

Proposed Instruments for Sustainable Environmental Management of Vulnerable Areas in Kebbi State

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Abstract

The environment around Zuru, Kebbi State is changing rapidly. This environmental change is a product of natural processes and human activity. Population growth and migration has added thousands of people and increased the demand for resources. Human impacts interact with the natural processes to threaten the environment's capacity to function effectively and also to increase people's vulnerability to disaster events. There is therefore the need to develop sustainable and practicable instruments for sustainable management of the environment. The development of the instruments is a multidisciplinary work as such requires a mixture of a wide range of existing proposals and instruments such as land information systems, land zoning, etc that will help to reduce to a manageable level the threat posed on the environment, the people and their livelihoods by both nature and the activities of men which exacerbate such threats. The tools presented in this paper are based on review of available literature and site investigations carried out in the selected area.

Keywords: Environment, Livelihoods, vulnerability, instruments, sustainable, management.

Introduction

This paper is an opinion paper and it attempts to present an over view of the human activities in the selected area of Kebbi State in relation to their impact on the environment. And to design instruments that will assist in achieving sustainable environmental management of the problems. 'Environmental management is a systematic approach to finding practical ways of promoting and preserving our surroundings, and reducing health hazards and environmental abuse' (Promise, 2022). Environmental management has been embraced by all countries of the world because it has a 'universal acknowledgement. Agenda 21 of the United Nations Conference on the Environment and Development, Rio de Janeiro, Brazil, 1992 recognizes sustainable environmental management as a galvanizing tool for the realization of the Sustainable Development Goals (SDGs)', (Promise, 2022). Field visits were first carried out to determine the existence of the problems. Environmental problems exist in the selected area. Human activities were discovered to be their cause. The Human activities which cause them are flexible and can be carried out to whatever extent due to the fact that there are no measures of restrictions to that. According to Evuti, (2018), 'Sustainable development necessitates that a nation must meet the needs of the present without compromising the ability of future generations to meet their own desired goals. Therefore, there is need by all nations to struggle to maintain a balance between its economic development and the sustainability of its environment'. As a result of this, '

human beings cannot really claim to be living a life that is fully human, if they do not live in harmony with nature' (Tochukwu, 2014).

'The present day Nigeria is witnessing urbanization in most of its settlements with attendant overpopulation hazards' (Jegade, 2022). There is therefore the need to develop strategies to curtail the emerging overpopulation hazards in our Urban areas. These strategies or instruments should be all encompassing and flexible so as to help decision making. The instruments should also reduce the cost of hazard mitigation and implementation, be sustainable, improve human and animal health and maintain eco diversity.

The environment is a complex system, a product of the dynamic interaction of all the elements and living beings present in a place. Since man subsist from the environment, his focus should be on how to improve the overall welfare of the present and future generations. That is managing the environment well. If the environment is to be sustainably managed, there is the need to take action that protects the environment to the desired standard. The actions that will help to conserve the ecosystems and maintain good ecological relationship within the environment. 'The management of the environment translates into a set of activities, means and techniques aimed at conserving the elements of ecosystems and the ecological relationships between them, especially when there are alterations due to human action' (Paez and Aponte, 2021). To help manage the emerging environmental issues facing human beings, Paez and Aponte (2021), further stressed that environmental management should be 'based on the need for society to conserve and improve the environment's supply and quality of resources and reversing the deterioration of the environment in order to preserve and improve its quality for future generations. As population continues to increase, man's cohabitation, exploitation and utilization of resources will continue to increase thereby increasing the need for instruments of proper environmental management. The formulation of these instruments will require a multi-disciplinary approach a methodical data collection and correct interpretation so as to develop instruments that are consistent and can be comprehensively applicable to specific needs.

Aim

The aim of this paper is to provide a goal-oriented approach that will assist in achieving sustainable environmental management goals.

Problem Statement

For now, the essential global question appears not to be how can man satisfy his basic requirements for survival on earth but that of what are the consequences of attempting to do so? Kebbi state provides a clear cut situation of an area that need environmental management tools since the state is characterized by unplanned pattern of land use practices, rapid urbanization, a rising population and poverty level.

Methodology

Existing publications were reviewed. Some areas in the selected study area were also visited to observe, identify and prioritize the human activities and their possible effects on the environment. Transact walks were widely carried out in the course of preparing this paper. "transact walks help in identifying and observing the appearance and characteristics of a site under study" (Malik, 2005). Maps were also consulted where necessary.

The decision to select some parts of Zuru area was because of the writer's knowledge of the layout, local culture, customs and human activities of this area. This will help to provide an in-depth study of ground situations and allow for free interactions with the local people.

An Overview of the Study Area

Zuru town is located in the southern part of Kebbi State, Zuru local government area and Zuru emirate. Zuru town provides an example of an urban situation characterized by examples of urban environmental degradation, an emerging unagreeable pattern of life due to garbage dumps, poor layout, poor building quality and rapid emerging unsustainable land use practice in and around the town.

