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EVALUATING THE LEVEL OF SUSTAINABILITY PERFORMANCE OF PROFESSIONALS IN HAZARD PRONE ENVIRONMENT OF AKWA IBOM STATE, NIGERIA

***EFFIONG, C.J.,[1] EDOM, A.[2] AND JOSEPH, E.S. [2]**
[1]Department of Urban and Regional Planning, University of Uyo, Uyo, Akwa Ibom State, Nigeria
[2]Nigerian Building and Road Research Institute, Ado-Otta, Ogun State
*Corresponding author: cyrileffiong@uniuyo.edu.ng

Abstract
The study evaluates the level of sustainability performance of professionals in hazard prone environment of Akwa Ibom State. In Nigeria, over 60-70% of Nigerian population relies on farming for livelihood. However, the obvious is that developing countries including Nigeria are lacking in capacity to sustain agricultural production which has resulted in scarcity of food and extinction of some produce. The worst is that professionals do not relate current information which would have help improve sustainability performance in hazard prone environment. The study adopted a survey design method underpinned by a pragmatic knowledge based approach. A total of 150 copies of structured questionnaire was purposively sampled among professionals in urban planning, Architecture, Agronomy, Agricultural Extension and Environmental Health. A descriptive, Relative Important Index and Kruskal Wallis Test was used in the analysis. Findings reveal that there is a low performance of sustainable indicators among professionals as sustainability indicators didn't have any influence on human settlement in hazard prone environment. It concluded that the involvement of professionals significantly very low. Using Kruskal Wallis to test the level of involvement in hazard prone areas, the study concludes that there is low evident in data to suggest that professionals involve in hazard prone environment. The study recommends that professionals, stakeholders and government should develop a strategy that can improve information sharing and technology in hazard prone communities knowing that vulnerable communities require information in order to achieve resilient environment.

Keywords: *Environment, Hazard, Performance, Resilience and Sustainability*

Introduction

The present world is faced with a wide range of threats to the environment as well as socio-economic development. Man depends to a large extent on the natural resources available in the environment both on water (aquatic livelihood) and land (terrestrial

livelihood). The various methods of resource exploitation have caused certain environmental shocks which have impaired livelihood (Chambers and Conway, 1992). In response to these environmental shocks and stresses, the local communities have devised various livelihood strategies which have been implemented to build their resilience. Resilience according to Brugmann (2012) is the ability of an urban asset, location and or system to provide predictable performance benefits, utility and associated rent and other cash flow under a wide range of circumstances. These hazards can include flooding which can affect livelihood of communities thereby exposing them to be more vulnerable. Therefore, the ability of hazard prone communities to absorb to these changes in a timely and efficient manner makes its preservation and restoration essential. A livelihood is anything or activities people derive benefit and use to make living. A livelihood must be socially, economically and environmentally sustainable. When a livelihood is socially sustainable, then mean that it can cope with and recover from stress, shock and maintain its capabilities at the present and in the future (Chambers and Conway, 1992). Furthermore, livelihood is environmentally sustainable when is able to maintain the natural state on which livelihood depend. Therefore, when a livelihood can withstand stress and cannot compromise ecological integrity, then it is socio-economically sustainable. These strategies can be said to also facilitate their adaptive capacity that lessen their vulnerability to such future environmental shocks.

As noted by Effiong (2013) that over 60-70% of Nigerian population rely on farming for livelihood. However, the obvious is that developing countries including Nigeria are lacking in capacity to sustain agricultural production which has resulted in scarcity of food and extinction of some produce. Scott and Zabbey (2013) examines how oil and water in the Bodo Spills destroy traditional livelihood structures in the Niger Delta and highlighted the destructive impact of the oil spill on the environment. Etiosa and Taylor (2007) highlighted climatic and environmental changes and the relationship between these changes and poverty while not lacking in knowledge that successful policy intervention will depend on an understanding of existing coping mechanism. Although, several studies in Nigeria have been carried out to investigate sustainable livelihood and the coping strategies adopted as documented by Ekanem, 1999b, Dow and Downing, 2006; Uyigue and Agho, 2007; Mmom and Aifessehi, 2013), however, these studies have not comprehensively evaluated the level of performance of professionals (urban planner, Architects, Agronomist, Agricultural Extension officer and Environmental health officers) in achieving resilience city in hazard prone areas. This is sequel to the observation by Abolore (2012) that the vast majority of developments in Nigeria are conceived designed, permitted, constructed, operated and managed without a comprehensive account of their consequences for sustainability. Furthermore, unsustainable development have been attributed to poverty, inequalities, discrimination and socio-cultural exclusion, insecurity, human rights, abuse, corruption as well as environmental disaster and inappropriate resource management.

