

THE ROLE OF WOMEN IN ENVIRONMENTAL MANAGEMENT IN CROSS RIVER STATE, NIGERIA

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Abstract

The study investigated the role of women in environmental management in Cross River State, Nigeria. The study was guided by four research questions and four hypotheses were formulated to guide the study. Survey research design was used for the study. The population of the study comprises 150,000 women in Cross River State. A sample of 150 women was drawn from the population. Accidental sampling technique was used to select women for the study. The instrument for data collection was a modified four-point Likert scale of questionnaires of 30 items constructed by the researcher. Data collected were analyzed using Pearson Product Moment Correlation Coefficient, the findings revealed that women participation in waste disposal management relate to environmental management, women participation in forest management and tree planting relate to environmental management in Cross River State, Nigeria. It was recommended that women should be given more room to participate in the environmental management women should be educated on the impact they can create in environmental management and more women should be encouraged to participate in tree planting.

Keywords: Women participation, Environment and Management.



Introduction

Women constitute about half of the country's population according to our various censuses, yet they are not given prime place to manage the environment. As citizens of this great nation Nigeria who formed a large number of the population, women are supposed to contribute much of their quota to the development of the country. Their intellect should be inculcated into the effort channel towards the development of the wider society. Regrettably, they still suffer a lot of constraints and inhibition which militate against their personal development which consequently retard their contribution to the growth and development of the environment.

In the face of the increasing environmental problems that are destroying by our rural dwellers, women are especially vulnerable to them. They have always played an essential role in ensuring the protection of fragile ecosystems, surviving natural resources for sustainable environmental management. Although women have been involving in planting of trees and management of waste in environment without knowing how to adapt to climate

change, their contributions have generally been undervalued. Women play a critical role in managing the natural resources on family and community and are mostly affected by the environmental degradation in the environment. According to Edem (2019) women play an essential role in the management of water, soil, source for fuel, food, waste disposal, forest and agricultural development. Women participation is the involvement of the women in the environmental related issues. Adam (2018) opined that women participation is conceived as the process and an outcome related to women engagement in environmental issues by participating in policy making and formulating that is related to the environment. The role of women has direct impact in the management of home and in the field of production and disposal. The choice of healthy methods of waste segregation and recycling and reuse them, waste management and the issues that women are directly involved in it. Hence, training of children to prevent destruction of the environment has a significant influence on a generation raised. The concept of women participation in development has now become an integral part of the development discourses and policy initiatives.

Thus, women have served all agriculturalists, water resources managers and traditional scientists among others. Women are not only knowledgeable about the environment, they are also protective and caring (Shettima, 2018). Women being primarily responsible for domestic and household management, interact more intensively with both the natural and built environment more than men. Consequently, they are more likely to suffer from a degraded home, neighborhood and city environment and to shoulder more of the burden that go with living in poor housing and communities with inadequate residential and health infrastructure since they spend more time at home and its immediate vicinity (Etta, 2009).

Governments of the world are seeing the global dimension of a number of environment problems, such as climate change, ozone depletion, dumping of hazardous wastes, destruction of biological resources and of forests and the impact of desertification (Tolba, 2002). Therefore; the need to protect the environment became imperative. Women have recorded successes in solving environmental problems all over the world. In India, the women realized that degradation of productive land has led to the erosion of top soil; the choking of water drainage was causing salinity and loss of food crops. They collectively leased degraded land and revived them through traditional farming. In three years 700 acres of land were restored to productive use (Ress, 2002) they are more concerned about environmental protection and ecological preservation.

Dankelman and Davidson (2018) observed that women play a major role in managing their natural surroundings and adopt several mechanisms to deal with the kinds of environmental crisis they face. Women play an important role in the management of their environment as they contribute in the control of waste disposal management, forest management and tree planting, agriculture and soil conservation and also in food management. Women are seen as the bed rock for development. They however, observed that the response of government has not been significant and as a result, women, men and children continue to face problems including pollution, poor services, human waste pollution, fumes from household fuel and the consequences of soil erosion and flooding.

As rightly noted by Sayoe (2011) without the enhanced perception of a gendered analysis to guide into future, a crash is inevitable. Therefore, there is the need to understand the various ways women have actively participated in environmental protection and management with a view to integrate them into environmental management programme. The objective of this research is to appraise women involvement in environmental management with particular reference to development in Boki Local Government, Cross River State, Nigeria.

