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Environmental Awareness Strategies and Sustainable Forest Resources Management in Boki Local Government Area, Cross River State, Nigeria.

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Abstract

In Cross River State, Over seventy percent of the population lives in rural areas with their means of livelihood involving agricultural practices such as hunting, non-timber forest product gathering, fishing among others. These practices have resulted in mass deforestation of the virgin rain forest causing a gradual disappearance of forest resources in these areas. It is this poor attitude that necessitated this present study which sought to examine the relationship between environmental awareness strategies and sustainable forest resources management in Boki Local Government Area of Cross River State, Nigeria. To attain the aim of this study, two research questions and two null hypothesis was used for the research work and a sample of one hundred and fifty (150) respondents were selected from five (5) communities for the study. The selection was done through purposive sampling technique. The main instrument for data collection was the environmental awareness strategies and forest resources management questionnaire (EAS FRMQ) developed by the researcher. The instrument was validated by experts in measurement and evaluation. The reliability estimate of the instrument was established through Cronbach alpha technique with a coefficient of 0.71 to 0.86 respectively. Pearson Product Moment Correlation Coefficient with the help of Statistical Package for Social Sciences (SPSS) version 27 was employed in testing the null hypothesis at 0.05 level of significance and 148 degree of freedom. The result of the analysis revealed that there is a statistically significant relationship between mass media, community advocacy strategy and sustainable forest resources management. The study thus, recommended that

	local authorities should prioritize comprehensive environmental education programs, encourage collaboration among stakeholders, including the community, traditional leaders, NGOs, educational institutions, and the government, for a greener and more sustainable future.

Introduction

Nigeria as one of the African countries is blessed with enormous natural resources such as forests which encompasses vast areas of land. Forest resources are vital for human well-being and sustainable development. They not only provide a habitat for a wide array of flora and fauna but also contribute significantly to the local economy and livelihoods of the community. The Food and Agriculture Organization (FAO. 2021) stated that forest resources provide a wide range of goods such as timber, fuelwood, non-timber forest products, and medicinal plants. Forests also offer cultural and recreational values, eco-tourism opportunities, and contribute to water regulation, soil conservation, and natural disaster mitigation, benefiting communities and societies as a whole. These highlighted importance of forest resources underlining the need for their sustainable management to ensure the preservation of biodiversity, mitigate climate change, and support socio-economic well-being. Furthermore, it can ensure the responsible utilization of forest resources while safeguarding their long-term viability and maintaining the invaluable benefits they provide to ecosystems, communities, and the planet as a whole.

Sustainable forest resources management refers to the responsible and balanced utilization of forest resources to meet present and future needs while ensuring the long-term health and integrity of the forest ecosystem. The indices of sustainable forest resources management encompasses various aspects such as sustainable timber harvesting, reforestation, conservation of biodiversity, protection of ecosystem services, among others. The aim is to achieve a harmonious and sustainable relationship between human activities and the forest environment, ensuring the sustainable provision of timber, non-timber forest products, and ecosystem benefits. It is also aim at reducing the effect of environmental degradation is indisputable in Nigeria and particularly in Boki Local Government Area of Cross River State (Takon & Amalu, 2013).

However, research so far showed that rapid degradation of natural resources globally, nationally and locally and the rate of forest destruction has accelerated significantly since the turn of the century (Takon & Amalu, 2013). This has continued to be a subject of concern among scholars and is most critical in the tropics where over 2.5 billion people depend on forest resources for a variety of services (Park, 1992; Sharma, 1992 & Tijani, 2007). Cunningham and Cunningham (2004) reported that an estimated 12.5 million km of tropical forest lands were covered with closed canopy forest a century ago and 9.2 million ha or 0.6 percent of the remaining forest is cleared each year.

This trend is not very different in Nigeria as a whole and Cross River State in particular. Nwoboshi (1987) as cited in Takon and Amalu (2013) reported that forest clearance in Nigeria is put at an average of 400,000 ha per annum, while afforestation has only32,000 ha annually. The cumulative effect of these is that the country has lost 50million of forest in less than 100 years. In Cross River State, over seventy percent of the population lives in rural areas with their characteristic mud-walled and thatch-roofed houses. Ajake (2004) noted that between the years 2000 to 2005, about 20,000ha of reserved areas are converted to agricultural plantation.

