AJEMATES
African Journal of Educational Management, Teaching and Entrepreneurship Studies
VOL.9 (2), May-September, 2023 https://ajemates.org

PERCEIVED EFFECTIVENESS OF ANAMBRA STATE GOVERNMENT IN CONSERVING ECOSYSTEM AND BIODIVERSITY

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ABSTRACT

The study determined the perceived effectiveness of the Anambra State Government in conserving ecosystem and biodiversity. 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 0.86 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 analyzed using mean and analysis of variance (ANOVA). Post hoc analysis was conducted using bonferroni test for multiple comparisons. The finding of the study showed that the respondents perceived the Anambra State Government as ineffective in conserving ecosystem and biodiversity. 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 conserving ecosystem and biodiversity. Based on the findings, it was recommended, among others, that the Anambra State Environmental Protection Agency and other environmental friendly agencies should extend their functions to the rural areas.

Keywords: Effectiveness, Ecosystem, Biodiversity

Introduction

Ecosystem is a system comprising all living organisms existing with one another in a unit of space. It forms the foundation of biospheres and determines the life of organisms as well. Living organisms depend on non-living factors for their survival. The absence of one can affect all the organisms in an ecosystem. Ecosystem provides numerous benefits such as food, water, soil formation, pollination and air purification (Byju's Classes, 2022). Ecosystem is referred to as its biotic components such as plants, animals and other micro-organisms. It is a community of living organisms and their interactions with their non-living environment.

Ecosystem is very important because it provides habitat to plants and animals and encourages the development of food chairs and food webs. It provides other services to human societies such as protection of coastal shores from erosion by waves, protection from the sun's harmful ultraviolet rays, mitigation of droughts and floods, preservation of soils and renewal of their fertility and maintenance of biodiversity (Lubchenco et al, 2016).

Ecosystem is of immense benefit to biodiversity because without a wide range of animals, plants and organisms, there cannot be healthy ecosystems that provide natural air and food. Biodiversity is a good measurement of the health of an ecosystem. Humans depend on biodiversity for medicines and chemicals such as latex and rubber. Biodiversity is responsible for our food, soil, water, weather and even air. It is the variation among living organisms from different sources including terrestrial, marine and desert ecosystems, and the ecological complexes of which they are a part. Biodiversity involves every living thing, including plants, bacteria, animals' bacteria, fungi and humans (National Geographic Society, 2023).

Viable ecosystems and biodiversity protect us from natural disasters, regulate the climate and provide food, fertile soil and medicine. This means that there is no life without diversity. Protecting biodiversity impacts every aspect of life, from breathable air to climate, flood protection, shelter, food sources and more, which rely on the health and stability of natural resources such as forests, waterways and grasslands. The health of these elements depends on the diversity of species that interact with them and vice versa. Removing a part of the ecosystem or multiple parts of the system will inevitably cause collapse and dire consequences for many species, including humans (Greater Good Charities, 2023). Thus, it is very important to conserve ecosystem and biodiversity in order to checkmate the exploitation of any forest. Recently, the Anambra State Government organized a sensitization workshop on ecosystem conservation geared towards checkmating the exploitation of the forest in the state (Ifejiofor cited in ABS, 2022).

Conserving ecosystem and biodiversity is a comprehensive plan set to maintain all species of plants and animals in a geographical area through the management of natural resources. In this study, conserving ecosystem and biodiversity implies preservation and management of valuable natural resources such as timber, fish, top soil, pastureland, minerals, forests, wildlife, parkland, wilderness, watershed areas, mountains and restoration of degraded land and soil. Preservation of valuable natural resources is very imperative because they provide people with basic ecosystem goods (food, fibre and medicine) and services (air, water purification, climate regulation, erosion control and nutrient cycling). According to Swingland (2000), conserving ecosystem and biodiversity implies maintenance and management of natural resources to enhance human existence and equally promote food chain of the populace.