Waste disposal presents many challenges, particularly in the large cities whereby the amount of solid wastes are increasing faster due to the population of the society. Solid wastes are dumped at dumping site or undeveloped land (Uyanga & Buteyo, 2019; Olowonefa & Agbade, 2023). Women because they are closer to the environment, engage in environmental management by cleaning the environment and keeping it clean especially in terms of garbage disposal. Giving the health hazard of garbage, women see to its regular disposal at the community level by doing it themselves. In term of waste disposal and management, women are actively involved because they are closer to the environment. They engage in environmental management by cleaning the environment and keeping it clean especially in terms of garbage disposal.

Kwagala (2018), in his study observed that Drains are mainly cleaned by the women on a regular basis or pay to have them clean. In the south western part of the country, women in Pedro Village, Lagos state were found to be protective and conscious of their environment. They manifest this by engaging in waste management, drainage management, water resource are all efforts towards protecting their environment further exacerbated by blocked drainages and improper waste disposal.

The study by Chukwu (2018) shows that women play an active role in protecting their community and serve as enforcers of guidelines and penalties. Women's involvement in environmental management and problems make them to participate actively in keeping drainages around them clean and free from trash and sand. Obiora (2013) examined the current Status of Municipal Solid Waste Management Practice in FCT Abuja. The study aims at identifying the current challenges and areas requiring improvement in FCT Abuja. The data collection was in stages using an integrative approach via semi- structured interview and field observations (Meremikwu et. al 2022; Adie et. al 2026; Ibu et. al 2019; Ibu et. al 2019). The qualitative data was analyzed descriptively, while the quantitative data was analyzed using basic statistics. Based on the findings, it was concluded that municipal solid waste management is a serious issue due to its human health and environmental sustainability implications that are yet to be properly addressed within the FCT Abuja.

Jan Steins (2012) conducts a study that focused on Industrial Waste Management Models. His objective was to determine the commonly known business economic models, tools, methods and organizational theories as well as the Pollute-Pay-Principle that can be applied in waste management. System theory was adopted in order to get a clear picture of the model societal context; the economic model methods are studied and modified from a waste management point of view. It was concluded that theoretical findings point at the fruitful possibility to modify commonly used cost-revenue methods including the Pollute-Pay-Principle in an industry.

The waste management model presented here illustrates mix basic solution integrated planning of state and some Local Government Solid Waste Management System in Anambra State. The optimization model was developed with the objective of allowing the Board of Anambra State Environmental Protection Agency (ANSEPA) to capture practically all aspect of waste management and it is planning problem (All integrated into, personnel sundry, equipment maintenance and purchase). It contains many innovative features and removes many limitation frequency encountered in often existing optimization modeling for waste management. Moreover financial constraint causes delay in the models effectiveness and efficiency.

As in the Nigeria factor, financial resources are usually difficult to access, in that model goals can be delayed overhead waste collection, disposal and planning management, and a whole lot could be disrupted. When the complexity of solid waste management planning increases, system engineering tools can assist municipal and local decision makers in handling the complex planning situation (Antai et. al, 2025; Adie et. al 2020, Igyu et. al

2022, Obi et. al 2020). Many related literature reviews on waste management and sustainability development have been carried out in some States in Nigeria and other countries.

Anipi, Ojong, Deku and Moses (2023) in their research work investigated the community conservation communication strategies and environmental protection in central senatorial district of Cross River State, Nigeria. Five research questions were formulated to guide the study and further converted to five hypotheses. The population of the study comprised one million two hundred and sixty-one thousand rural dwellers. Survey research design was utilized in the study. 'Stratified random sampling technique was used in the 38 communities and the 400 respondents used for the study. 70 items rating scale questionnaire was the instrument used for data collection. The reliability estimates of the instrument was 0.74 and it was established using Cronbach Alpha Reliability method. The statistical tool for data analysis was simple linear regression at 0.05 level of significant. The result of data analysis revealed that there was a significant influence of traditional media, village mass media, village meetings, folk media community brainstorming on environmental protection. Based on the result of the study, it was recommended that vigorous campaigns or community education about unhealthy agricultural practices and community communication media, should be carried out to discourage high level of deforestation, unsustainable practices of environment and to increase awareness about environmental issues, which will enhance the campaign of sustainable development by protecting and preservation of sensitive ecosystems.

