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PERCEIVED EFFECTIVENESS OF ANAMBRA STATE GOVERNMENT IN ENSURING SUSTAINABLE USE OF RIVERS AND MARINE RESOURCES

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Abstract

The study determined the perceived effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources. One research question was formulated to guide the study and one null hypothesis was tested at 0.05 level of significance. The study used a descriptive survey research design. The population of the study was made up of 317 stakeholders in the area of environmental sustainability in Anambra State. No sampling was done because the population was manageable. The instrument used for data collection was a questionnaire. The reliability coefficient of the instrument which was 0.79 was determined using Cronbach's alpha. The instrument was validated by three experts from the Departments of Educational Foundations, Science Education and Adult and Continuing Education in Nnamdi Azikiwe University, Awka. The instrument was distributed and collected by the researcher through the assistance of three research assistants. Only 302 copies of the questionnaire were completed and returned. The data collected were analysed using mean and analysis of variance (ANOVA). Post hoc analysis was conducted on the null hypothesis using bonferroni test for multiple comparisons**.** The finding of the study showed that the Anambra State Government was ineffective in ensuring sustainable use of river and marine resources. The study equally revealed that the staff of the Ministry of Environment, Presidents General/Caretaker Chairmen and staff of the Non-Governmental Organizations differed significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources. Based on the findings, it was concluded and recommended, among others, that the Anambra State Environmental Protection Agency and other environmental friendly agencies should extend their functions to the rural areas.

Keywords: River and marine resources**,** effectiveness, ensuring sustainable use of river and marine resources

Introduction

Ensuring sustainable use of rivers and marine resources focuses on preventing and reducing marine pollution and coastal ecosystems. It addresses unregulated impacts of river acidification. This is geared towards reducing poverty by creating sustainable livelihoods and decent work in fisheries and marine aquaculture, among others. Ensuring sustainable use of rivers and marine resources in this study implies reducing marine pollution; protecting marine and coastal ecosystems; minimizing river acidification; managing fisheries and other fishing practices, and conserving coastal and marine areas in order to achieve the SDGs in Anambra State.

River and marine resources are essential to human well being, social and economic development. They provide livelihoods, subsistence and benefits from fisheries and tourism. Fisheries contribute significantly to global food security, livelihoods and the economy. River and marine ecosystems perform a number of key environmental functions such as regulation of the climate, prevention of erosion, accumulation and distribution of solar energy and absorption of carbon dioxide. Sustainable use of rivers and marine resources is very imperative to maximize their economic values. For instance, fishery can earn foreign exchange for any country, in addition; it creates employment and generates income.

Fishery is a source of raw materials for the food and animal feeds industries (Food and Agriculture Organization, 2010). In 2018, world experts of fish and fishery products reached a record of US $102 Billion (Mutune, 2002). In Nigeria in 2001, the total export value from fish was US $50 Million while the import value was US $375.03 Million (Food and Agriculture Organization, 2010). Globally, almost 45 million people were directly engaged in the fisheries sector in 2008

(Food and Agriculture Organization, 2010). The Federal Department of Fisheries (2013) reported that in the agricultural sector of the Nigeria economy which employs about 70% of the active labour force, fish occupies a unique position in that, it is the cheapest source of animal protein intake. However, from the observation of the researcher, fish seems to be the most expensive in 2022. Thus, there is need to ensure sustainable use of rivers and marine resources to harness their benefits. If they are not well protected or managed, some of the aquatic animals may be destroyed which will reduce drastically their benefits to mankind. Unsustainable use of rivers and marine resources gives room for unregulated or destructive fishing methods which will result in high levels of undersized species. Unsustainable fishing practices also refer to catching wide-range of fishes that are not considered sustainable in the long term (Solarin and Kusemiju, 2003). Use of gears with small mesh sizes and fishing with poisons are examples of unsustainable fishing practices used in developing countries including Nigeria and Anambra State in particular (Enaikele and Olutayo,2010). Many authors reported that fishers including children and the aged in the riverine environments in Nigeria and Anambra State in particular use Gammalin 20, locally made hand grenade and the roots, leaves, fruits and flowers extracts of certain poisonous plants to kill fish (Eyo and Ahmed, 2005). If rivers and marine resources are not properly protected, wastes from oil industries and other dangerous chemicals may find their ways into the surface waters (Onuoha, 2009) which will invariably kill some of the aquatic animals.