Conserving ecosystem and biodiversity is very vital because it saves large numbers of species and preserves the support systems that maintain life as well as the biological resources, ecosystem services,

social and spiritual benefits they provide to mankind. In this context, the biological resources which they provide are those products that people harvest from nature such as food, medicine, fibres and wood products, among others. The ecosystem services are processes provided by nature that support human life. They include decomposition of waste, pollination, water purification, moderation of floods and renewal of soil fertility. Ecosystem processes are often overlooked and are not generally valued as part of the economy until they cease to function. When economic value is assigned to these services, it is often startlingly high. For instance, insect pollinators help to produce many commercially important fruits such as almonds, melons, blueberries and apples. The global economic value of pollination services performed by insects has been valued at $217 Billion per year (Gallai et al., 2009). Throughout most of human society, conservation has been protecting nature for the spiritual gifts it provides, and protecting sacred places in the local landscape. Local people (village people) now run a profitable ecotourism operation. Money from tourism helps the local economy. It provides incentive to maintain the habitat as well as funds for the local health clinic and scholarships for local students (Kearns, 2010).

Put differently, the arguments for conserving ecosystem and biodiversity are varied depending on the underlying reasons for protecting ecosystem and maintaining biodiversity in general. Some authors argue that demonstrating the economic value of biodiversity is the only way to go, as people need concrete incentives to engage in action reversing biodiversity loss (Pearce, 2001). It is important to conserve ecosystem and biodiversity because of their social and economic benefits. This is because non conservation of ecosystem and biodiversity makes some animals and trees to be destroyed. Trees which absorb more carbon from the atmosphere than they release, when destroyed are unable to balance between the uptake and the release of carbon (Brief, 2009). Animals (snakes, birds, insects and grass cutters, among others) are dislocated from their habitat. Some of the plants and animals could be totally lost through death or extinction based on the fact that most of them cannot survive elsewhere.

In order to conserve ecosystem and biodiversity in Anambra State, there are agencies set up which include: Nigeria Erosion and Watershed Management Project, State Ministry of Agriculture and Awka Capital Territory Development Authority. The Anambra State government increased its counterpart fund to 1 Billion Naira for execution of projects under the Nigeria Erosion and Watershed Management (NEWMAP). NEWMAP championed 1 million tree planting campaign in collaboration with the Ananmbra State Ministry of Agriculture and the Awka Capital Territory Development Authority. The Agency developed seedlings that were used to replace the depleted forest reserves in the state. The afforestation programme was designed to mitigate the consequences of felling trees, improve urban development and reclaim erosion prone land areas in the state (Ivenso, cited in Guardian, 2017).

Furthermore, many varieties of plant and animal species have been terminally lost

in Anambra State due to deforestation and other human activities (Egboka & Okoyeh, 2019). Deforestation means clearing of forests and using the land for other purposes. Trees in the forest are cut for cultivation, building houses and factories and making furniture which affects ecosystem and biodiversity. Deforestation increases the temperature and pollution level on the earth, among others. To protect the extinction of plants and animals in the forest, communities in Anambra State were sensitized on the need for tree planting (Akira, cited in News Agency of Nigeria, 2020). Akira further noted that necessary measures had been put in place for close monitoring and protection of the environment by planting trees to protect the environment. With the efforts of government and residents to sustain the tree planting campaign, the state would have a healthy environment. Of the total trees planted in the state 60% are doing well, some had chocked and were struggling to survive and had been replaced with new trees (Akira, cited in News Agency of Nigeria, 2020). Recently, the Anambra State Government (ASG) launched campaign on planting of one million trees across the state to curb erosion menace (Soludo cited in Champion Newspapers Limited, 2022). In addition, restoration of land and soil is a critical role for achieving sustainable development. To perform this role effectively, the Anambra State government established the Anambra State Erosion, Watershed and Climate Change Agency. The agency sensitized communities to tackle erosion and ensure sustainable land use (Ivenso, 2019).