Although varied in their approaches and methods, forest management systems seek to protect forest cover, ensure the reproduction of commercially important species, and device continuing economic, social and environmental benefits from tin, forests. Unfortunately, only a small percentage of the world's forest resources are managed. For example, a survey of 76 countries possessing tropical forest found that out of 210 million hectares being logged only 20% was being managed (FAO. 2017).

According to Jan Steins (2012) recent estimates show that only 0.2% of the world's moist tropical forests are being managed for sustained timber production. The lack of understanding of forest regeneration processes and ecological complexity of tropical moist forest places special constraints on applying forest management practices, especially those developed in the temperate zone forest. Similarly, the rate at which biological diversity (especially the forest ecosystem) is loss, there is raise in the need to protect it (Opara et. al 2020, Effiong & Agbade 2016). This is because forests play a vital role in protecting the soils, water sheds, climatic stability and serve as source of many main sources of energy (cooking fuel) for women are from natural of these energy sources can lead to deforestation, soil degradation and air pollution. Only very few rich women use gas or electric cookers. The interesting part of the whole dilemma is that we have greater women participation in forest management through tree planting, rehabilitation or protection.

Hyman (2003), in Plateau State, Nigeria also shows that the commonest method employed by women in soil conservation is mulching. In addition, to his studies in Akwa Ibom State, Nigeria revealed that thirteen percent (13%) of women said they engage in sustainable harvesting so that those plants would be available for next time. However, they admitted being cutting tree branches in ways that would allow for future germination of such tree (Adie et. al 2019; Adie et. al 2019; Adie et. al 2022). The Society for Women and Vulnerable Groups (SWOVUGE) is also helping communities to restore. This is to show that women are actively participating in protection of biodiversity either through planting tree or raising seedling in nursery.

Aina and Salau (2012) opined that rural women as farmers and traders perhaps experience environmental problems much more than their male counterparts. Land (which herein refers to as soil), which is also a part of natural resources is more vulnerable than is

generally thought, yet it remains the very basis of human existence and the foundation of our food chain. Man's activities directly or indirectly depend on the soil. Man's attitude towards soil and his treatment of it determined his degree of success in feeding his family and maintaining his home. In Nigeria, Adewale (2014) claimed that women's efforts in the management of land as a natural resource have to a large extent been unrecognized and neglected in comparison with their male counterparts by government in the planning, devising and implementation of environmental programmes. Agriculture is the backbone of Africa's economy (Economic Commission for Africa, 2014).

The environment is an important sector of the economy with the high potential for employment generation, food security and poverty reduction (Obiora, 2013). Women contribution to the social and economic development of societies is more than half as compared to that of men by virtue of their dual roles in the productive and the development of any nation. They play very significant roles in Nigeria agricultural production, processing and utilization. In Nigeria, women are very much involved in agricultural practices especially in the area of cassava farming. There is a strong association between cassava and women in sub-Sahara Africa where cassava is often referred to as a 'woman's crop'. Women are mostly responsible for cassava farming and it provides them with income earning opportunities and enhances their ability to contribute to household food security status (Forsythe, Martin & Pothumu, 2015)

Anipi, Ojong and Edoho (2023) in a study examined women's participation in Agricultural cooperative societies and poverty reduction in the Northern Senatorial District of Cross River State, Nigeria. Four null hypotheses were formulated and tested. Literature review was carried out based on the variables of the study. A sample of two hundred (200) respondents was drawn from the population of eight hundred (800) respondents. The research design adopted was a survey research design. The sampling technique adopted for this study was the simple random sampling technique. The main instrument used for data collection was the questionnaire. Pearson product-moment correlation analysis was employed for data analyses and results were tested at a .05 level of significance. The result showed that there was a significant relationship between women's participation in agricultural loans, women's participation in implementation and equipment support, women's participation in thrift and credit cooperative society, women's participation in improved varieties and poverty reduction in the study area. These findings are based on the recommendations made among others that: more women should join agricultural cooperative societies to reduce poverty for transformation and nation-building.

Purpose of the study

The purpose of the study was to investigate the role women participation in environmental management in Cross River State, Nigeria. Specifically, the study sought to find out whether

- 1) Women participation in waste disposal management relate environmental management in Cross River State.
- 2) Women participation in forest management and tree planting relate to environmental management in Cross River State.

Research questions

The following research questions are raised to direct the study:

1. To what extent does women participation in waste disposal management relate environmental management in Cross River State.
2. To what extent does Women participation in forest management and tree planting relate environmental management in Cross River State.

