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Full Length Research Paper

Urban road and on-street parking in Niger Delta Region of Yenagoa, Bayelsa State, Nigeria

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This study is a survey of urban roads and on-street parking in Niger Delta Region- Yenagoa, Bayelsa State. The study generated data with the aid of physical measurements, traffic and volumetric counts. Descriptive and inferential statistical tools were utilized for the data analysis. The results showed that road widths were narrow and could not accommodate on-street parking. Tested hypotheses confirmed that the width of roads and the number of parked vehicles were strongly correlated (r=0.73, P<0.01). The volume of traffic counts and the number of parked vehicles were also strongly correlated (r=0.89, P<0.01). The study therefore recommended traffic management techniques such as vehicle parking regulations and control, and the provision of off-street or multi-storey parking facilities.

Key words: Traffic management, road congestion, vehicle parking, parking facility, volumetric count, Niger Delta.

INTRODUCTION

Parking is an essential component of the transportation system. Vehicles must park at every destination (Litman, 2013). With the dramatic increase in automobile use, parking has become an integral part of the modern urban setting and an important land use, and that is why parking spaces are noticed when absent on roads (Manville and Shoup, 2005). The reason why parking in general is an absolute necessity for planning a road network is because urban roads and streets are places where people meet, walk, do their shopping and engage in a diverse array of social and recreational activities (Dumbaugh and Gattis, 2005).

However, on-street parking is associated with urban roads (Still and Simmonds, 2000) and most urban roads in Nigeria cities are narrow, lacking pedestrian lanes and there are cases of double parking alongside illegal street parking along these narrow roads thereby affecting traffic flow in the city. This is due to lack of off-street parking facilities along the transportation routes coupled with inadequate traffic management (Asiyanbola and Akinpelu, 2012; Olurunfemi, 2013).

Parking space for vehicles is a major challenge in cities and has been increasing in both developed and developing countries because it links the urban transportation infrastructure, land administration, land-use management and urban planning (Rodrigue et al., 2016). In some cities, vehicles looking for on-street parking (cruising for parking) have created mobile queue of cars that are waiting for curb vacancies (Shoup, 2006). Shoup (2006) describes cruising as invisible and most transport economists and planners have neglected it as a source of congestion. Car users are more likely to drive

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around and look for an on-street parking space, instead of off-street parking because on-street parking space could be cheap while off-street parking space could be expensive (Shoup, 2006).

In Yenagoa, the capital city of Bayelsa State Nigeria, urban roads are expected to be traffic routes whose primary function is to convey traffic within the urban area and also provide ample spaces, which have already proved insufficient. The indiscriminate parking along streets within the urban core is a serious impediment and there is indication of lack of adequate attention to this aspect of transportation. Therefore, this study surveys urban roads and on-street parking in Yenagoa, Bayelsa State of the Niger Delta region in Nigeria with the objective to assess the adequacy of urban road width to accommodate on-street parking and also assess the impact of on-street parking on urban traffic flow.

THEORETICAL FRAMEWORK

The theoretical framework for this study (Figure 1) is based on urban land-use theories, and location of activities such as residential, commercial, industrial, administrative and recreational centres. The volume and direction of traffic flow to this location of activities varies because of its functions for example commercial, industrial and administrative area will generate more traffic than residential and recreational area. Each type of urban activity has its own mobility requirements that are serviced by urban transport infrastructures (Newman and Kenworthy, 1999).

The location of activities influences the volume and direction of traffic flow thereby resulting in the increase of vehicles on urban roads along those areas where activities are located. Since very vehicle must park at its destination, the demand for parking now comes to play, and this raises the question of adequacy of urban road width to accommodate on-street parking and the impact of on-street parking on urban traffic flow to those location of activities. On the basis of the above discussed it is traffic volume and the number of parked vehicles.

MATERIALS AND METHODS

The study area is Yenagoa capital city of Bayelsa State, Niger Delta region of Nigeria which comprises of 20 communities (Figure 2). The cross-sectional survey design was adopted in this study. This includes descriptive, explanatory and exploratory design to describe each of the many variables necessary for the study. The population for household survey comprises the head of households along the 120 roads within the 20 communities in Yenagoa. Out of the 120 roads in Yenagoa city, only 40 are arterials. To get the required number of roads for sampling in the study, Yamane (2007) simplified formula was used, Equation 1.

$$n = \frac{N}{1+N(e)2}$$

(1)

n = the sample size, N= the population size, e= the level of precision.