Literature Review

The idea of building resilience has been studied in a range of ecosystem from coral reefs, to forest resources (Nystrom *et al.*, 2000). Extension officers have been educating the rural populace on improved varieties that farmers can use to boost food production. Likewise, farmer in hazard prone areas depends on ecosystem services for livelihood hitherto, agricultural extension office need to improve their strategy in information gathering and dissemination on new crop varieties that can withstand shock and stress. This is sequel to the observation made by Klein *et al.* (2003) that environmental changes will affect agricultural production, however, research, technology and ecosystem response is needed to improve the development of agriculture with resilience.

Nigeria loses about 350,000 hectares of land that support agriculture and other economic activities yearly to desert encroachment (Ogboi, 2011). According to the National Action Programme to combat Desertification (NAP, 2000) report; between 50-75 per cent of 11 northern states comprising Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Sokoto, Yobe, Adamawa and Zamfara are affected by desertification. Its consequences include severe threat to surface and underground water and drop in yields, indicating a grave danger to food security in the country. The situation has triggered off massive population migration, as Fulani herdsmen seek new grazing lands which has resulted in communal clashes in some communities.

Soil degradation is ranked high by the World Bank (1990) because of its impact on the sustainable income of Nigerians, on large number of people, the poor and overall environmental integrity. Soil degradation may occur in form of nutrient loss, loss of soil micro-organism of agricultural land, pollution of surface and ground water, soil erosion and loss of human settlements, and other infrastructures. Most communities depend to a large extent on agriculture and natural resources for livelihood. This is why Effiong (2013) observed that over 60-70% of Nigerian population rely on farming for livelihood but, they lack in capacity to sustain agricultural production which has resulted in scarcity of food and extinction of some produce. Therefore, farmers required science and technology to improve yield in hazard prone areas of the environment. Agronomist uses science and technology to produce plant for food fuel and fiber. Their role is needed in hazard prone areas because the science and technology will help farmers develop agriculture that can withstand environmental shock and stress hitherto increases food security.

According to Al-Sweity (2013) a professional is a person who has attained a high degree of professional competence in a particular activity, noting that such person must be highly educated, enjoys work autonomy, earns a comfortable salary and engages in creative and intellectually challenging work. A professional usually belongs to a given profession; an individual uses skills and intellectual based on an established body of knowledge and practice to provide specialised services to the public.

In any hazard management, professional from different fields are needed especially in the aspect of information dissemination which will aid low income community to improve in their capacity to cope with the effect of

climate change. This is sequel to the observation made by Oyewobi *et al*. (2011) who noted that the mark of major profession is in its ability to accept responsibility to act in the public interest which requires an overt commitment in the development of environment. These professionals comprises Urban Planner, Architect, Agricultural extension officers, Agronomist, Environment health officers etc. These professionals provide essential services which to a large extent can enhance the local knowledge used by local communities to adapt in hazard prone areas.

Hypotheses

Ho: Performance of professionals on sustainability indicators in hazard prone communities cannot be significantly identified.

Ho: There is no significant variation in the perception of sustainability performance among the identified professionals in the region.

Methodology

This study adopted a cross-sectional survey method which was exploratory and descriptive underpinned by a pragmatist knowledge based approach. The pragmatist believes that knowledge claims arise out of actions, situations and consequences rather than antecedent conditions as in positivism (Creswell, 2003). The approach focuses attention on the performance of professionals in achieving resilience city in hazard prone areas and drawing liberally from both quantitative and qualitative assumptions to derive knowledge about the problems in line with pragmatism enquiry approach. The cross sectional survey was adopted to quickly reveal prevalence and relationship among variables at a particular point in time (Mann, 2003; Saunders, Lewis and Thornhill, 2009). The survey was carried out with the aid of interview and structured questionnaire since the study was based on exploration of the perception of respondents on variables which are mostly measured in ordinal scale. The study population consists of professionals (Urban planners, Agricultural Extension officers, Environmental Health officers, Agronomists in Nigeria. The study purposively sampled 150 professionals resulting in 158 valid responses. This comprises Urban Planners (37), Architects (30) Agronomists (32), Agricultural Extension Officers (27), and Environmental Health Officers (24) from Akwa Ibom State. Eight each of economic and social sustainability indicators were identified from literature as variable for the basis of formulating questionnaire. Data on the level of performance of professionals in terms of sustainability attributes were measured on five point likert scale namely Strongly Agree =1, Disagree =2, Partially Agree =3, Agree =4 and Strongly Agree =5. The relative important index method was used in the study to determine professionals' perception of the level of performance in terms of sustainability attributes in hazard prone areas of Akwa Ibom State in line with the formula used by Ugwu and Haupt, (2007) and Enshassi, Mohamed and Abushaban (2009) as shown in equation 1

$$RII = \sum W/AxN \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where W is the weight given to each variable by the respondents and ranges from 1-5; A- the highest weight =5; N – the total number of respondents. The RII were then classified as 0-0.359 very low significance (VLS); 0.36- 0.529 low significance (LS); 0.53-0.679 moderate significance (MS); 0.68-0.839 high

significance (HS) and 0.84 – 1.0 very high significance (VHS). The hypotheses were analysed using Kruskal Wallis test.