Research hypotheses

The following hypotheses were raised to direct the study:

1. There is no significant relationship between women participation in waste disposal management and environmental management in Cross River State.
2. There is no significant relationship between Women participation in forest management and tree planting and environmental management in Cross River State.

Methodology

The research design used for the study was survey research design. Survey research design refer to any development field investigation that systematically collect, analyze and synthesis quantitative data on a large representative sample of a given population. It describes and explain the relative incidence distribution, sociologically, commercially, economically and clinically. Variable, as well as other characteristics about the sample through data obtained from personal interview and observation for accurate generalization to cover the entire population. This design was chosen because it provides the researcher with descriptive and assessment of the overall impact of the programme on the population in the light of the objectives of the programme. The area of the study is Cross River State. Nigeria.

The population for this study was made up of 1500 women from communities in Cross River State. Accidental sampling technique was used for the study. Accidental sampling technique was used since the researcher went to area selected for the study, any woman found in the area was found suitable for the study and given the questionnaire to respond. The researcher guided and showed the respondent on how to respond to the items in the questionnaire. The researcher randomly sampled 150 rural women for the study which is approximately 10 % of the population of the study.

The instrument for this study was a four point liken questionnaire titled Women Participation in Environmental Management and Development (WPEMQ) in Cross River State. Nigeria". The researcher personally visited the study area. The researcher administered the questionnaire and gave the women orientation on how to respond correctly to the items. With the help of two research assistance, the completed questionnaires were at the end of the exercise collected from the respondents,

Results

The study was aimed at examining the role of women in environmental management in Cross River State. The independent variables were waste disposal management, forest management and tree planting, soil conservation and food management while the dependent variable is environmental management. The description in mean and standard deviation units is shown in table 1.

Table 1: General description of variables (mean and standard deviation of the variables)
(N= 150)

Variables	N	$\bar{X}$	SD
Waste disposal management	150	17.193	3.427
Forest management and tree planting	150	16.520	3.009

Hypothesis one: There is no significant relationship between the role of women in waste disposal management and environmental management.

The independent variable was waste disposal management while dependent variable was environmental management. Pearson Product Moment Correlation was used to analyze the data. The result of the analysis is presented in table 2.

Table 2: Pearson Product Moment Correlation analysis of the relationship between waste disposal management and environmental management (N= 150)

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-value	p-level
Waste disposal management	2579	46091			
	45139	0.265*	0.001		
Environmental management	2600	46722			

* $p < .05$; $df = 148$; critical r-value = 0.159

The result of the data analysis in Table 2 shows that the calculated r-value of 0.265 is greater than the critical r-value of 0.159 at .05 level of significance and 148 degree of freedom. Based on this, the null hypothesis was rejected. This means that there is a significant relationship between women participation in waste disposal management and environmental management. The significant positive r-value further means that the higher the women participation in waste disposal management, the better environmental management and vice versa.

Hypothesis two: The second hypothesis stated that there is no significant relationship between women participation in forest management and tree planting and environmental management.

independent variable was forest management and tree planting while dependent variable was environmental management. Pearson Product Moment Correlation was used to analyze the data. The result of the analysis is presented in Table 3.

Table 3: Summary of the result of the pearson product moment correlation analysis of the relationship between the role of women in forest management and tree planting and environmental management (N= 150)

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-value	p-level
Forest management and tree planting	2623	47775	45899	0.210	0.009
Environmental management	2600	46722			

* $p < .05$; $df = 148$; critical r-value = 0.159

The result of the data analysis in Table 5 shows that the calculated r-value of 0.210 is greater than the critical r-value of 0.159 under .05 level of significance and 148 degree of freedom. Based on this, the null hypothesis was rejected. This means that there is a significant relationship between the role of women in forest management and tree planting. The significant positive r-value further means that, the higher the women participation in forest management and tree planting, the better the environmental management, and vice versa.

Discussion of findings

Women role in waste disposal management and environmental management.