In Anambra State, cultural values are safeguarded through the use of traditional taboos practices (laws) and sanctions. These practices are used to preserve sacred groves for the ultimate aim of better management and conservation of the natural resources (Anoliefo, Isikhuemehen & Ochije, 2003). At the community level, some natural resources are seen as deity, shrines or sacred grooves and members of the community respect them for their values and also for the possible consequences when not adhered to. For instance, in Uli community in Anambra State, stealing of yam and bush burning are seen as great offences (Anoliefo, Isikhuemehen & Ochije, 2003). From the researcher's viewpoint, conserving ecosystem and biodiversity as contained in the UN document is quite necessary because it will enhance their capacity to provide benefits that are essential for sustainable development. It is on this note that the researcher plans to determine the effectiveness of Anambra State Government in conserving ecosystem and biodiversity.

Statement of the Problem

Biodiversity is a good measurement of the health of an ecosystem. Humans depend on biodiversity for medicines and chemicals such as latex and rubber. Removing a part of the ecosystem or multiple parts of the system will cause collapse and dire consequences for many species, including humans. In developed countries such as USA, Japan and Germany, forest reserves are well preserved. In Nigeria and Anambra State in particular, trees in the forest are cut for cultivation, building houses and factories and making furniture which affects ecosystem and biodiversity. Many living organisms have gone into extinction.

Many varieties of plant and animal species have been terminally lost in Anambra State due to deforestation and other human activities (Egboka & Okoyeh, 2019). Recently, the Anambra State Government has put in place necessary measures for close monitoring and protection of the environment by planting trees to protect the environment. Despite the efforts, the level of extinction of plants and animals in the forest seems to increase. The researcher therefore embarked on this study to determine the effectiveness of Anambra State Government in conserving ecosystem and biodiversity and to make necessary recommendations for future planning and decision-taking for community well-being and development.

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 conserving ecosystem and biodiversity?

Research Hypothesis

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

1. There is no significant difference among the Staff of the Ministry of Environment, Presidents General / Caretaker Chairmen and Staff of the NGOs on the effectiveness of the Anambra State Government in conserving ecosystem and biodiversity.

Research Method

The study adopted a descriptive survey research design. The study was conducted in Anambra State 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 Conserving Ecosystem and Biodiversity Scale (PEGCEBS)”. 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 (contains 9 items) focused on items addressing the research question. It elicited information on activities necessary for conserving ecosystem and biodiversity. 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 & 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 analyzed and the internal consistency of the instrument was determined using Cronbach's alpha. The coefficient alpha analysis yielded reliability of internal consistency of 0.86. The researcher administered 317 copies of the questionnaire to the respondents with the help of three research assistants.

The number of questionnaire which were completed and returned were 302 copies (95.3%) while 15 copies (4.7%) were lost. 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 analyze the data on the research question while the ANOVA was used to test the null hypotheses 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 analyze 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	Boundary limits
Very Effective	4	3.50-4.00
Effective	3	2.50-3.49
Slightly Effective	2	1.50-2.49
Ineffective	1	1.00-1.49

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.

Presentation of Results

Research Question One: How effective is Anambra State Government in conserving ecosystem and biodiversity?

Table 1: Mean Ratings of the Respondents on the Perceived Effectiveness of the Anambra State Government in Conserving Ecosystem and Biodiversity (*N*=302)

S/N	Items	SME (*N* = 90)	SNGOs PGs/CTC(*N* = 177)	(*N* = 35)	Total (*N* = 302)	
		Mean	Mean	Mean	Mean	Remark
1	Forests	2.53	2.31	2.67	2.50	Effective
2	Mountains	2.50	2.15	2.53	2.39	Ineffective
3	Increasing afforestation by promoting tree planting	2.67	2.32	2.83	2.60	Effective

