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Assessment of community's willingness to participate in environmental management in Jimeta Metropolitan Area, Adamawa State, Nigeria

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Abstract

Environmental problems posed serious challenges in Jimeta metropolitan area of Adamawa state and the situation is indeed alarming. The menace of annual flooding, indiscriminate dumping of refuse, pollution, diseases outbreak, among others, are by far the most pressing environmental issues afflicting the study area. This study aims to assess the community's willingness to participate in environmental management in Jimeta metropolitan area of Adamawa state, Nigeria, with the specific objectives of determining the community's perception toward environmental management to assess the community's willingness to participate in environmental management activities and to assess the factors that influence their willingness to participate. Data were collected using structured households' survey questionnaire, key informants interviews, and participatory observation in eight of the eleven wards within the metropolis. 120 respondent's households were randomly selected to represent the entire population of the study area. Quantitative data were analysed using Statistical Packages for Social Sciences (SPSS) version 21.0 while qualitative data were analysed using content analysis. Results show that about 85% and 70% perceived that environmental management is costing but also beneficial respectively. While 78% perceived that, existing nature of the environment have poor quality. Using cross tabulations and regression analysis the result revealed that, 50% of the respondents were willing to participate in environmental management. Perceived benefits, level of educational, and sources of income were the factors that positively influenced household's willingness to the management of the environment. The study recommends intensifying efforts towards creating awareness among the community members about their role in managing their

environment, social participation and implementation of rules and regulations for a better and sustainable environment, among other recommendations.

Keywords: Community participation, Environmental management, Environmental problems, Perceived benefits, Perceived cost, Perceived quality, Willingness.

Introduction

Our world is facing multiple environmental crises, especially from different types of environmental problems (UN Habitat, 2014).The menace of global warming, ozone depletion, declining biodiversity, desertification, flooding, pollution, among others have been identified by various researchers as the major environmental problems bedeviling our world nowadays. Various processes can be said to be the contributing factors to these environmental problems and almost all these processes are the result of the use of natural resources in unsustainable manner and these processes have highly negative impact on our environment (Le et al., 2019). Recent decades have witnessed a great interest in environmental issues (Al-Mawali et al., 2018) as a result of the risks that accompanied the great industrial development and urbanization, which threatens the environment and society (Le et al., 2019). Today, the environment is facing Continuous pressure from the population it carries. The search for economic independence by many individuals, groups, community, and nations have resulted in the continuous degradation of the environment.

Madu (2007) submitted that the rapid growth in world population is a major cause of many environmental challenges. He noted that population size and rate of growth have led to the increase in the demand for food, clean water and energy increase. Consequently, the ability of the environment to meet some of these needs have become threatened. Moreover, poor people's reliance on natural resources, and the lack of alternatives to which to turn in times of stress have led to a high level of use which degrades the very asset on which their survival depends. Dilys et al. (2011) opined that environmental challenges result from imbalances, corruption and inequality. All these give the poor little access to economic wealth of the nation, hence, their Over-dependence on environmental resources.

Environmental Management is a systematic approach to finding practical ways of promoting and preserving our surroundings, and reducing health hazards and environmental abuses. The management of the environment has a universal acknowledgement. Agenda 21 of the United Nations Conference on Environment and Development, Rio-de-Janerio, Brazil, 1992 recognizes sustainable environment as a galvanizing tool for the realization of the Sustainable Development Goals (SDGs). Raven, Berg and Hassenshall (2010) submitted that the elements

that contribute to addressing environmental problems include scientific assessment, risk analysis, political action, long-term evaluation and community participation. Therefore, Community Participation in environmental management is a process which involves people to participate in planning, implementing and managing their local environment (Rajini, 2015). It implies that community members are involved in identifying and identifying environmental management interventions as well as strategies to meet their needs. It is actually a readiness on the part of both local governments and the community to accept equal responsibilities and activities in managing their surroundings. It also means a commitment to bring to the table resources, skills and knowledge for this purpose, and a respect for the capabilities and capacities of all partners. Therefore, Community Participation is a process which involves people to participate in planning, implementing and managing their local environment (Rajini, 2015). It is actually a readiness on the part of both local governments and the community to accept equal responsibilities and activities in managing their surroundings. It also means a commitment to bring to the table resources, skills and knowledge for this purpose, and a respect for the capabilities and capacities of all partners.