The main stay of the economy of the area is agriculture. Since the area falls within the transition zone between the Sudan and Guinea savanna, much of the land is also utilized for animal rearing. Migration to settle in the neighboring Niger State is high. This has led people to abandon the native reserve encouraging shifting cultivation, bush burning and over grazing. And in many places, shifting cultivation has exposed the land to soil erosion and leaching. The derived Guinea Savanna type of vegetation which is characteristic of this area is much disturbed by other human activities such as bush burning, hunting and animal rearing. Bush fire is a seasonal phenomenon associated with the dry season in Zuru area. The bush fire season start in early November and continues through January. These annual bush fires impact negativity on the woodland grasses.

Landslides are rare phenomena in the area. They occur on the hill slope west of the Zuru town. They are caused by instability on the slope created as result of the cuts made by people trying to stabilize the slope for the purpose of building. The destruction of the trees and the natural ground cover by grazing and annual bushfires has altered the water retention capacity of the soil leading to flash floods on the slope of the hill west of Zuru town whenever it rains heavily.

High population densities are associated with acute environmental degradation in urban areas of the developing countries. This is because more people produce more wastes and other forms of pollution. Both population and building densities are increasing the degree of water impermeability of many parts of the town due to increased use of cement. This impermeability upsets the natural drainage and can contribute to flooding in near future. In an attempt to obtain cheap sand for making cement blocks and mortar for building, people quarry sand from existing gullies close to the town. These activities contribute greatly to deepening and widening of gullies towards nearby buildings and farmlands.

The population of Zuru is increasing and with this increase is the demand for energy. Modern house hold energy sources are scarce and expensive; this makes the demand for firewood as an alternative source to be on the increase. Trees are being cut down and transported to the town to be used as an energy source. Bigger trees are cut and burnt and the coal transported, sold and utilized as an energy source. This cleaning and falling of trees for this purpose exposes the land to erosion, loss of nutrient and reduce wild life species as their natural habits are systematically destroyed. Threats to the environment are therefore as a result of increase in population, urbanization and poor land management practices. The UNEP, 2022 Identified numerous challenges to the efforts aimed at addressing environmental concerns in Africa. One of these can be summarized as the development of environmental use models that incorporate both natural and human induced factors that contribute to degradation and that could be used for resource use planning and management.

Summary of Ground Situation in the Study Area.

Human Activity	Environmental Problem	Impact Area
Cuts and Fills on slope	Slope stability leading to Erosion and land slide	All areas on the hill and hill slope west of Zuru. From Rikoto to Amanawa
Bush burning	Reduction in density of vegetation leading to exposure and stunting	From Dabai to beyond Amanawa (Hill top and Slope) ShadaWanka and beyond. (154 farmers affected)
Clearing of vegetation for new farms, firewood and over grazing	Exposure of land to erosion and leaching. Increasing concretion in late rite soil sites.	Zango, Fada/Unguwan Zuru, Jarkasa, behind peace Garden, behind izala central mosque, ShadaWanka, SamteGadema area, Tudun wada areas affected by flood
Increase in building density Within the town and sprawl.	Increased run off (over flooding of available drains and buildings) Environmental sanitation Problems from increased dumping of waste.	6 uncontrolled large waste Dumps 16 drains likely to be over flooded Pollution of river ShadaWanka and santeGadema. (water sources for some parts of the town)

Source: 2022 (Transect walk).

From the ground situations in the study area presented in the table above, it is evident that;

- Cut and fills on the hill slopes west of Zuru town contribute to erosion and landslides.
- Bush burning has reduced has reduced vegetation and rendered the soil bare promoting erosion, leaching and a reduction in the water retention capacity of the soil.
- Increase in population has increased the number of buildings in the town thereby increasing sprawl, uncontrolled waste dumping and building on hazard prone sites, etc.

Proposed Instruments for Sustainable Environmental Management

To overcome this challenge on the ground, tools of environmental management should always be developed "to build on or, at worst fine-tune indigenous systems in order to make them culturally acceptable, socio-economically realistic and viable, and therefore, sustainable (CODESRIA, 2011). Environmental management can be defined as an attempt to control human impact on and interaction with the environment in order to preserve natural resources. The focus of environmental management is therefore the improvement of human welfare for present and future generations. And this will require a mixture of a wide range of existing proposals and instruments. It is in view of this that the instruments presented were built around the instruments for sustainable environmental management presented by Janis Beinstem (1994).