In Anambra State, there are agencies set up for ensuring sustainable use of rivers and marine resources such as: Anambra-Imo River Basin Development Authority, State Fisheries and Aquaculture Business Development Agency and Anambra State Emergency Management Agency. The Anambra-Imo River Basin was created to ensure the continued development and management of rich natural resources of the basin within the current national integrated rural development and

green revolution policy. The future rate of development of fish culture in the basin depends, to a great extent, on the combined and/or coordinated efforts of the State Fisheries Division and the Anambra-Imo River Basin Development Authority, especially on the latter which is specifically charged with the integrated development of the basin. Considerable strides have been made in the Anambra basin especially around Otuocha.

There has been concerted effort by Anambra State River Basin Authority to improve productivity of fish in the various water bodies in Anambra State. The authority had organized series of seminars and workshops to educate fishermen on the need for the conservation of water bodies. Similarly, the Anambra State Emergency Management Agency had organized series of sensitization campaigns and meetings to educate communities and vulnerable people on environmental threats such as flooding.

In Anambra State, Anambra River which flows 210 kilometers into the Niger River is one of the most exploited rivers in South eastern Nigeria. Scores of fishermen using various fishing tools patrol the river daily in pursuit of their livelihood-fishing. Sadly, the situation has dramatically changed. Relentless exploitation of the Anambra River in recent times coupled with adverse effect of climate change has resulted in decline in the population of fish in the river and poor harvest of fishery resources. The rising temperatures, dramatic changes in weather patterns and destruction of marine ecosystems have contributed significantly to depopulation of fishes in the natural rivers (Nneli, cited in Maiga,2017). In 2012, the Anambra river banks were over flooded and most of the natural fish habitats submerged; majority of the fishery resources migrated elsewhere causing decline in fishery resources in the Anambra River. The decline has continued with no respite in sight (Imoka, cited in Maiga, 2017).

Climate change and destructive techniques used by local fishermen contribute significantly to decline in fishery resources in the Anambra River. Marine ecosystems and traditional coastal livelihoods are facing unprecedented pressures from overfishing. In countries such as Nigeria and Anambra State in particular, with limited capacity and infrastructure for fisheries management and conservation, natural water fishery and fishers are on the brink of extinction (Okafor, cited in Maiga, 2017). The use of small size nets, dynamites and chemicals for fishing are the major contributors to depletion of fishing population in the river. The danger of small size net is that it harvests both the young and matured fishes thereby destroying the young generation that supposed to maintain the process of procreation and averts sustainability. Dynamite and use of chemicals are equally as dangerous as small size nets because they do not discriminate between young and old fishes.

Globally, riverine areas are naturally prone to flooding. Thus, they should be conserved properly to ensure sustainable use of rivers and marine resources. The flood hazard of year 2012 was unprecedented in Nigeria and was seen as a natural disaster. Statistics showed that 94% of states of the Federation including Anambra State suffered great losses in the flood; 38% of the local government areas in Anambra State including Omambala area were adversely affected. Houses and other public and private properties, infrastructure and facilities were submerged and destroyed while many residents were displaced (SEMA, cited in Efobi and Anierobi, 2013). Prompt and proper distribution of relief materials remains a major challenge to the State Emergency Management Agency (SEMA). The activities of SEMA are hampered by delays and poor targeted operations leading to anger, bickering and acrimony among victims in the flood affected areas (Efobi and Anierobi, 2013).

The Anambra State Emergency Management Agency had carried out sensitization campaigns to flood-prone communities in Anambra State to prepare citizens for impending flooding in the State. The sensitization was necessitated following the 2020 flood predictions by Nigeria Hydrological Service Agency (NIHSA) and the Nigeria Meteorological Agency (NIMET), as the state had been listed among states of the federation to witness flooding menace. The exercise was carried out in Ayamelum, Anambra East and West, Onitsha North and South, Ihiala, Ogbaru and Awka North Council Areas. The members of communities living along river banks in the state were directed to get ready to move into designated holding centres. They were equally told to desist from acts that could lead to blocking of water channels, building on flood channels and dumping of refuse in drainages (Lamai, 2020). In addition, 28 Internally Displaced Centres (IDCs)/ Emergency Shelter Centres (ESCs) at the affected local government areas were created in flood-prone areas in case of flooding (SEMA, 2018). The 28 Emergency Shelter Centres were located in Anambra West (6 Centres), Anambra East (6 Centres), Awka North (4 Centres), Ogbaru (4 Centres), Ihiala (3 Centres), Awka South (3 Centres) and Ekwusigo (2 Centres). Similarly, the Anambra State Emergency Management Agency equally distributed relief materials to the victims of collapsed buildings in Anambra State. From the observation of the researcher and literature, it seems that the agencies established to conserve coastal and riverine areas, protect river ecosystems, minimize river acidification, reduce river pollution and regulate overfishing practices have not done much to ensure sustainable use of rivers and marine resources for sustainable development.