Any attempt to redress or arrest the problems must necessarily involve the major stakeholders, if it must be sustainable and stand the test of time. The involvement of communities in managing the various activities in their environment today is appreciably a global order in incorporating host communities in decision making in any developmental activities that may affect their environment. Environmentalists have realized that any externally defined solutions that do not involve local people are unrealistic and ultimately fail to produce the intended results of environmental management. Local communities therefore have to be allowed and encouraged to become responsible for the management in their territory and have an important share in the benefits for their efforts.

Environmental problems are a global phenomenon, the extent, or intensity of the issues and problems, however, differ from country to country, depending on the size and rate of growth of her population, the quality of, and, the technologies available to her people (Aloni et al, 2015). Nigeria, the most populous country in Africa and the 7th most populous in the world, has been ranked at 151 among 181 countries on environmental health and ecosystem vitality in 2020 using 32 performance indicators across eleven issue categories (Wendling et al., 2020). Environmental problems posed serious challenges in Jimeta metropolitan area of the State and the situation is indeed alarming. The town is facing multiple environmental crises especially from serious overpopulation and rapid urbanization which have led to numerous environmental issues ranging

from annual floods, rapid deforestation, soil or land degradation, water, and urban air pollution, diseases outbreaks, reduction of biodiversity and other related environmental issues. The study was aimed at assessing the community's willingness to participate in environmental management in Jimeta metropolitan area of Adamawa state, Nigeria. The specific objectives include:

a) To determine the community's perception toward environmental management;
b) To assess the community's willingness to participate in environmental management activities;
c) To assess the factors that influences their willingness to participate in environmental management.

Material and Methods

Description of the Study Area

Jimeta is located in Yola North of Adamawa State, northeastern part of Nigeria, and is situated between latitude 9° 13' and 9° 17'N and longitude 12° 24' and 12° 28'E. Zemba et al., (2013) reported that Jimeta had an approximate land area of 111.85 km² in 2002. The city is located on a floodplain of the River Benue valley and is relatively asymmetrical, having possibilities of expansion in only North-West through South as North to South-East are bordered by the River Benue and its adjoining marshy lands. The expansion of the city is represented by construction of structures like buildings, roads, parking lots, pavements, and erection of poles along streets.

Jimeta has a typical tropical climate with average daily hours of bright sunshine of about 7 – 8 hours and the wind speed averaging about 76.1 Km/hr. It has an average annual sunshine hour of 2750 approximately (Adebayo and Zemba, 2020). Air temperature characteristics are typical of West African Savannah Climate. The temperature in this region is generally high throughout the year with the seasonal maximum usually occurring in April, reaching as high as 43 °C. Between January and March, relative humidity is extremely low (20-30%) in Jimeta, which starts increasing as from April and reaches its peak (about 80%) in August and September due to the influence of the humid maritime air mass, which covers the whole area during this time. Two distinct seasons; the rainy and dry season are experienced. The rainy season runs from the months of May through October, while the dry season commences in November and ends in April/May. The average annual rainfall is put at about 960 mm with the highest occurrence in August and when intensity assumes over 20% of the annual value. The study area falls within a climatic region where similar works have been conducted (Sharma *et al., 2020*). Natural vegetation over this geographical area is essentially a response to the climate and some other

parameters such as soils and topography (Adefioye, 2013). Jimeta comprises so many land use types, ranging from institutional, agricultural, and commercial to residential. It is stratified into low, medium and high-density areas. The low-density areas are well-planned units where government officials reside, while medium and high-density areas are made up of common people with little or unplanned buildings (Abdullahi, 2018).