By using 20% precision and 40 identified arterial roads in the study area using Equation 1, we have approximately 16 arterial roads. Therefore, by simple random sampling technique sixteen urban roads (arterial roads) were selected from the selected communities. A sampled size of 10,688 parked vehicles was determined through volumetric count from the sixteen randomly selected arterial roads.

Volumetric count and physical measurement survey

Volumetric count was carried out to obtain information on the number of parked vehicles on the street and for two-way traffic volume of the following vehicle types namely: cars, minibus, trucks, sport utility vehicle, pick-ups and vans on a daily basis for sixteen weeks. Physical measurement of road width of the sixteen arterial roads/streets was carried out to obtain the width of each of the roads/streets under study. The count for both parked vehicles and traffic volume was done between the hours of 7 - 9 am, 1 - 3 pm, and 5 - 7 pm on a daily basis for the sample sixteen arterial roads/streets for the period of sixteen weeks. The widths of each roads/streets under study were measured using meter rule as the instrument for measurement (Figure 3).

RESULTS

Variation in the number of parked vehicles and traffic volume count

Table 1 reveals the number of parked vehicles and traffic volume counts per day for one week for all the roads/streets under study. For parked vehicle count, Azikoro, Imgbi, Osiri, Winners and Inec roads had the highest numbers of parked vehicles with 972, 917, 801, 739 and 717, respectively. This is due to the fact that religious worship centres, government and private schools, mechanic workshops activities that are found along such road/street attract people on a daily basic. Measurements on Azikoro, imgbi, Osiri, Ogbia, Green villa roads showed very high volumetric counts. Roads/streets with high number of parked vehicles were also associated with high volumetric counts. Roads/street such as Chief limel oku street, Nepa road, and Aritaeline road with number of parked vehicles 534, 483 and 492 have 2985, 2187 and 2411 volumetric counts respectively had low number of parked vehicles with low number of traffic count. This implies that such road has fewer activities centres that attract more people there.

It was hypothesized that the increase in traffic flow into a street will result to the increase in high number of parked vehicles in that street. Therefore, the number of parked vehicles on each of the roads/streets was run against the traffic count on each roads/street using correlation analysis to check for a relationship between the two variables. Table 2 shows that the Pearson product moment correlation coefficient is significantly strong and positive correlation (r= 0.89, P<0.01) which means that there is a direct relationship between number of parked vehicle and that of traffic count. This result