Instrument	Components	Explanation	Advantages	Likely areas for usage
Land Zoning	Maps, cadastral, topographic, density map, etc.	Division of urban area into districts so as to control land use and population density.	Preserves agricultural land and protects environmentally fragile land	Urban areas
Land acquisition alternatives	-Voluntary sales -Expropriation	-Land is purchased by the government for public purpose -Land is purchased restrictions Attached and resold by government agencies.	Allows permanent protection and gives public access to land -land management objectives can be achieved	Urban areas and farm lands

		-Private land can be taken over by government after paying compensation		
Land information system	-Environment impact assessments -Social impact assessments GPS, Remote sensing, case studies, critical facilities mapping.	Data base containing spatially referenced land-related data for a specific area as well as procedures and techniques for the systematic collection, updating, processing, storage and distribution of the data	Facilities land planning and land administration, land management, environment assessment, etc.	Urban land and rural land

Instrument	Components	Explanation	Advantages	Likely areas for usage
Specific site Performance Assessment (SSPA)	Questionnaires, participatory rural appraisals focus group discussion, direct field measurement (since a small area is involved)	This involves small areas or a segment of a large area in which detailed account of issues can be taken.	<ul style="list-style-type: none"> Stake holder involvement (Site owners, community members, tribes). Allow for stake holder involvement Cost effective 	Erosion site, Drainages, lake, river segment, street, vulnerable buildings, refuse dap, a farm, hill slope, etc.

			<ul style="list-style-type: none"> There is time for detailed work since a small area is involved Personal relations can be established with stake holders. 	
Land use Risk Assessment (LRA)	Cost benefit analysis (CBA), Quasi-option value (QOV) Impact Assessment (environmental, social and economic)	It assesses current land use so as to reduce future use or risk <ul style="list-style-type: none"> QOV is the value of preserving option for future use in the expectation that knowledge will grow over time Bernstein (1994) 	Reduce uncertainty in management decision making. And encourages planning. Allows for flexibility in planning, design and implementation.	A general hospital in a rural area, a school, airport, a refuse dump, etc.
Environmental site Assessment	Feasibility studies	It is usually prepared for a real estate holding which identifies potential existing contamination liabilities	It has a wide scope that covers a wide range of issues.	Housing estate

Instrument	Components	Explanation	Advantages	Likely areas for usage
		Systematic means of combining various data	Provides critical data to support planning,	Region, city, basin, etc.

Geographical information System (GIS)	Computer, handsets, GPS, etc	about a geographic area	hazard management and environmental Management. It can be used over large areas.	
Characterization of wild life habitats	Maps and site appraisals.	Meaning of identifying the wild life density, available species and their natural feeding grounds.	Look at causes of habitat degradation, loss and the bush meat trade.	Open range, rugged areas and vegetated areas.
Integrated community based participatory approach.	Workable, flexible and sustainable approach to mitigation approaches to mitigation documentation.	Method used by the community in improving performance and mitigation of environmental problems should be improved upon not rejected.	Can be cost effective since they can be managed by the community from which it is adapted. It is easy to sustain.	All aspects of human activity.
Sustaining taboos	Media, handbills, posters, etc.	Encourage and sustain taboos concerning killing and eating of certain animal species, clearing of sensitive areas	Prevent the extinction of animals and reduce the wanton cutting down and clearing of trees and vegetation will generally	Hill slopes, gullies and vegetated areas.

		and cutting down of rare trees.	promote conservation.	
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Conclusion

From the observations, and other data gathering processes carried out on the field, and as presented in the overview of the study area, in Zuru area, human activities are impacting negatively on the environment. And no single measure has been adapted to sustainably manage these negative impacts there is therefore the need to adapt a wide range of instruments. In doing that, existing ones can be updated to the desired standards and new ones proposed.

Recommendation

Based on the conclusion, it is recommended that instruments desired for sustainable environmental management in the area should have the following characteristics:

- should reduce uncertainty in effective decision making;
- should address data needs and encourage sustainable management;
- should be easy in translating into action; and
- should try to involve the local community.

References

- Agunia, B. Promise, (2022, October). Environmental Management in Nigeria – We all have a Role to Play. www.academia.edu
- CODESTRIA, (2011, October). In Godwell Nhamo and Ekpe. I, (2002, October). Framework and Tools for Environmental Management in Africa. Economic Commission for Africa. www.JSTOR.org.
- Godwell Nhamo and Ekpe I, (2002, October). Framework and Tools for Environmental Management in Africa Economic Commission for Africa. www.jstor.org
- Janis Beinstein, D. (1994, October). Land use considerations in Urban Environmental Management. The World Bank Washington, DC.
- Jegade, M. J. A, (2022, October). Problems and Prospects of Environmental Management in Nigeria. www.globalacademicgroup.com
- Malik, B. (2005). Disaster Vulnerability and Mitigation in Urban Areas: Case Study of Zuru Town, Kebbi State (unpublished Masters Degree thesis). Usmanu Dan Fodiyo University, Sokoto.
- Paez, A and Aponte, F. Aponte, (2021, October) Environmental Management Tools and Instruments of Application. American Journal of Protection www.researchgate.com
- Tochukwu, A. (2014, October). Nigeria and Efforts at Environmental management www.fairdserver.com
- UNEP, (2022, October). U N Environmental Management System: www.UNEP.org