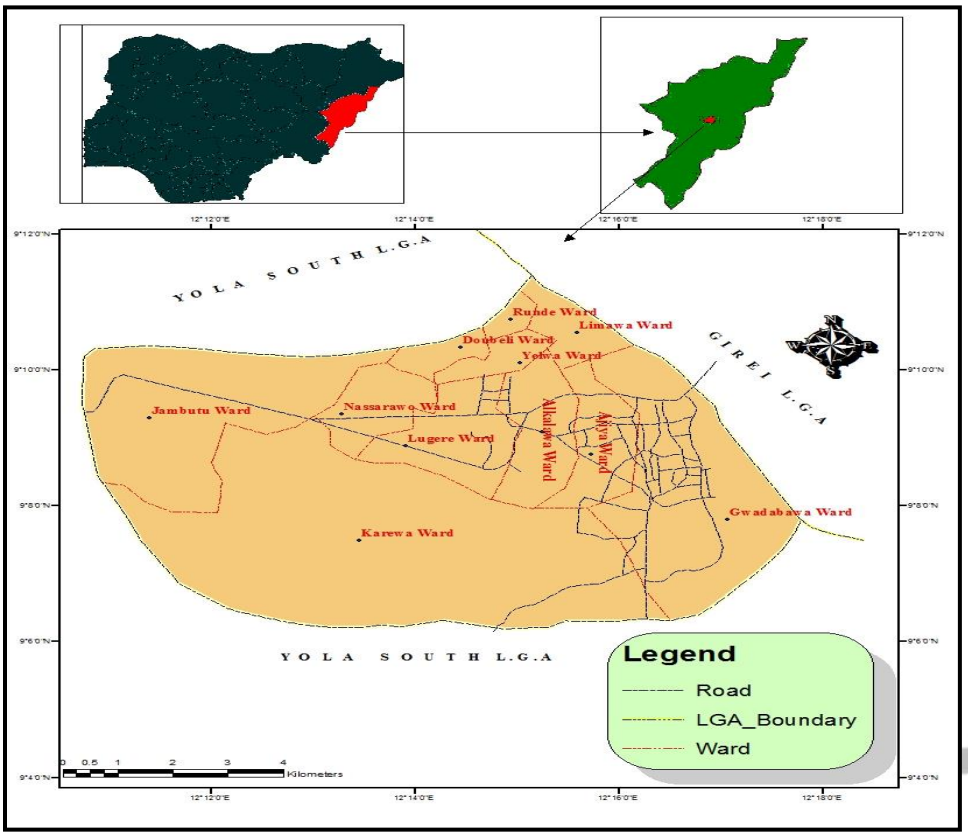

Fig. 1: Study area

Research Methodology

The study design was cross-sectional, which enabled the researcher to collect the data once and analyze them concurrently. Eight out of eleven wards were purposively selected for this research work. The reason behind the selection of these wards was that they are the wards that are mostly affected by environmental problems in the study area (Aminu & Ibrahim, 2015). These wards include Ajiya, Doubeli, Jambutu, Gwadabawa, Luggere, Limawa, Rumde and Yelwa. Total samples of 120 households were randomly selected from the eight wards of the study area; 12 households from each ward. The essence was to get on equal and good representative population.

Structured households survey questionnaire with likert scale of three items which are Agree, Neutral and Disagree was administered to respondents. The questionnaire was designed

into sections; Section A contain the households' socio-economic variables such as age, sex, marital status, level of education, duration of Residence and source of incomes were also included. The second section (Section B) focuses on the objectives of the research work like the community perception toward environmental management, the willingness to participate and the factors that influence their participation in environmental management.

The participatory method was used to collect information which supplemented the data collected from other mentioned methods. The physical identification of various matters which were not disclosed during questionnaire survey and other secondary sources was done. A key informant interview was conducted to supplement information on all matters respondents were required to respond in households' survey questionnaire. The households' socio-economic variables were also included, such as age, sex, education, and income condition to help in contextualization of the findings so as to develop good recommendations.

Secondary data consisted of both qualitative and quantitative were collected from Adamawa state ministry of Environment and Yola North Local government Environmental sanitation unit, journals, books, reports, internet publications, among other sources.

Data analysis involved qualitative and quantitative analysis. The Statistical Package for Social Sciences (SPSS) computer software version 21.0 was used during analysis of Questionnaire data. Qualitative analysis involved content analysis of the data from direct observation and group discussions. Quantitative analysis involved both descriptive and inferential statistical analyses. Quantitative socio-economic data were analyzed using descriptive statistical methods (Frequency distribution). A frequency distribution table and numerical descriptive values (Percentages) were used to summarize the data. This was carried out to understand the distribution of respondents and to explain the socio-economic characteristics of the respondents (Households). The inferential statistical analysis in this study aimed at finding factors that might influence households' willingness to participate in environmental management. Cross tabulations chi-square was used to assess willingness to participate while categorical optimal scaling regression analysis was used to determine latent factors influence willingness to participate in environmental management. The dependent summated categorical variable used was willingness to participate in the management of the environment.