In Boki Local Government Area of Cross River State, the researcher observed that the mainstay of the people is crude agricultural practices involving mixed cropping, hunting, non-timber forest product gathering, fishing and other resources exploitation. The high poverty level of these agrarian communities has resulted in mass deforestation of the virgin rain forest biochure for lucre and livelihood. As a result of these, some human activities that negatively affect sustainable forest resource management. These include illegal logging, encroachment and conversion of forest land for agriculture or settlements, unsustainable harvesting of timber and non-timber forest products, improper waste disposal, and inadequate enforcement of forest regulations and lack of awareness and understanding of sustainable forest management principles. In fact, the people are highly dependent on forest ecosystem for survival making use of its diverse and abundant natural, wildlife, land, food and water resources.

The government has demonstrated a commitment to addressing the challenges of sustainable forest resource management through policy development as well as forest monitoring and enforcement. For instance, through the forestry commission, the Cross River State has taken the initiative to institutionalize participatory forest management and community forestry as a valuable and sustainable forest management practice in Boki local government area. The establishment of National Park by the federal government in Okwango area of Boki and managing the drill ranch in Bwanchor, were some of the initiatives put in place to strengthen the drive for the management and conservation of forest resources. Yet, In spite of these government policies and initiatives, evidence of degradation and depletion of forest resources are observed posing a threat to the sustainability of forest resources in Boki local government area of Cross River State. This may be attributed to lack of environmental awareness strategies which are pivotal in engaging the local community and fostering a sustainable forest resource management for present and future generations.

Environmental awareness strategies in this context refer to deliberate and planned approaches designed to increase knowledge, understanding, and consciousness among individuals and communities about environmental issues, challenges, and solutions. Essien and Ushie (2018) defines it as a process of sensitizing individuals and community members attitude to understand the complex nature of the environment and the negative impact of their actions on the environment. The researchers further stated that environmental awareness deals with individuals knowledge and sensitivity concerning environmental matters such as deforestation, climatic changes, pollution, erosion, biodiversity loss and depletion of forest resources of different kinds. Raven (1995) cited in Essien and Ushie (2018) opined that there is need for increase public awareness which is a major strategy in solving the problems of deforestation.

These strategies aim to raise awareness about environmental problems, their causes, and potential solutions, highlighting the importance of sustainable practices and responsible behavior to mitigate environmental degradation and promote a more sustainable future.

The rapid pace of unsustainable environmental practices and encroachment has posed significant threats to the fragile balance of these forest ecosystems. Therefore, there is need for a purpose-driven environmental awareness campaign. Such awareness or environmental information will help to influence individuals and communities attitude toward environmental sustainability practices. Supporting this view, Ogunbode and Arnold (2012) cited in Essien and Ushie (2018) revealed that a better understanding of environmental attitudes could be ascertained by observing a given population and assessing their environmental awareness. Whereas, Low levels of environmental awareness could be associated with negative environmental attitudes or perceptions toward the environment (Ormsby & Kaplin, 2005 in Essien & Ushie, 2018). This means that low or poor level of environmental awareness will make both individuals and community members to show poor attitude that could cause great damage to the environment.

There are numerous environmental awareness strategies that enhance effective forest resources management. Nduke (2000) as cited in Essien and Ushie (2018) stated a number of programmes that could be used to achieve this. These include: forest tracing, reorientation, re-afforestation and formation of conservations clubs. Anijah-Obi (2001) as cited in Essien and Ushie (2018) suggested the formation of conservations clubs and societies, training and deployment of environmental extension officers and other community penetrating strategies. This study will examine mass media strategy and community advocacy strategy.

Mass media strategy is the use of mass media channels to effectively communicate and disseminate information, messages, and campaigns related to environmental issues, conservation, and sustainable practices. It involves leveraging various forms of media, such as television, radio, print publications, online platforms, and social media, to reach a wide audience and raise awareness about environmental challenges, solutions, and the importance of sustainable behavior. Udumo, Andong and Odumegwu (2019) stated that mass media is a significant instrument through which information on forest management can be disseminated to the public. Apolinary (2011) cited in Udumo, Andong and Odumegwu (2019) conducted a study on the role of print media in creating awareness on forest management in Tanzania, Africa. The study showed that print media played a leading role in educating and informing the public on effect of forest mismanagement and related human impacts. Radio is often associated with a wider geographical coverage and a relatively cheap cost of acquiring and using in contrast to the print media.