Moreover, the government of Anambra State had conducted massive educational and awareness campaigns on the relevance of trees in reducing the incidence of gully erosion and other environmental problems in the state (Okoyeh, Akpan and Okeke,2014). Despite the efforts made by the state government, erosion induced problems in the state have increased more than ever and

the trend seems to correlate well with the increased growth in human population and human activities within the natural ecosystem (Hurni et al 2005; Kometa and Akoh, 2012). It is on this note that the researcher intends to determine the effectiveness of the Anambra State Government in ensuring sustainable use of river and marine resources. Effectiveness refers to achieving a desired result or outcome. It is the capability of producing a desired result or the ability to produce desired output. According to Oxford University Press (cited in Jakobsson and Stahl, 2019) effectiveness is the degree to which something is successful in producing a desired result. Effectiveness is a measure of the match between stated goals and their achievement (Fraser, cited in Harvey, 2004). It refers to something being able to achieve desired outcome. It implies the quality with which a task is carried out which leads to better performance or outcome. A task is referred to as effective if it produces intended result. This study is concerned with the effectiveness of Anambra State Government (ASG) in ensuring sustainable use of river and marine resources. It implies measuring the degree to which the desired result as stipulated by the UN has been achieved. This will enable the researcher to identify gaps and proffer recommendations for scaling-up of actions by the State Government towards achievement of the goal for the wellbeing of the citizens.

Statement of the Problem

Globally, environmental challenges are enormous and devastating. They severely affect quality of life and ability of communities to survive. They range from pollution, river acidification, waste disposal, among others. In Nigeria and Anambra State in particular, the level of environmental challenges seems to aggravate instead of abate. This is because waste disposal, erosion and flooding seem to increase on a daily basis. This situation is quite disturbing and worrisome. In most developing countries such as Ghana, waste pickers, recycling and reuse of waste, expansion of the river gutters, sandbags and portable inflatable tubes are used to control waste disposal,

flooding and erosion, among others. These have not so far been used in Nigeria and Anambra State in particular but have the potential to provide valuable solutions to the present situation. In Anambra State, several efforts (such as construction of drains and gutters to divert rain water to a disposal area) have been made to minimize the menace of flooding, water pollution, erosion and waste disposal, among others. Despite the efforts, the level of environmental challenges seems to aggravate instead of abate. Thus, it becomes imperative to empirically find out the degree to which Anambra State government has met the targets as stipulated in the SDG of ensuring sustainable use of rivers and marine resources. This will enable individuals, private and public agencies to intensify and synergize efforts towards ensuring sustainable use of rivers and marine resources by 2030.

The researcher therefore embarked on this study to determine the effectiveness of Government in ensuring sustainable use of rivers and marine resources, and to proffer useful recommendations for future planning, decision-taking, community well-being and development in Anambra State and Nigeria in general by the year 2030.

Purpose of the Study

The purpose of the study was to determine the perceived effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources. Specifically, the study sought to determine the perception of the staff of the Ministry of Environment, Presidents General / Caretaker Chairmen and NGOs on the effectiveness of the Anambra State Government in:

1. Ensuring sustainable use of rivers and marine resources

Research Question

A research question guided the study; in the perceptions of the staff of the Ministry of Environment, Presidents General/Caretaker Chairmen and NGOs:

1. How effective is Anambra State Government in ensuring sustainable use of rivers and marine resources?

Research Hypothesis

A null hypothesis (H_0) was tested at 0.05 level of significance:

1. Staff of the Ministry of Environment, Presidents General / Caretaker Chairmen and Staff of the NGOs will not differ significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources.

Methods

The study adopted a descriptive survey research design. The study was conducted in Anambra State of Nigeria. Anambra State is one of the States in the South Eastern region of Nigeria. The major occupation of the area is commerce. Onitsha is the commercial hub of the State while agriculture is the main activity of the rural dwellers (Ogbaka, 2016). The population of the study was made up of 317 stakeholders (105 Staff of the Ministry of Environment, 177 Presidents General / Caretaker Chairmen and 35 Staff of the four NGOs) in the area of environmental sustainability in Anambra State. No sampling was done because the population was manageable. The instrument used for data collection was a questionnaire. It was titled ‘‘Perceived Effectiveness of the Government in Ensuring Sustainable Use of Rivers and Marine Resources Scale (PEGESURMRS)”. The instrument was divided into two parts, A and B. Part A (contains 3 items) focused on the personal data of the respondents while Part B focused on items addressing the research question. Part B contains 9 items necessary for ensuring sustainable use of rivers and marine resources. Each of the items has 4-point response categories as follows: Very Effective (VE); Effective (E); Slightly Effective (SE) and Ineffective (I). The instrument for the study was validated by three experts in the Department of Adult and Continuing Education, Department of