Results and Discussion

Description of Households' Socio-economic Characteristics

Respondents' socio-economic characteristics were analyzed. These socio-economic characteristics were age, sex, marital status, level of education, duration of residence and source

of income. The findings from Table 1 show that about 29.1% were between, 41 – 50, 26.5% were between, 31 – 40, 15.8% were between 20 – 30 and 15.3% were between 51 – 60 years of age. Also, about 10.2% and 3.1% of the respondents were 61-70 and above 70 years of age respectively. This result is similar to (Faleyimu and Akinyemi, 2014) who found that, majority of the respondents by age groups were in the adults (31 – 50) followed by youth (20 – 30). The adult group being the majority, that is many respondents are matured enough to understand and take part in decision-making process for a particular community while youth are very energetic, high risk-taking and fast learners (Lazaro *et al*., 2013). This implies that the majority of the respondents are mature enough to fully understand issues concerning environmental management.

The sex distribution shows that, of the 120 total respondents, 72.1% were males and 24.9% were females. The study shows that, about 69.4% of the respondents responded to the households' survey questionnaire were married followed 22.3% singles, while the rest of the respondents who were very few, about 6.2% and 2.1% were widows and divorced respectively. On education, the study shows that, the majority of the respondents (about 48.2%) had acquired secondary school education. The findings of the study show that, about 47.0% and 26.3% of the respondents responded to the household survey questionnaire lived in the study area in between 16 – 30 and 1 – 15 years respectively. The main source of income in the study area was trading with 41.5% while the rest were employment (civil servants) with 41.2% and other sources of income were accounted for 17.3%. In the case of employment, this study refers to formal and informal public, private and self-employed respondents.

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Table 1: Distribution of households' socio-economic characteristics (n=120)

Characteristics	Percentage (%)
Age group	
20-30	15.8
31-40	26.5
41-50	29.1
51-60	15.3
61-70	10.2
>70	3.1
Total	100
Gender	
Male	72.1
Female	24.9
Total	100
Marital status	

Married	69.4
Single	22.3
Widow	6.2
Divorced	2.1
Total	100
Education level	
Primary	48.2
Secondary	29.8
Tertiary	3.7
Adult education	8.2
Higher learning	10.1
Total	100
Duration of Residence	
1-15	26.3
16-30	47.0
31-45	19.5
>45	7.2
Total	100
Income source	
Employment	41.2
Business	41.5
Others	17.3
Total	100

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Source: Field Survey, 2023

Households' Perception towards Environmental Management

Perceived management costs towards environmental management

The study finding shows that, most of the respondents (85%) have positive perception of costs associated with environmental management and 8.0% disagreed, while the rest were neutral/undecided (Table 2). Similar finding was obtained by Ahmed, H. (2015) who found that 95% of respondents have a positive perception of costs associated with open space conservation. The above finding implies that, local community had a positive perception of the costs associated with environmental management. They are aware that, our environments need maintenance, regular cleanness, protection and social security which had been reflected as the direct management costs by local community. Therefore, this finding will provide a base for fairness to the local community during participatory environmental management initiatives.

Perceived benefits from environmental management

The study finding in Table 2 shows that, 70% of the respondents perceive environmental management as beneficial, that is maintaining a clean environment reduces pollution, preserves our biosphere, protects endangered species and helps preserves the earth's natural resources among other benefits. The above finding is similar to other studies. For example, Sakurai *et al.* (2015) found that, majority of the households in Yokohama perceived that managing the environment will enhance residents' social interaction for that being a motive to participate in management activities. The finding implies that the majority of the respondents were aware and positive about the benefits that may be accrued from sustainable management of their environment.

Perceived quality of the environment

The finding shows that about 78% perceive that, existing nature of the environment has no good quality, while the rest were undecided/neutral (Table 2). Similarly, the perceived quality of the environment has been a concern in most of the developing countries, study by Lindgren and Castel (2008) argues on different management approaches, and mainly, they insisted on multi-stakeholders involvement, including local community. In South Africa, a study by Sutton (2008) argues that, neglecting the public perceptions of the environment may result in planning approaches and decisions that are inconsistent with a community's needs and desires. The finding implies that, respondents are sensitive and concerned with the existing poor quality of their environment.