Banjo, Adebambo and Dairo (2012) in Udumo, Andong and Odumegwu (2019) conducted a study to determine the effectiveness of radio communication on the attitude change toward forest resource management in Ondo State of Nigeria. Four hundred (400) copies of

questionnaire was administered to the respondent in the selected household using simple random sampling technique and non- probability technique. The result showed that radio was the most available, easily accessed and effective sources of environmental information in addressing forest management. Setyawati and Shaw (2015) studied the case in Indonesia where the media industry is thriving and deforestation is growing. Discourse analysis on 150 forestry related articles from three online media found that there is a difference in the focus of national and local media. The national media coverage tends to discuss the problems of an issue while the local media provides solutions to those issues.

Also, Udumo, Uba and Efut (2018) reported that despite the impact of mass media in ensuring adequate sensitization, forest resources are still being depleted through deforestation, lack of adequate sensitization of community members regarding sustainable forest management, logging, abuse of indigenous laws and regulations, unsustainable farming methods, uncontrolled bush burning among others. In the same vein, Akpoghiram and Okoro in Udumo, Andong and Odumegwu (2019) stated that radio is an effective environmental communication tool, which could be used to raise public awareness and consciousness towards environmental concerns with a high degree of effectiveness. Zacharia (2020) examines the role of radio surveillance in the fight against deforestation in Rufiji, Tanzania. the study was guided by three research questions. Data were collected using questionnaires and focus group discussions. The findings reveal that the radio has largely failed to use instrumental surveillance function of the environment to empower community members find alternative sources of income generation and refrain from actions that are detrimental to forest conservation efforts.

Community advocacy, as a forest resources management strategy, refers to the active engagement, empowerment, and mobilization of local communities to advocate for the sustainable management and conservation of forest resources. It involves empowering community members to take an active role in decision-making processes, policy development, and implementation of practices that promote responsible forest use, biodiversity conservation, and the protection of forest ecosystems. According to National centre for advocacy studies (2001) cited in Duke (2021), advocacy is a planned and organized set of actions to amplify the voices of poor and marginalized to make them able in claiming their rights effectively so as to influence public policies and practice. This implies that advocacy is an important means for building community political commitment to put priorities and policies in place. Duke (2021) stated that insufficient public awareness and education constitutes a major barrier in the attainment of healthy community forest. Researchers explained that community advocacy, advocacy communication, which involves delivering evidence-based recommendations from decision makers, directly and indirectly influences decision makers, stakeholders and relevant audiences to support and implement actions that contribute to the fulfillment of the promotion of environmental preservation (Jose, 2009; Sandred, 2004; Dave, 2004 in Alakali, Alu, & Joseph, 2022).

Advocacy as a forest sustainable strategy according to Idika, Ovat, Achighe, and Udumo (2019) as cited in Duke (2021), is an important means for building community political commitment to put priorities and policies in place. The researchers also opined that it is also a process that

involves selecting and organizing information to create a convincing argument and communicating it through interpersonal and media channels. It has implications to their effective implementation of the existing policy or amendment in the existing policy or formulation of new policy. Duke (2021) submitted that the community forestry is regarded as a successful example of decentralization in natural resource management that fulfills people's forest product needs and enhances environmental sustainability. Thus, according the author, advocacy empowers people to claim and exercise their right and fulfill their responsibilities.

Alakali, Alu, and Joseph (2022) conducted a study on advocacy communication and environmental preservation: an appraisal of the activities of charcoal and timber merchants in Logo and Kwande Local Government Areas of Benue State, to assess the impact of advocacy journalism on effective environmental preservation in the two Local Governments Areas under study. The work is anchored on the Coalition Theory and Development Change Model, while survey design is adopted to obtain the relevant information for the study. Utilizing questionnaire and focused group discussion, 272 questionnaires were administered and 252 collected, while 6 focused group discussion sessions were held across different locations in the study areas. The result revealed that if consistent advocacy journalism/communication is sustained and properly monitored and utilized, it can be useful in discouraging disforestation activities.

Duke (2021) evaluated community environmental education programmes and sustainable forest management in Biase Local Government Area in Cross River State. A sample of two hundred (200) respondents was randomly selected for the study through simple random sampling technique. Pearson product moment correlation analysis was adopted to test the hypothesis directing the study. The result of the analyses revealed that community advocacy significantly relate with sustainable forest management. Wuyep, Jatau and Williams (2022) examined the causes of deforestation, the measures for controlling deforestation and the management strategies of deforestation in Mushere. The chi-square p-value of 29.7 showed that there is a significant relationship between the effective management strategies of forests and the rate of deforestation. The study, suggested public sensitization among other to protect the forest. Alakali, Akwougu and Fanafa (2022) investigated Advocacy Communication and Environmental Preservation: An Appraisal of the activities of Charcoal and Timber merchants in Logo and Kwande Local Government Areas of Benue State. The study revealed that consistent advocacy journalism/communication discourages disforestation activities in the study areas.