Result and Discussion

The socio economic characteristics of professional were covered with proportion of Male (18.4%) and Female (81.8%). The result reveals that majority of respondents were more females than male because more females engaged in farming and was used to get access to information and retrieve how professionals have assisted their capacity to cope in hazard prone areas. The age of respondents ranges from 18-30 (18.7%) and 31-59 (81.3%) which reveals that majority of professional used are true professionals, though the categorization of registered and unregistered were not made considering that information sharing is crucial in their capacity to cope and achieve resilient. The states of operation were Ibeno, Ikot Abasi, Estern Obolo, and Mkpat Enin and their years of experience are between 1-5yrs (36.7), 6-10 yrs (36.7), 11-15yr (26.7).

Table 1: Characteristics of Respondents

Characteristics of Respondents	Sub Characteristics	Frequency	%
Respondent Affiliation	Urban Planner	37	24.7
	Architect	30	20.0
	Agronomist	32	21.3
	Agric Extension Officers	27	18.0
	Environmental Health Officers	24	16.0
	Total	150	100
Sex of Respondents	Male	81	18.7
	Female	69	81.3
	Total	150	100
Age of Respondents	18-30	28	18.7
	31-59	122	81.3
	Total	150	100
Area of Operation	Ibeno	42	28.0
	Estern Obolo	42	28.0
	Ikot Abasi	40	26.7
	Mkpat Enin	26	17.3
	Total	150	100
Experience	1-5	55	36.7
	6-10	55	36.7
	11-15	40	26.7
	Total	150	100

For the purpose of evaluating the sustainability performance of professionals, sixteen indicators each for social and environmental aspect of sustainability were identified from literature and given to respondents to assess the performance of professionals on the identified sustainability indicators. The result revealed that the indicators did not show any significant performance in the promotion of human settlement in hazard prone environment. Deforestation attained small marginal significant performance of 12.8% in the environmental aspect of sustainability compared to other indicators. Also the result further shows that lack of demand for these services make professionals

seek areas where their services are needed. This implies that there are no developments standards followed in development of human settlement which hitherto do not promote professional involvement in the region. The result supports the need for government agencies and stakeholders to adopt strategies that can mainstream sustainable indicators into urban development and livelihoods.

Table 2: performance of professionals on the identified sustainability indicators

	Urban Planner N = 37		Architect N = 30		Agronomist N =32		Agric Ext officer N = 27		Env. Health officer N = 27		Average N = 150	
Sustainability indicators	RII	Rank	RII	Rank	RII	Rank	RII	Rank	RII	Rank	RII	Rank
Social aspect												
Grant development permit	0.55	4	0.13	9	0.13	9	0.11	9	0.09	7	0.20	11
Enhance land use	0.16	8	0.16	7	0.15	8	0.12	8	0.10	6	0.14	12
Educate stakeholders	0.19	7	0.17	6	0.17	7	0.14	6	0.11	5	0.12	13
Limit dev. In flood prone areas	0.52	5	0.12	10	0.11	10	0.13	7	0.09	7	0.37	4
Limit green house gas	0.16	8	0.10	11	0.11	10	0.11	9	0.09	7	0.11	14
Educate farmers on new farming techniques	0.13	10	0.14	8	0.61	2	0.11	9	0.12	4	0.22	9
Educate farmers on improve seedlings	0.12	11	0.10	11	0.65	1	0.09	11	0.09	6	0.21	10
Combating crime	0.10	13	0.09	12	0.10	11	0.07	12	0.07	9	0.09	15
Environmental aspect												
Improve mental health	0.46	6	0.61	1	0.21	5	0.40	4	0.09	7	0.35	5
Preserve natural environment	0.61	3	0.31	5	0.37	4	0.10	10	0.09	7	0.30	6
Environmental aesthetics	0.64	2	0.43	4	0.45	3	0.21	5	0.09	7	0.36	3
Waste generation	0.14	9	0.12	9	0.18	6	0.41	3	0.19	2	0.21	10
Deforestation	0.67	1	0.56	2	0.21	5	0.98	1	0.07	9	0.50	1
Public health	0.51	5	0.45	3	0.13	9	0.09	11	0.08	8	0.25	7
Pollution reduction	0.41	6	0.31	5	0.15	8	0.13	7	0.15	3	0.23	8
Biodiversity	0.11	12	0.12	10	0.65	1	0.63	2	0.42	1	0.39	2