Table 2: Perceived environmental management costs, benefits and quality. (n=120)

Variable	Agree (%)	Neutral (%)	Disagree (%)	Total (%)	Standard deviation
Perceived cost	85	7	8	100	1.07375
Perceived benefits	70	30	0	100	0.93482
Perceived quality	78	17	5	100	1.29681

Households' Willingness to Participate in Environmental Management

The households' willingness to participate in environmental management was assessed using likert questions as variables which were coded, and the values entered into the SPSS, followed by computation of the summated scale (willingness to participate in environmental management) for all variables. The respondents were asked if they were willing to participate in

various environmental management activities. Findings in Table 3 show that 50% of the respondents were willing to participate in environmental management activities, 42% were neutral, while the rest were undecided. This finding is similar to other related studies, for example, Sakurai *et al*. (2015) found that more than half of respondents were willing to participate in various conservation activities in urban area, like tree planting and nature conservation in Japan.

Table 3: Household willingness to participate in environmental management activities

Variable	Value labels	Total (n=120)%
Willingness to participate	Agree	50
	Neutral	42
	Disagree	8
Total		**100**

Total number of households = 120

Factors Influence Households' Willingness to participate in environmental management

It should be mentioned that, to determine how the households' characteristics influence the willingness of the individual household to participate in environmental management, the Categorical regression model with the help of Statistical Package for Social Sciences (SPSS) was used during analysis. The dependent variable was willingness to participate in environmental management while the independent variables were perceived benefits, perceived quality, perceived cost, educational qualification, sources of income and duration of stay in the community. The results of categorical regression analysis are summarized in Tables 3 and 4.

The result gave R^2 = 0.826 which shows that about 50.0% of the willingness to participate in environmental management is explained by transformed values of independent variables included in the regression equation. Furthermore, the analysis of variance (ANOVA) gave the value of F = 89.438, that corresponds to the 0.005 level of significance, which means that the categorical regression model adapted well to the transformed data (Table 4).

Table 4: Categorical regression ANOVA table

	Sum of Square	df	Mean Square	F	Level of Significance
Regression	40.614	6	6.769	89.438	0.000[b]
Residual	8.552	113	0.076		
Total	49.167	119			

Dependent Variable: Willingness to participate

The study result shows some factors that had positive and negative influence on households' willingness to participate in environmental management. The factors observed to influence positively the households' willingness to participate in environmental management include perceived benefits, educational qualification and sources of income.

The result in Table 5 shows that, perceived benefit is statistically significant (P = 0.233) and positive (Beta = 0.108), regression coefficient with households' willingness to participate in environmental management. This implies that, for a unit increase in understanding the benefits associated with the environment, there is a unit increase in willingness to participate in environmental management among the local community, particularly households. These results are similar to Sakurai *et al*. (2015) who showed that, local community believed that participation in conservation of green spaces will benefit them through increasing social interaction and collaboration among themselves and the government.

The result in Table 6 shows that, level of education is statistically significant (P = 0.000) and positive (Beta = 0.975) regression coefficient with households' willingness to participate in environmental management. This implies that people with higher level of education are more willing to participate in the management of the environment. These results are in agreement with the observations by Shan (2012) which indicated that respondents with a university and higher degree had stronger willingness to participate than those with an upper secondary education in conservation of urban green spaces in China.

Result in Table 6 also shows that the source of income was statistically significant (P = 0.080) and positive (Beta = 0.114) regression coefficient with households' willingness to participate in environmental management. This also differ with the studies conducted by other researchers like Mwanyoka *et al.* (2006) claim that, respondents whose income depends most on the existing environmental resources will have low support on the particular environmental resource conservation initiatives. This result implies that, respondents whose income generating activities might hinder environmental sustainability are also in supporting policies and activities that have to do with environmental management. Therefore, this information provides a base for fairness during planning and implementation of environmental management initiatives.

However, the result in Table 6 shows perceived cost has negatively influenced households' willingness to participate in environmental management. Perceived cost is statistically significant (P = 0.024) and negative (Beta = -0.137) regression coefficient with households' willingness to participate in environmental management. This implies that, the higher the perceived costs by households, the more unwilling to participate in environmental

management activities. This result is similar to the observations by McConnell and Walls (2005) which indicate that the low the conservation costs, the higher the willingness to participate in conservation programme and vice versa for the local community in Michigan, and Sesabo *et al*. (2006) found that the higher the household's perceived costs associated with MPA establishment, the greater the unwillingness to support its establishment in Tanzania.