4	Combating desertification by promoting reforestation	2.55	2.30	2.78	2.54	Effective
5	Restoring of land and soil by controlling erosion	2.65	2.26	2.83	2.58	Effective
6	Protecting the extinction of plants and animals by sensitizing communities on the need for tree planting	2.56	2.19	2.64	2.46	Ineffective
7	Integrating the values of ecosystems and biodiversity into curriculum in schools at all levels by sensitizing young children on the need to preserve them	2.09	1.66	1.80	1.85	Ineffective
8	Managing forests effectively by discouraging deforestation	2.59	2.30	2.61	2.50	Effective
9	Designing roads with standard drainages by avoiding road crowning	2.36	2.45	2.75	2.52	Effective
	Total mean score				2.43	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 not effective in 3 items. They were effective in 6 items. The grand mean of 2.43 corroborates this remark. Therefore based on the decision rule, the Government was ineffective in conserving ecosystem and biodiversity.

Ho1: There is no significant difference among the Staff of the Ministry of Environment, Presidents General/Caretaker Chairmen and staff of the NGOs on the effectiveness of the Anambra State Government in conserving ecosystem and biodiversity.

This hypothesis is tested in Table 2.

Table 2: ANOVA on Perceived Effectiveness of the Anambra State Government in Conserving Ecosystem and Biodiversity

		Sum of Squares	df	Mean Square	F	Sig.	Eta-squared (ηp2)	Remark
Conserving Ecosystem and Biodiversity	Between Groups	7.670	2	3.835	17.399	<.001	0.104	Significant
	Within Groups	65.904	300	.220				
	Total	73.575	302					

Table 2 indicates that the staff of the Ministry of Environment (N =90; M = 2.50; SD = .56), Presidents General / Caretaker Chairmen (N = 177; M = 2.21; SD = .44) and the staff of NGOs (N = 35; M = 2.61; SD = .39) differed significantly in their mean ratings on the effectiveness of the Anambra State Government in conserving ecosystem and biodiversity, F (2,302) =17.399, p = 0.001, ηp2 = .104. Post hoc analyses as presented in

Table 3 indicates significant differences in the mean ratings on the effectiveness of the Anambra State government in conserving ecosystem and biodiversity 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 Perceived Effectiveness of the Anambra State Government in Conserving Ecosystem and Biodiversity

Multiple Comparisons

Dependent Variable: Conserving Ecosystem and Biodiversity

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	.28684*	.06118	<.001	.1395	.4341
	Staff of NGO	-.10653	.09288	.757	-.3302	.1171
Presidents General / Caretaker Chairmen	Staff of the Ministry of Environment	-.28684*	.06118	<.001	-.4341	-.1395
	Staff of NGOs	-.39338*	.08580	<.001	-.5999	-.1868
Staff of NGOs	Staff of the Ministry of Environment	.10653	.09288	.757	-.1171	.3302
	Presidents General / Caretaker Chairmen	.39338*	.08580	<.001	.1868	.5999

*. 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 conserving ecosystem and biodiversity. The finding is in line with the submission of Egboka and Okoyeh (2019) who noted that many varieties of plant and animal species have been terminally lost in Anambra State due to deforestation and other human activities. Trees in the forest are cut for cultivation, building houses and factories and making furniture which affects ecosystem and biodiversity. The null hypothesis revealed that the Staff of the Ministry of Environment, Presidents General / Caretaker Chairmen and the Staff of the NGOs differed significantly in their mean ratings on the effectiveness of the Anambra State Government in conserving ecosystem and biodiversity. However, the post hoc analyses indicated significant differences in the mean ratings between Staff of the Ministry of Environment and Presidents General / Caretaker Chairmen; between Presidents General /Caretaker Chairmen and Staff of the NGOs. However, significant difference did

not occur between Staff of the Ministry of Environment and the Staff of the NGOs.