Majority of the literatures reviewed were based on studies conducted in the developed countries and only few were from developing countries, and particularly from the study area. Therefore, this study was essentially designed to establish the relationship existing between environmental awareness strategies and sustainable forest resources management in other to contribute to the existing gap of knowledge. The need came as other researchers and scholars have not

adequately focused on the relationship which exists between environmental awareness strategies and sustainable forest resources management in Boki Local Government Area.

Sustainable forest resource management aims to balance current human needs with the long-term health of forest ecosystems, addressing the needs of local communities, indigenous peoples, and stakeholders dependent on forest resources. Key indices include restoring degraded forests, responsible logging techniques, protected areas for critical habitats, and educational programs to raise awareness and understanding of sustainable forest management. These efforts ensure the vitality and long-term benefits of forest ecosystems. It is observed that the forest resources in Boki Local Government Area of Cross River State, Nigeria have been under pressure. There is massive exploitation of forest resources through large scale logging, bush burning, fuel wood collection, unsustainable agricultural practices such as the application of chemical on farmlands and the exploitation of non-timber products of various kinds.

The unsustainable degradation and depletion of forest resources in Boki Local Government Area of Cross River State, Nigeria, pose a significant threat to the long-term sustainability of these vital ecosystems. Despite government policies and initiatives, including the institutionalization of participatory forest management and community forestry, evidence of ongoing deforestation, illegal logging, encroachment, and unsustainable practices persist, indicating a lack of effective environmental awareness strategies to engage the local community and foster sustainable forest resource management for present and future generations. The problem of this study led to the question: what is the relationship between environmental awareness strategies and sustainable forest resources management in Boki Local Government Area of Cross River State, Nigeria?

Research hypotheses

1. There is no significant relationship between mass media strategy and sustainable forest resources management.
2. There is no significant relationship between community advocacy strategy and sustainable forest resources management.

Research methodology

The study was carried out in Boki local government area of Cross River State. Boki is one of the eighteen local government areas of CrossRiver State and the second largest in terms of landmass (344,952km2). It is located between latitudes 5 o82 1 and 6 o40 1N and longitudes 8 o50 1 and 90 o00 1E. The area is bounded to the North by Obudu and Obanliku local government area, to the south by Ikom, to the west by Ogoja and to the East by Cameroun Republic. From 2006 National population census, Boki has a projected population of 146,192. The population is unevenly distributed across the ten political wards such as Ekapask 1, Agba 2, Boje, Abo, Truan, Alankv, Abu- Borum, Njua, Kakwagom/Buyop, Wula and Bateriko. Boki is situated at the southern end of the eastern highlands, a chain of hills along the eastern Nigeria border with Cameroun. Elevation ranges 150m to 1000mabove sea level. The most notable are the Boje and Nsadop hills, Erruan Mountains and Mbe Mountains. Boki is well drained with many streams and rivers such as Afi, Okorn and Aren rivers. Minor streams exist across the entire area that constitutes the tributaries of the main rivers. The study area has a tropical climate typified with distinct wet and dry seasons. It has a mean annual temperature of 25 o C

and annual rainfall of between 2000mto 3500mm. The rainfall is of double maxima regime (July and September). The above climatic conditions and rich soils derived from cretaceous and tertiary shale and sand stone produced a Luxuriant vegetation.

The researchers adopted ex-post facto design. According to Isangedighi, Joshua, Asim and Ekuri (2004), ex-post facto research design is that type of research which studies phenomena after they have occurred. Thus, the researcher does not have direct control of the independent variables because their manifestations have already occurred. It deals with the investigation of relationship among variables. The choice of the research design was that, the phenomena of interest had already occurred and cannot be manipulated.