The result in Table 6 also shows that, perceived quality is statistically significant (P = 0.640) and negative (Beta = -0.077) regression coefficient with households' willingness to participate in environmental management. This implies that, households or local communities have no concern with the existing quality of the environment and were not motivated to participate in improvement. These finding differs to those reported by Sakurai *et al*. (2015) for Yokohama in Japan local community believed that their participation in management initiative will influence the quality of urban environment.

The last factor which had a negative influence and statistically significant (P = 0.003) and positive (Beta = -0.273) regression coefficient is duration of Residence, with households' willingness to participate in environmental management. This implies that their period of stay in the community doesn't influence their willingness to participate in managing their environment. These results differs from the observations by Mpokigwa *et al.* (2011) which showed that, local community who stayed for longer in the village are more interesting in conserving environmental resources such as forest in Mufindi district, Tanzania.

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Table 6: Coefficients of categorical regression

Predictor variables (Model)	Standardized Coefficients		t	Sig.
	Beta	Std. Error		
Perceived cost	-0.137	0.074	-2.006	0.047
Perceived quality	-0.077	0.167	-0.469	0.640
Perceived benefit	0.108	0.126	1.200	0.233
Respondent's education level	0.975	0.078	6.060	0.000
Duration of Residence	-0.237	0.067	-2.989	0.003
Major source of income	0.114	0.057	1.765	0.080

Conclusion

The study revealed the perceptions of the local community on the existing quality of the environment, management costs and benefits of having a clean environment. The local community believed that it is costs fully to manage the environment, but the management costs could not outweigh the anticipated benefits. Furthermore, the study revealed an unsatisfactory level of participation of the public as there are no adequate structures that allow for more synergy

between the public and the authorities. On the willingness to participate, local communities were willing to participate in environmental management. The factors that significantly influenced their willingness to participate positively were perceived environmental management benefits, level of educational, and sources of income. These results imply that the local community is in a good position to accept appropriate participatory initiatives if and only efforts and resources will be channeled.

Finally, the study recommends intensifying efforts towards raising awareness among the community members about their role in managing their environment, social participation and implementation of rules and regulations for a better and sustainable environment. This will surely improve their participation. The study reveals lack of structures that allows for more synergy between the public and the authorities. Therefore, there is need for the establishment of structures at various communities within the metropolis. This structure should consist of dynamic and trained local committees on the environment and its management strategies so as to enhance effective participation at lower levels. Finally, the research recommends the need for the government to involve the public in environmental management from the planning/decision-making stage to the final implementation and monitoring stage and also encourage the need to increase the overall level of public willingness to participation.

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Reference

Abdullahi, B. M. (2018). Water Supply and Distribution problems in Developing Countries: A Case Study of Jimeta-Yola, Adamawa, Nigeria.

Adebayo, A .A. & Zemba, A. A. (2020). Climate in Adebayo, A. A., Tukur, A. L., and Zemba, A. A. (2020) (2nd edition), Adamawa State in maps, Department of Geography, MAUTech, Yola and Paraclete Publishers, Yola, Nigeria, pp 31-36.

Adefioye, S. A. (2013). Analysis of land use/land cover pattern along the River Benue channel in Adamawa State, Nigeria. Academic Journal of Interdisciplinary Studies, 2,5: 95-107. DOI: 10.5901/ajis.2012. V2n5p95.

Ahmad, H. (2015). Assessment of Community's Participation in Conservation of Open Spaces in Dar Es Salaam City, Tanzania. Retrieved From http://www.suaire.sua.ac.tz/bitstream/handle/123456789/706/AHMAD%20HASSAN.pdf

Al-Mawali H., Al Sharif, A., Abu Rumman, G., & Kerzan, F. (2018). Environmental strategy, environmental management accounting and organizational performance: Evidence from the United Arab Emirates market, journal of environmental accounting and management. Journal of Environmental Accounting and Management 6(2), 105-114.

Aloni, B., Pressman, E., & Karni, L. (2015). The effects of fruit load, defoliation and night temperature on the morphology of pepper flowers and on fruit shape. *Annals of Botany*, *83*(5), 529–534.

Aminu, L. & Ibrahim, N. (2015). Appraisal of Municipal Solid Waste Management (MSWM) in Jimeta-Yola Adamawa state of Nigeria: The need for Innovative, PPP trategies, *Jurnal Teknologi (Sciences & Engineering) 77:15 (2015) 93–102,* www.jurnalteknologi.utm.my | eISSN 2180–3722 |.