Urban land use

↓

Location of Activities

↓

| Residential | Commercial area | Administrative | Recreational |

↓

Volume and Direction of traffic flow

| Type of Road | Demand for Parking | Type of Parking |
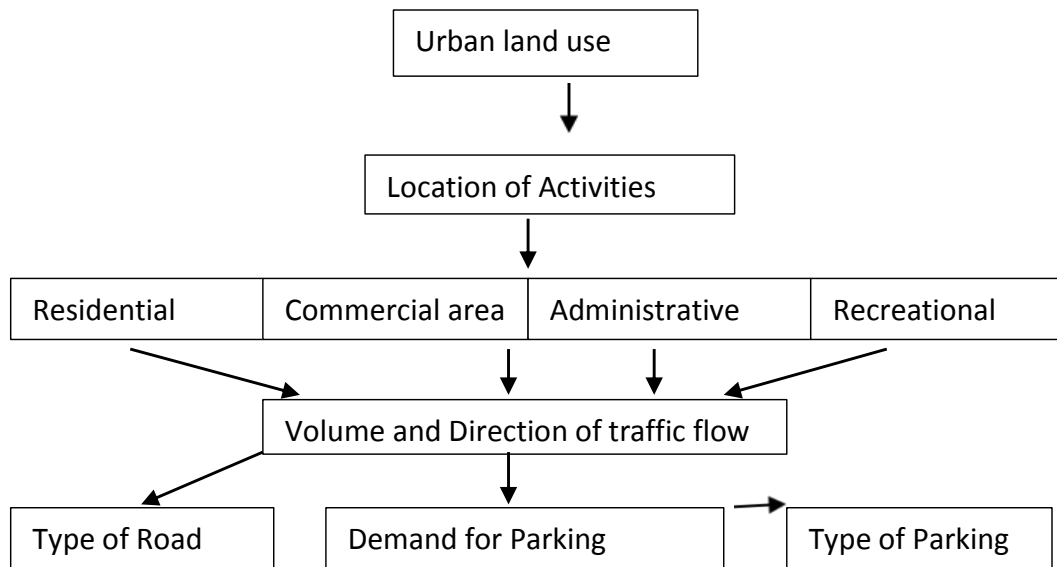
Figure 1. A typology of urban road and on-street parking theoretical framework.
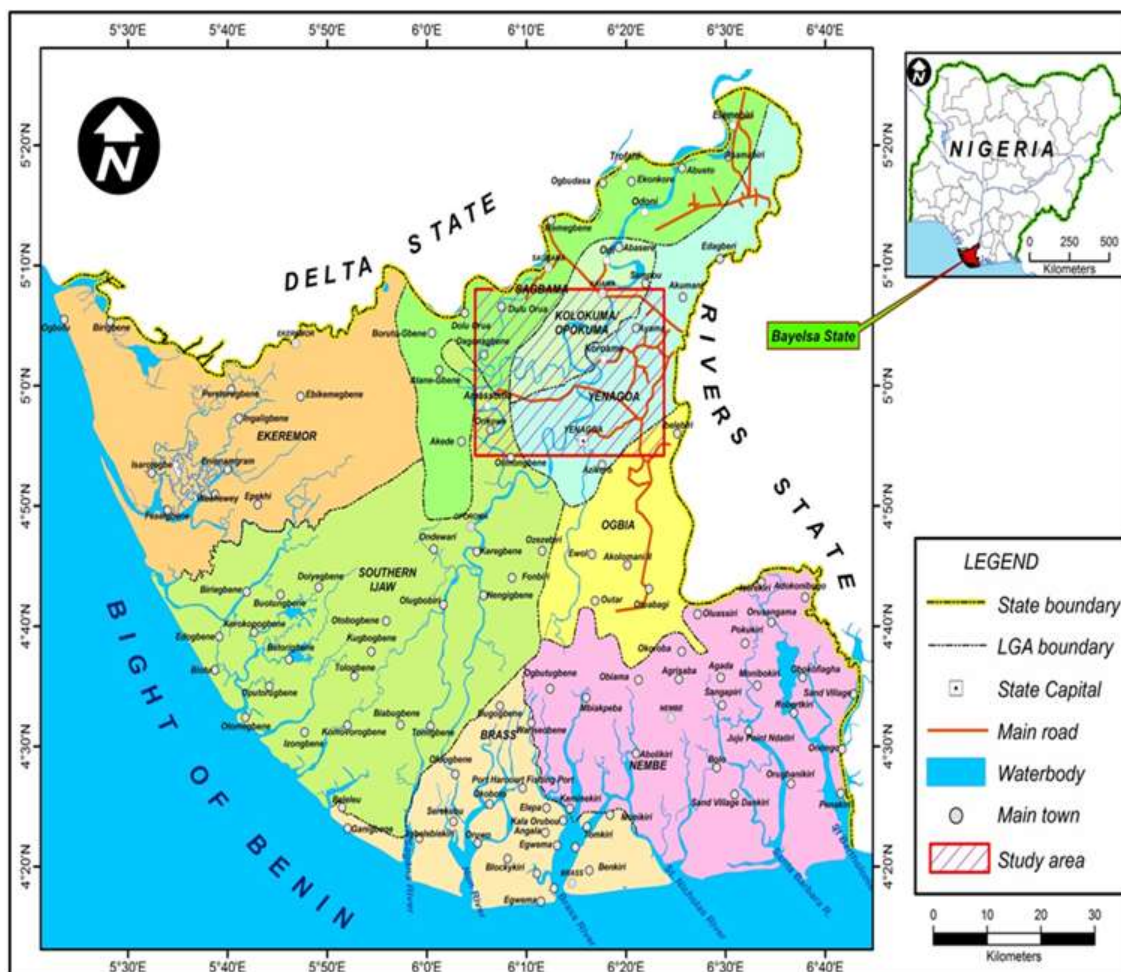
Figure 2. Niger Delta Region showing the study area.
Source: Adapted from a political map of Bayelsa State (Office of the surveyor general February. 2008 edition).

Figure 3. Picture illustrating how the width of roads under study was measured.

Table 1. Number of parked vehicles and traffic volume counts per day over week on roads/streets under study in Yenagoa, Bayesa State, Nigeria.

S/N	Roads/streets under study	Number of parked vehicles/day	Road width (m)*	Traffic volume counts/day
1	Winners academy roads	553	6	4244
2	Chief limel oku street	534	6	2985
3	Winners road	739	5	4120
4	Tenacious road	613	6	3663
5	Ogbia road	663	6	5607
6	Nepa road	483	6	2187
7	Green villa road	660	6	5013
8	Ebi's road	685	6	5774
9	Nikton road	623	6	4352
10	Inec road	717	6	4845
11	Azikoro road	972	15	11822
12	Osiri road	801	8	6513
13	Ebi's mechanic road	616	6	5941
14	Imgbi road	917	9	8055
15	Aritaeline road	492	6	2411
16	Oil mill road	615	8	2146
Mean		668	7	4980

Source: Owota, (2017:58) *Road width meters are to the nearest whole number.

shows that as one variable increases, the other also increases. In other words, roads/streets that have

activities centres which attract people on a daily basis will experience high traffic flow and the demand for parking

Table 2. Correlations of the relationship between number of parked vehicles and traffic volume count.