Hypothesis one examined the relationship between the role of women in waste disposal management and environmental management. The finding of the study showed that the result of the first hypothesis revealed that there is a significant relationship between the role of women in waste disposal management and environmental management. This finding is in line with Kwagala (2008) in his study observed that Drains are mainly cleaned by the women on a regular basis or pay to have them clean. Women in Pedro Village, Lagos state were found to be protective and conscious of their environment (Ogunode et. al. 2020). They manifest this by engaging in waste management, drainage management, water resource are all efforts towards protecting their environment further exacerbated by blocked drainages and improper waste disposal. Anipi, Ojong, Deku and Moses (2023) in their research work investigated the community conservation communication strategies and environmental protection in central senatorial district of Cross River State, Nigeria. Five research questions were formulated to guide the study and further converted to five hypotheses. The population of the study comprised one million two hundred and sixty-one thousand rural dwellers. Survey research design was utilized in the study. 'Stratified random sampling technique was used in the 38 communities and the 400 respondents used for the study. 70 items rating scale questionnaire was the instrument used for data collection. The reliability estimates of the instrument was 0.74 and it was established using Cronbach Alpha Reliability method. The statistical tool for data analysis was simple linear regression at 0.05 level of significant. The result of data analysis revealed that there was a significant influence of traditional media, village mass media, village meetings, folk media community brainstorming on environmental protection. Based on the result of the study, it was recommended that vigorous campaigns or community education about unhealthy agricultural practices and community communication media, should be carried out to discourage high level of deforestation, unsustainable practices of environment and to increase awareness about environmental issues, which will enhance the campaign of sustainable development by protecting and preservation of sensitive ecosystems. This study also agrees with Oloko (2019) who studies in Kaduna State, Nigeria revealed that thirteen percent (13%) of women said they engage in sustainable harvesting so that those plants would be available for next time. Furthermore, this study is also in line with Obiora (2013) who observed that the role of women education in the development of community is vital. This is in view of the fact that education plays a crucial role in development. It is an agent of change to forest management and development.

This study is also in line with Shettima (2018) who revealed that Women are not only knowledgeable about the environment, they are also protective caring towards their environment, direct marketing of milk and milk products, while men were responsible for the indirect marketing of livestock, using a professional broker. Although women's individual transactions are smaller than that men of the aggregate sales by women contribute substantially to household income. Thus, even its total household income was to increase through an emphasis for beef rather than on dairy production.

Women role in forest management and tree planting and environmental management

Hypothesis two examined the relationship between the role of women in forest management and tree planting. The study is affirmation with FAO (2012) that African women contribute a significant amount of their time in weeding, harvesting, animal husbandry, cleaning, fetching water, baking, cooking, sewing and childrearing, they have not received adequate recognition for the intensive time spent on their dual roles as producers and reproducers. They also observed that the bulk of the production processes are carried out by women, but they have the least access and use of those resources that lead to the final output.

The result of the second hypothesis revealed that there is a significant relationship between women participation in forest management and tree planting and community development. This finding is in line with (Maye, 2014) who stated that It is now very clear that women globally are playing a key role in the protection of the environment. Similarly, this finding is in line with Adebayo (2008) who reported that 70% of women in Adamawa state, Nigeria have planted trees on their farms.

This study also agrees with, Adewole (2014) who estimated that women in Africa spend about 15-18 hours a day performing these essential chores for the livelihood of the farming household. While in analyzing a United Nations document. This finding also agree with Tolba (2002) who stated that women represent half of the world's population and perform nearly 66 percent of all working hours but receive only one tenth of the income generated and own less than one percent of the property. Anipi, Ojong and Edoho (2023) in a study examined women's participation in Agricultural cooperative societies and poverty reduction in the Northern Senatorial District of Cross River State, Nigeria. Four null hypotheses were formulated and tested. Literature review was carried out based on the variables of the study. A sample of two hundred (200) respondents was drawn from the population of eight hundred (800) respondents. The research design adopted was a survey research design. The sampling technique adopted for this study was the simple random sampling technique. The main instrument used for data collection was the questionnaire. Pearson product-moment correlation analysis was employed for data analyses and results were tested at a .05 level of significance. The result showed that there was a significant relationship between women's participation in agricultural loans, women's participation in implementation and equipment support, women's participation in thrift and credit cooperative society, women's participation in improved varieties and poverty reduction in the study area. These findings fanned the bads of the recommendations made among others that: more women should join agricultural cooperative societies to reduce poverty for transformation and nation-building.

Conclusion

Based on the results of the study, it was concluded that the role of women in environmental management in Cross River State Nigeria with specific reference to hypotheses; There is a significant relationship between the role of women in waste disposal management and environmental management in Cross River State. There is a significant relationship between the role of women in forest management and tree planting and environmental management in Cross River State.

Recommendations

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

- i) that women should be educated on the impact they can create in the community development
- ii) That more women should be acknowledged to participate in tree planting

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