Educational Foundations (Measurement and Evaluation Unit) and Department of Science Education in the Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was carried out using 15 stakeholders in the Ministry of Environment, Association of Town Unions and NGOs in Enugu State (5 stakeholders in each case). The state was used because they share the same characteristics with the area of study. The data collected were analysed and the internal consistency of the instrument was determined using Cronbach's alpha. The coefficient alpha obtained was 0.79 and was adjudged high enough for the study. The researcher administered 317 copies of the questionnaire to the respondents with the help of three research assistants (a staff of Ministry of Environment, a staff of Anambra State Association of Town Unions and a staff of the NGOs) who are stakeholders in environmental sustainability in Anambra State.

After a period of two weeks, 302 copies (95.3%) of the questionnaire were completed and returned, while 15 copies (4.7%) were not returned. The researcher used the 302 copies which were returned for the analysis. Mean and analysis of variance (ANOVA) were used for analyses. Mean was used to analyse the data on the research question while the ANOVA was used to test the null hypothesis at 0.05 level of significance. Analysis was done using Special Package for Social Sciences (SPSS) version 25. Post hoc analysis was carried out using Bonferroni test for multiple comparisons. Frequencies and percentages were used to analyse the information on personal data of the respondents. The decision rule was based on the boundary true limit of the four-point response categories as follows:

Response Categories	Rating Points
Very effective	4
Effective	3
Slightly Effective	2

Ineffective 1

Following the rating points and for precision in analysis and discussion of results, Anambra State Government was considered effective in any item which scored 2.50 mean point and above while ineffective in any item that scored below 2.50.

A null hypothesis was accepted at 0.05 level of significance if the *F* value was less than the value of significance (*P* value) or otherwise, the null hypothesis was rejected.

Results

Research Question One: How effective is Anambra State Government in ensuring sustainable use of rivers and marine resources?

Data collected in respect to this research question are presented in Table 1.

Table 1: Mean Ratings of the Respondents on the Perceived Effectiveness of the Anambra State Government in Ensuring Sustainable Use of Rivers and Marine Resources

S/N	Items	SME(*N* = 90)	PGsCTC (*N* = 177)	SNGOs (*N* = 35)	Total (*N* = 302)	
		Mean	Mean	Mean	Mean	Remark
1	Reducing river pollution of all kinds by preventing dumping of chemical substances	2.47	2.08	2.83	2.46	Ineffective
2	Protecting river ecosystems by promoting their resilience	2.27	1.73	2.67	2.22	Ineffective
3	Minimizing river acidification by encouraging farmers to cultivate submerged forests to absorb more carbon dioxide	2.15	1.74	2.03	1.97	Ineffective
4	Regulating over fishing practices by placing ban on use of gammalin and poisons for fishing	2.23	1.94	2.22	2.13	Ineffective

5	Conserving riverine areas by organizing sensitization campaigns and meetings to educate communities and vulnerable people on environmental threats such as flooding	2.21	1.88	2.03	2.04 Ineffective
6	Dedicating part of the state budget to marine technology by providing sensor technology	1.68	1.65	1.44	1.59 Ineffective
7	Conservation of rivers and their resources by organizing seminars and workshops to educate fishermen on the need for the conservation of water bodies	2.19	2.10	2.11	2.13 Ineffective
	Total mean score				2.07 Ineffective

Note> I= Ineffective, SME= Staff of Ministry of Environment, PGs/CTC=Presidents General/Caretaker Chairmen, SNGOs = Staff of Non-Governmental Organizations

With reference to the decision rule, Table 1 shows that the Anambra State Government was ineffective in 7 items. The total mean score of 2.07 corroborates this remark. Therefore, based on the decision rule, the Government was ineffective in ensuring sustainable use of rivers and marine resources.

Ho1: Staff of the Ministry of Environment, Presidents General/Caretaker Chairmen and staff of the NGOs will not differ significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources.

This hypothesis is tested in Table 2.