To evaluate the respondents' agreement in the involvement of professionals in hazard prone communities of Akwa Ibom State, the first hypothesis was postulated as earlier stated. This was tested with kruskal wallis test at $p \leq 0.05$, with the decision rule is that if p-value is greater than 0.05, the hypothesis is accepted but if p-value less than 0.05 the hypothesis is rejected. As shown in table 3, the P-value of 0.53, 0.778, 0.843, 0.911, 0.921, 0.98 was greater than assumed significance level of 0.05, hence the null hypothesis was accepted while p-value of 0.384 and 0.334 was less than significance level of 0.05 hence the null hypothesis was rejected. It was concluded that there is no evident in data to suggest that professionals adhere to sustainability indicators in carryout their work in hazard prone communities. The result indicates a very low involvement of professionals in hazard prone communities which affirms the assertion of Richardson et al (2012), that planning professionals do not initiate tools that can reduce climate risk and ensure that the built environment can withstand a range of environmental stress. Therefore, it is imperative for professionals to limit development in flood prone areas, help to preserve natural environment and educate the stakeholders and decision makers about risk and opportunities.

Table 3: Results of Kruskal- Wallis test for comparison of sustainability performance among professionals

Sustainability	Professionals	No. of respondents	Mean rank	Chi square	P-Value	Decision
Grant development permit	Urban planners	37	74.78			Accepted
	Architects	30	85.67			
	Agronomist	32	75.17	3.112	0.543	
	Agric Ext. Officers	27	74.19			
	Env. Health Officers	24	65.81			
	Total	150				
Enhance public land use	Urban planners	37	72.59			Rejected
	Architects	30	85.15			
	Agronomist	32	79.66	4.247	0.384	
	Agric Ext. Officers	27	73.19			
	Env. Health Officers	24	64.98			
	Total	150				
Educate stakeholders about risk and opportunity	Urban planners	37	75.26			Rejected
	Architects	30	85.68			
	Agronomist	32	80.33	4.650	0.334	
	Agric Ext. Officers	27	68.11			
	Env. Health Officers	24	65.02			
	Total	150				
Limit development in hazard prone areas	Urban planners	37	72.35			Accepted
	Architects	30	80.88			
	Agronomist	32	70.59	1.753	0.778	
	Agric Ext. Officers	27	74.17			
	Env. Health Officers	24	81.67			
	Total	150				
Limit green house gas emission	Urban planners	37	72.74			Accepted
	Architects	30	77.77			
	Agronomist	32	70.19	1.448	0.843	
	Agric Ext. Officers	27	79.28			
	Env. Health Officers	24	79.75			
	Total	150				
Educate farmers on new farming technique	Urban planners	37	77.34			Accepted
	Architects	30	80.22			
	Agronomist	32	75.61	0.976	0.911	
	Agric Ext. Officers	27	70.89			
	Env. Health Officers	24	71.81			
	Total	150				
Educate farmers on improved seedlings	Urban planners	37	72.57			Accepted
	Architects	30	76.10			
	Agronomist	32	72.16	0.922	0.921	
	Agric Ext. Officers	27	77.59			
	Env. Health Officers	24	81.38			
	Total	150				
Combating crime	Urban planners	37	73.52			
	Architects	30	77.68			Accepted
	Agronomist	32	73.67	0.275	0.98	
	Agric Ext. Officers	27	77.59			
	Env. Health Officers	24	75.29			
	Total	150				

Conclusion and Recommendation

This study has evaluated the perception of the extent of profession's involvement in achieving resilience in hazard prone communities of Akwa Ibom State. The study identified eight sustainability indicators from literature covering social, environmental and economic aspect. A relative index was used to analyse the indicators and the study reveals a very low sustainability performance of professionals in hazard prone environment. The study reveals that there is variation of sustainability performance among professional in hazard prone environment. This is sequel to the observation made by Hague, 2011 that vulnerable communities lack capacity and information to cope with climate change. As such, there is need to build resilience against environmental shock and stress. It is therefore pertinent for government and stakeholders to involve professionals who can help them build resilience through information sharing, improvement in technology and new farming techniques which will help local farmers boost productivity. Professionals should use their specialised body of knowledge to promote the wellbeing of the public especially those in vulnerable areas for enhanced sustainable development which can transcend to human development. Government should adopt strategies that can improve the capacity of farmers to develop sustainable livelihood. Also they should implement social, environmental and economic sustainability indicators to achieve resilience.

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