		Number of parked vehicles	Traffic count
Number of parked vehicles	Pearson Correlation	1	0.89[**]
	Sig. (2-tailed)		0.000
	N	16	16
Traffic count	Pearson Correlation	0.89[**]	1
	Sig. (2-tailed)	0.000	
	N	16	16

**Correlation is significant at the 0.01 level (2-tailed).

Table 3. Correlations of the relationship between the width of road and the number of parked vehicles.

		Number of parked vehicles	Width of Road
Number of parked vehicles	Pearson Correlation	1	0.73[**]
	Sig. (2-tailed)		0.001
	N	16	16
Width of Road	Pearson Correlation	0.73[**]	1
	Sig. (2-tailed)	0.001	
	N	16	16

**Correlation is significant at the 0.01 level (2-tailed).

on such roads/streets will be high and it will be noticed on roads/streets that do not have off-street parking facilities with high number of on-street parking.

Physical measurements

A standard road width of 8 m is derived from vehicular access width of 5.5 m and a parking space of 2.5 m (Mannering et al., 2007; Parking Network, 2016). The width of the roads/streets under study was measured during the physical measurement (Figure 3). From Table 1, ten roads/streets have a width of 6 m while Osiri road and Oil mill road have width of 8 m each. Imgbi road is 9 m wide and Azikoro road which has a double lane is 15 m. Table 1 also reveals that roads/streets which widths are below 8 m do not have enough on-street parking space. Therefore, on-street parking of vehicles will cause traffic congestion. That is why it was hypothesized that there is a direct relationship between the width of roads and the number of parked vehicles.

The Pearson production moment correlation coefficient between the number of parked vehicles on each roads/street and the width of roads/streets, extracted from Table 1, is also significantly strong and positive (r=0.73, P<0.01) as shown in Table 3. Therefore, there is a direct relationship between the width of the roads/streets and the number of parked vehicles. In other

words, as the number of parked vehicles increases the width of the road need to be increase.

DISCUSSION

The findings of the study reveal that roads/streets in most of Yenagoa urban areas are not wide enough to accommodate on-street parking since most of their width is less than 8 m which is the standard width of an urban road. This also revealed that the narrow nature of roads/streets in Yenagoa is as a result of poor construction and design coupled with inadequate set back from structure/building by developers. The findings also reveal the relationship between the width of the roads/streets and the number of parked vehicles, this implies that as the number of parked vehicles increase, the width of roads/streets need to increase to accommodate more parking space. If the width of the roads is not increased there will be problem of parking space as noted by Raji and Waziri (2008) in their research with the findings that says an increase in number of vehicles without adequate infrastructure (off-street parking facilities), has accentuated the problems of traffic congestion, traffic delay, parking problems, accident, and urban land use severance.

Sumaila (2012) carried out a study concerning the current and emerging transportation problems in Nigeria's

Federal Capital Territory and came out with the following results which include non-development of transit ways to major activity centres, emergence of illegal bus stations, poor parking system and absence of pedestrian walkways. This study confirms the result of the presents study. The findings of this study confirm that traffic volume and parked vehicles have a strong positive relationship that leads to traffic congestion. The parking vehicles on the roads/streets reduce the vehicular access for free flow of traffic, vehicles plying that route need to slow down especially when looking for where to park. There is a confirmation to this important finding by Downie (2008) which say that parking is another contributing factor to congestion. It is of the view that parking on the road, which consumes large amount of space has become a land issue that greatly inflates the demand for urban land, causing congestion in cities.

RECOMMENDATION

Owing to the findings of this study the following have been recommended:

(i) The state Government and local Planning Authority should specify and enforce the provision of parking space into any building (commercial, residential or administrative) before approval. This will reduce the currents challenges of on-street parking on urban roads and forestall future occurrences;
(ii) In Yenagoa city, most of the roads/streets are not up standard in width, which creates problem for easy vehicular movement. The government normally proceeds by road expansion whenever there is problem of traffic congestion caused by parked vehicles. For this present study, the adoption of traffic management techniques such as one-way traffic system, vehicles parking regulations and controls including the construction of off-street or multi-storey parking facilities will help in reducing the challenge of on-street parking along the roads/streets in Yenagoa.