Table 2: ANOVA on Perceived Effectiveness of the Anambra State Government in Ensuring Sustainable Use of Rivers and Marine Resources

		Sum of Squares	df	Mean Square	F	Sig.	Eta-squared (ηp2)	Remark
Ensuring Sustainable Use of Rivers and Marine Resources	Between Groups	6.700	2	3.350	16.631	<.001	0.100	Significant
	Within Groups	60.226	300	.201				
	Total	66.926	302					

Table 2 indicates that the staff of the Ministry of Environment (N = 90; M = 2.170; SD = .50), Presidents General / Caretaker Chairmen (N = 177; M = 1.87; SD = .43) and the Staff of NGOs (N = 35; M = 2.19; SD = .40) differed significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources, $F(2,302) = 16.631$, p = 0.001, ηp2 = .109. Post hoc analyses as presented in Table 3 indicates significant differences in the mean ratings on the effectiveness of the Anambra State government in ensuring sustainable use of rivers and marine resources between staff of the Ministry of Environment and Presidents General / Caretaker Chairmen; and between Presidents General / Caretaker Chairmen and Staff of NGOs ($p < .05$). However, significant differences did not occur between staff of the Ministry of Environment and Staff of NGOs ($p > .05$).

Table 3: Post Hoc Analysis on Effectiveness of the Anambra State Government in Ensuring Sustainable Use of Rivers and Marine Resources

Multiple Comparisons

Dependent Variable: Ensuring Sustainable Use of Rivers and Marine Resources

Bonferroni

(I) PDR	(J) PDR	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Staff of the Ministry of Environment	Presidents General / Caretaker Chairmen	.29673*	.05849	<.001	.1559	.4375
	Staff of NGOs	-.02002	.08879	1.000	-.2338	.1937

Presidents General / Caretaker Chairmen	Staff of the Ministry of Environment	-.29673*	.05849	<.001	-.4375	-.1559
	Staff of NGOs	-.31675*	.08202	<.001	-.5142	-.1193
Staff of NGOs	Staff of the Ministry of Environment	.02002	.08879	1.000	-.1937	.2338
	Presidents General / Caretaker Chairmen	.31675*	.08202	<.001	.1193	.5142

*. The mean difference is significant at the 0.05 level.

Discussion of Findings

Analysis in Table 1 showed that the Anambra State Government was ineffective in ensuring sustainable use of rivers and marine resources. This finding is in line with the opinion of Imoka cited in Maiga (2017) who found that the Anambra river banks were over flooded in 2012 and most of the natural fish habitats submerged; majority of the fishery resources migrated elsewhere causing decline in fishery resources in the Anambra River. The decline has continued with no respite in sight. With limited capacity and infrastructure for fisheries management and conservation, natural water fishery and fishers are on the brink of extinction (Okafor, cited in Maiga,2017). This shows that the agencies established to conserve coastal and riverine areas, protect river ecosystem, minimise river acidification, reduce river pollution and regulate overfishing practices have not done much to ensure sustainable use of rivers and marine resources.

The null hypothesis revealed that the staff of the Ministry of Environment, Presidents general / Caretaker Chairmen and staff of the NGOs differed significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources. However, the post hoc analysis indicated significant differences in the mean ratings between staff of the Ministry of Environment and Presidents general / Caretaker Chairmen; and between Presidents general / Caretaker Chairmen and staff of the NGOs. Moreover, significant difference did not occur between staff of the Ministry of Environment and staff of the NGOs.

Conclusion

Based on the findings, it was concluded that the Anambra State Government was ineffective in ensuring sustainable use of rivers and marine resources. The study also concluded that the staff of the Ministry of Environment, Presidents General/Caretaker Chairmen and staff of the NGOs differed significantly in their mean ratings on the effectiveness of the Anambra State Government in ensuring sustainable use of rivers and marine resources. Thus, the efforts of the Anambra State government should be doubled to achieve the targets of the goal as contained in the UN document which will help to achieve the goal in Anambra State.

Implications of the findings

The findings of the study have critical implications to the Anambra State Government, physical environment and the entire citizen of Anambra State.

The findings imply that so far the efforts made by the Anambra State Government are not enough and could hinder achieving the Sustainable Development Goal of ensuring sustainable use of rivers and marine resources by 2030. This implies that not much has been done in the area of sustainable use of rivers and marine resources which may affect the wellbeing of people as well as the physical environment. It further implies increased flooding, erosion, marine related issues, among others.

Recommendations

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

1. The Anambra State Environmental Protection Agency and other environmental friendly agencies should scale up their efforts by extending their functions to the rural areas.

2. Waste disposal receptacles should be extended to the rural areas of the state by the Anambra State Waste Management Agency and effort made to dispose such waste effectively.
3. The Anambra State government should invest in all the existing targets simultaneously.
4. The Anambra State government should organize seminars and workshops periodically to educate communities and vulnerable people on environmental threats such as erosion, flooding and pollution of all kinds.
5. The Anambra State government should integrate the values of ecosystems into curriculum in schools at all levels to sensitize young children on the need to preserve them.
6. Members of communities should dig catch pits at the strategic locations. This will help to checkmate flooding.

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