The population of the study is made up of male and female farmers, civil servants, forest product collectors, and community leaders selected from five communities namely: Abon-Takon, Kayang/Buitong, Buanchor, Boje and Abo who were able to read and write. A sample of one hundred and fifty (150) respondents was selected from the five communities in the local government area. To achieve this, the researcher purposively selected thirty (30) respondents from each of the community as sample for the study. A 18-items structured questionnaire titled "Environmental Awareness Strategies and Sustainable Forest Resources Management Questionnaire" (EASSFRMQ) was used for data collection on four-point Likert scale of Strongly Agree (SA) Agree (A), Disagree (D), and Strongly Disagree (SA). The items were validated by three experts in measurement and evaluation. Some unwanted items were discarded while others reconstructed. Cronbach alpha technique was used to determine the reliability estimate of the instrument with a coefficient of 0.71 to 0.86. Pearson Product Moment Correlation Coefficient with the help of Statistical Package for Social Sciences (SPSS) version 27 was employed in testing the null hypothesis at 0.05 level of significance.

Results and discussion of findings

Ho:1

There is no significant relationship between mass media strategy and sustainable forest resources management in Boki Local Government Area, Cross River State, Nigeria. Descriptive statistics and Pearson product moment correlation analysis was used to analyze this hypothesis as presented in Table 1.

Table 1: Descriptive statistics and Pearson product moment correlation analysis of the relationship between mass media strategy and sustainable forest resources management in Boki Local Government Area, Cross River State, Nigeria.

Variable	N	$\bar{X}$	SD	df	r-value	Sig.
Mass Media Strategy	150	17.53	3.624			
				148	.351**	.000
Sustainable Forest Resources Management		17.19	3.568			

N=150, r = .351, p<0.05

The result of table 1 revealed a statistically significant relationship between mass media strategy and sustainable forest resources management (r =.351). This implies a low positive correlation coefficient, p-value = 0.000 which is less than alpha = 0.05. The positive r value implies that educating the community members through mass media campaign can enhance their consciousness and efficiency in managing forest resources. Thus, the null hypothesis three is rejected.

Ho:2

There is no significant relationship between community advocacy strategy and sustainable forest resources management in Boki Local Government Area, Cross River State, Nigeria. Descriptive statistics and Pearson product moment correlation analysis was used to analyze this hypothesis as presented in Table 2.

Table 2: Descriptive statistics and Pearson product moment correlation analysis of the relationship between community advocacy strategy and sustainable forest resources managementin Boki Local Government Area, Cross River State, Nigeria.

N=150, r = .541, p<0.05

Variable	N	$\bar{X}$	SD	df	r-value	Sig.
Community Advocacy Strategy	150	18.10	3.632			
				148	.541**	.000
Sustainable Forest Resources Management		17.19	3.568			

The result of table 2 revealed a statistically significant relationship between community advocacy strategy and sustainable forest resources management (r =.541). This implies a

moderate positive correlation coefficient, p-value = 0.000 which is less than alpha = 0.05. The positive r value implies that community advocacy as a strategy can enhance sustainable forest resources management in the area. Thus, the null hypothesis three is rejected.

Discussion

The result of hypothesis one revealed significant relationship between mass media strategy and sustainable forest resources management. The finding of this hypothesis is in agreement with the findings of Udumo, Andong and Odumegwu (2019) who revealed that mass media is a significant instrument through which information on forest management can be disseminated to the general public. Similarly, Banjo, Adebambo and Dairo (2012) showed that radio was the most available, easily accessed and effective sources of environmental information in addressing forest management. In the same vein, Akpoghiram and Okoro in Udumo, Andong and Odumegwu (2019) stated that radio is an effective environmental communication tool which could be used to raise public awareness and consciousness towards environmental concerns with a high degree of effectiveness.

The result of hypothesis two showed a significant relationship between community advocacy strategy and sustainable forest resources management. The result support the findings of Duke (2021) who revealed that community advocacy significantly relate with sustainable forest management. Also, Wuyep, Jatau and Williams (2022) showed that there is a significant relationship between the effective management strategies of forests and the rate of deforestation. Similarly, Alakali, Akwougu and Fanafa (2022) revealed that consistent advocacy journalism/communication discourages disforestation activities in the study areas.

Conclusion

Based on the findings of this result, it was concluded that there is a statisfically significant relationship between environmental awareness strategies and forest resources management in Boki Local Government Area, Cross River State. Raising awareness about environmental preservation and sustainable forest resource use empowers the community to make informed decisions and adopt sustainable practices. Through this approach, a greener and more sustainable future can be achieved, safeguarding the community's natural heritage, protecting ecosystems, and enhancing quality of life for present and future generations.

Recommendation

To promote environmental awareness and sustainable forest management in Boki Local Government Area, it is recommended that local authorities should prioritize comprehensive environmental education programs, encourage collaboration among stakeholders, including the community, traditional leaders, NGOs, educational institutions, and the government, for a greener and more sustainable future..

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