Conclusion

Based on the findings, it was concluded that the Anambra State government was ineffective in conserving ecosystem and biodiversity. The study also showed 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 conserving ecosystem and biodiversity. 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, organisms and the habitat. The findings revealed that the efforts made by the Anambra State Government are not enough and could hinder achieving the Sustainable Development Goal of conserving ecosystem and biodiversity by 2030. The findings revealed that not much has been done in the area of ecosystem and biodiversity management which may impact on the survival of the existing organisms as well as their habitat.

Recommendations

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

1. The Anambra State Government should invest in the area of ecosystem and biodiversity management. This will help to achieve the targets of the goal.
2. 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.
3. The Anambra State Government should integrate the values of ecosystems and biodiversity into curriculum in schools at all levels to sensitize young children on the need to preserve them.
4. The Anambra State Environmental Protection Agency and other environmental friendly agencies should extend their functions to the rural areas.

References

Akira, A. (2020, June 24). Anambra residents urged to plant trees to protect environment, ozone layer. *News Agency of Nigeria*, Retrieved from https ://www.environewsnigeria.com on June 25,2020.

Anoliefo, G.O., Isikhuemehen, S.O. and Ochije, N.R. (2003). Environmental implication of the erosion of cultural taboo practices in Awka South Local Government Area of Anambra State, Nigeria: Forest, trees and water resources preservation. *Journal of Agricultural and Environment Ethics, 16,281 – 296.*

Brief, C. (2009). *Tropical forests are no longer carbon sinks because of human activity.*

Byju's Classes.(2022).*Ecosystem*. Retrieved from https://byjus.com>biology>ecosy….

Egboka, B.C.E. and Okoyeh, E.I. (2019).Review and assessment of environmental impacts of ecological disasters on biodiversity in Anambra State ,Nigeria. *Biodiversity International Journal, 3(2), 53-58.*

Gallai, N. et al. (2009). Economic valuation of the vulnerability of world agriculture confronted with pollinator deadline. *Ecological Economics* ,68,810-821.

Greater Good Charities.(2023).*The importance of biodiversity*. Retrieved from https://www.greatergood.org

Ifejiofor, F.(2022,August 8). Anambra State Government organizes workshop on ecosystem conservation in Awka . *Absradiotv*,Retrieved from https://www.absradiotv.com>anam...

Ivenso, M . (2017 , August 7). Anambra commits 1 billion NGN to erosion projects. *The Guardian*, Retrieved from https://guardian.ng.

Ivenso, M. (2019). *NEWMAP has entrenched culture of erosion management in Anambra.* Retrieved from https://www.sunnewsonline.com>n...

Kearns, C. A. (2010).*Conservation of biodiversity. Nature education knowledge*, 3(10),7. Retrieved from https://www.nature .com/suitable / knowledge /library / conservation -of-biodiversity -13235087/

Lubchenco et al . (2016). *Ecosystem services*: *Benefits supplied to human societies by natural ecosystems*. Retrieved from https://www.researchgate.net>

National Geographic Society.(2023).*Biodiversity:* Retrieved from https://www.nationalgeographic.org

Ogbaka, L.C. (2016). Extent of reformation of prison inmates using prison education programmes in Anambra State. Unpublished Masters degree thesis. The University of Nnamdi Azikiwe University, Awka.

Pearce, D.W. (2001). The economic value of forest ecosystems. *Ecogys Health*, 7,284-296. Retrieved from https://www.tandfonline.com/doi/full /10. 1080/21513732.2015.1050969

Soludo, C. C. (June 6,2022). Soludo marks world environment day, flags off one million tree planting exercise , calls for preservation of ecosystem. *Champion Newspapers Limited,* Retrieved from https:championnews .com. ng on September 2,2022

Swingland, I.R. (2000). *Biodiversity, definition of.* The Durrell Institute of Conservation and Ecology. Retrieved from https://www.researchgate.net/ publication/242392506-biodiversity-definition of.