are improved because artisans and other cottage industries can now work, helping to provide services and also generate income and revenue to the family, the communities and government. Electricity provision also fosters schools. Economic growth are enhanced and improving economic and businesses opportunities within the rural communities.

Oyaniran, (2020) also found that maintaining and sustaining rural infrastructure in most rural remote communities remains another challenge government and development partners must urgently addressed, this is because rural infrastructural development in Nigeria is crucial for the holistic growth and development of these communities. While Oyeniran,(2021), saw the challenges to rural infrastructural development as impediment to rural development, Madu, (2023) posited that through collaborative efforts, successful projects have resulted in improved transportation, access to clean water, and reliable electricity, this author went

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further to posit however, that there are challenges which persist, and ongoing supports are required to ensure the sustainability of these infrastructural projects in the long run.

Poverty alleviation programmes and environmental sustainability

The result of hypothesis two showed that there is a significant relationship between poverty alleviation programmes and the environmental sustainability in Cross River State. The conclusion was based on the fact that Adj R^2 is 0.057. This implies that 5.7% of the variance in the dependent variable (environmental sustainability) could be accounted for by poverty alleviation. However, though the percentage contribution is small, a cursory look at the table showed that F=44.213 (p<.05) is significant. Also, since p(.000) is less than p(.05), it implies that Poverty alleviation has a significant relationship with Environmental sustainability in Cross River State. Therefore, the stated null hypothesis is rejected and alternative hypothesis upheld forthwith.

The present conclusion is in line with the work Onyebuchi, (2023) who sated that people resort to do all manners of things that will put food on their table, provide income for their pockets and manage their health. their last resort becomes the environment and their available natural resources. Most resort to indiscriminate timber exploitation, other to the exploitation of non-timber forest products, others to sand mining, illegally mining mineral resources within their community like the mining of kraolite in Biase, while others resort to bush burning to hunt games and rodents for sales and few left for consumption. Those who engage in farming, clear and cultivate fragile ecosystems for their farming activities, some resort to market gardening, where they cultivate vegetables like okra, pepper, green vegetables, pumpkin, scent leaves, curry among others by the streams and river banks which are fragile watershed ecosystem.

In a bid to improve their crop productivity, most begin to use inorganic fertilizers to make more profit out of their farming activities. These chemicals have deleterious adverse effects on the already fragile environment and the sustainability of the ecosystem becomes a problem confronting man. As they clear the fragile ecosystem, they expose the surface soil to harsh environmental conditions, contributing to reduce evaporation and transpiration, reducing the amount and volume of rainfall, increasing the amount of temperature and reducing the relative humidity of the area. All these are drivers of climate change. Where game hunting becomes an alternative choice of earning a living, most species are already endangered, so hunting without considering the species, sizes, age and abundance of some species make them become endangered or threatened. In some cases, these species go extinct either locally or in the regions. These and many more do not encourage environmental sustainability. Poverty is

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both a moral, social and economic scourge which people should avoid as much as possible. Poverty is a deprivation of any kind that people face in their rural settings. Poverty can be seen as a lack, deprivation or the inability to have what one needs at a particular time.

Conclusion

Sequel the results of data analysies and the findings, the researcher concluded that rural infrastructural development programmes have a significant relationship with environmental sustainability in Cross River State, Nigeria, although their contribution is relatively modest. The findings further revealed that poverty alleviation programmes also have a significant relationship with environmental sustainability, indicating that both development interventions meaningfully influence environmental outcomes in the study area.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. With reference to rural infrastructural development programmes, policymakers should prioritize environmentally sustainable infrastructure development in rural areas, incorporating green technologies and practices to minimize environmental impact. This can be achieved through collaboration with environmental experts and community stakeholders.
2. Poverty alleviation initiatives should incorporate environmental sustainability components, such as training on sustainable livelihoods and environmental conservation, to empower rural communities. This can help reduce poverty while promoting environmental sustainability.

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