Dilys, R., T. David, S. Jessica, W. Matt & E. Joanna (2011). Biodiversity and Poverty: Ten frequently asked questions – Ten policy implications. London: International Institute of Environment and Development.

Faleyimu, O. and Akinyemi, M. (2014). Socio Economic Assessment of Urban Forestry Respondents' income in Okiti Pupa, Ondo State, Nigeria. *Journal of Applied Science in Environmental Management* 18(4): 603 – 607.

Lazaro, M., Shemdoe, R. S. and Emma, L. (2013). Community Perceptions and Willingness to Accept and Execute REDD+ Initiative: The Case of Pugu and Kazimzumbwi Forest Reserves, Tanzania. *Cross Cultural Communication* 9(3): 48 – 54.

Le T. T., Nguyen T. M. A., & Phan, T. T. H. (2019). Environmental management accounting and performance efficiency in the vietnamese construction material industry: A managerial implication for sustainable development. Sustainability, 11, 5152, 1 – 32.

Lindgren, T. and Castel, P. (2008). Open space management in Residential areas - How it is organised and why. *International Journal of Strategic Property Management* 12: 141–160.

Madu, I. A. (2007). Population and environmental problems. In G. E. K. Ofomata and P. O. Phil-Eze (Eds.). Geographical perspectives on environmental problems and management in Nigeria (pp 80-95). Enugu. Jamoe Publisher.

McConnell, V. and Walls, M. (2005). The value of open space: evidence from studies of nonmarket benefits. [http://rff.org/RFF/Documents/RFF-REPORT-Open% 20S paces.pdf] site visited on 18/7/2014**.**

Mpokigwa, M. K., Sangeda, A. Z. and Iddi, S. (2011). Toward communication, education and awareness rising for participatory Forest management: A case study of Mufindi District, Tanzania. *International Journal of Social Forestry* 4(1): 17 – 31.

Mwanyoka, I. R. (2006). Evaluation of Community Participation in Water Resources Management: The Case of the East Usambara Biosphere Reserve to UNESCO mab young scientists program. [http://www.unesco.org/mab/doc/mys/2005/ tanzania.pdf] site visited on 10/6/2015.

Raven, P. H., Berg, L. R. & Hassenshal, D. M. (2010). Environment. New Jersey, Wiley.

Sakurai, R., Kobori, H., Nakamura, M. and Kikuchi, T. (2015). Factors influencing public participation in conservation activities in urban areas: A case study in Yokohama, Japan. *Biological Conservation* 184: 424 – 430.

Sesabo, J. K., Lang, H. and Tol, R. S. J. (2006). *Perceived Attitude and Marine Protected Areas Establishment: Why Households' Characteristics Matters in Coastal Resources Conservation Initiatives in Tanzania.* Working Paper No. 99. Research unit sustainability and global change, Hamburg University. 39pp.

Shan, X. Z. (2012). Attitude and willingness toward participation in decision-making of urban green spaces in China. *Urban Forestry and Urban Greening* 11: 211– 217.

Sharma, R., Pradhan, L., Kumari, M., & Bhattacharya, P. (2020). Assessment of Carbon sequestration potential of tree species in Amity University Campus, Noida. Environmental Sciences Proceedings, 3(52), 1-9

Steriani, M. K. and Soutsas, K. P. (2005). Recreation Demand Model Construction Through the Use of Regression Analysis with Optimal Scaling. *Mediterranean Journal of Economics, Agriculture and Environment* 4(4): 25 – 30.

Sutton, C. M. (2008). Urban Open Spaces: A case study of Msunduzi Municipality, South Africa. Dissertation for Award of MSc. Degree at Queen's University, Kingston, Ontario, Canada. 129pp.

Wendling, Z. A., Emerson, J. W., de Sherbinin, A., Esty, D. C., *et al.* (2020). *2020 Environmental Performance Index.* New Haven, CT: Yale Center for Environmental Law & Policy. epi.yale.edu.

Zemba A. A., Mohammed, M. S. & Ishaku, H .T. (2013). Population density and vegetation fraction as indices for urban land cover classification in Jimeta, Nigeria. International Journal of Environment Ecology, Faily and Urban Studies (IJELFUC) ISSN 2250-0065 Vol. 3 Issue 2, Jun 2013, 79-86 (C) TJPRC pvt. Ltd.