Conclusion

In conclusion, the study is to survey urban roads and on-street parking in Yenagoa city, Niger Delta region of Nigeria. On-street parking on urban roads cannot be over emphasized. Decisions concerning parking space availability and the challenges on urban roads have larger implications and this study demonstrates the complexities of the subject.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Environmental sanitation practices in Kuchigworo and Garamajiji along airport road, Abuja

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Good environmental sanitation is a precondition for good health and success in the fight against poverty, hunger and death. It is also central to the human rights and personal dignity of every human being. The study adopted direct field observation, it involved interview and physical assessment. Results were presented in tables and charts, while data analyses were carried using simple percentages and frequencies. The results of findings showed that well/boreholes is a major source of water (75.5%). Also, 13.7% washed toilets daily, while 55.8% washed toilets on alternate days. The study revealed that the dumping of refuse on roadside/open spaces has impacted the environment negatively, some of these impacts are physical nuisance of the solid wastes to the environment, the dumpsites serve as hideouts to rats and other dangerous insects and it emit offensive odor. The study recommended that refuse can be collected regularly to avoid pollution, and there is a need for proper environmental sanitation awareness to educate people on the importance of a clean environment.

Key words: Environment, sanitation, environmental-sanitation, informal, settlements.

INTRODUCTION

Environment means different things from different perspective to different peoples and professionals. The environment is the set of conditions and circumstances affecting people's lives. The environment includes water, air and soil but also the social and economic conditions under which we live (Park, 2011). Globally, poor environmental quality is increasingly recognized as a major threat to social and economic development and even to human survival (Daramola and Olowoporoku, 2016; Acheampong, 2010; UNICEF, 2007; UNICEF, 2006; WHO, 2005). The impacts of environmental deterioration are even more severe on developing countries such as Nigeria; thus, obstructing and destabilizing socio-economic development (Bello, 2007;

Mmom, 2003). The living environment is well polluted owing to social misdemeanor of indiscriminate littering, improper domestic wastewater discharge, and poor sewage disposal. These behaviors promote unsanitary living conditions that result in the breeding of communicable diseases (Daramola and Olowoporoku, 2016; Adimekwe, 2013).

Sanitation is the state of cleanliness of a place, community or people particularly relating to those aspects of human health, including the quality of life determined by physical, biological, social and psychological factors in the environment (Mensah, 2002). It can also be considered as interventions to reduce people's exposure to diseases by providing a clean environment to live and

with measures to break the cycle of disease (Schertenleib, 2005). Nyamwaya (1994) also described sanitation as the proper disposal of human waste that is faeces and urine. It includes keeping the human environment free of harmful substances, which can cause diseases. It could also be seen as the principle and practice of effecting hygienic conditions in the environment to promote public health and welfare, improve quality of life and ensure sustainable environment. Wherever humans gather, their waste also accumulates.

Sanitation is one of the most basic services in human life. Inadequate sanitation is a major cause of disease worldwide and improving environmental sanitation is known to have a significant beneficial impact on health in both household and across communities (Philip, 2010). Environmental sanitation is an essential factor contributing to the health, productivity and welfare of the people. Environmental sanitation comprises the disposal and treatment of human excreta, solid waste and wastewater, control of disease vectors, and provision of washing facilities for personal and domestic hygiene, which work together to form a hygienic environment (Schertenleib, 2005).

Progress in sanitation and improved hygiene has greatly improved health, but many people still have no adequate means of appropriately disposing their wastes. This is a growing nuisance for heavily populated areas with the risk of infectious disease, particularly to vulnerable groups such as the very young, the elderly, and people suffering from diseases who have low resistance. Poorly controlled waste also means daily exposure to an unpleasant environment (Philip, 2010). Environmental sanitation is geared towards the protection and promotion of environment improvement. Sanitation is, thus, that aspect of our environment that may affect the health of the citizen (Uchegbu, 2015). It is averred that there is a strong people-environment relationship. The quality of man's environment is an integral contributor to the overall quality of families and individuals life (Adedeji, 2005). It is expected that when the environmental sanitation standards of a city improve, there will be up-liftment in the living conditions and health security for the inhabitants. Thus, there will be improvement in the quality and aesthetic of the environment at large, thereby making it habitable (Owoeye and Adedeji, 2013).

With globalization, developing nations all over the world are urbanizing at an alarming rate. Although urbanization is the driving force for modernization, economic growth and development, there is increasing concern about the effects of expanding cities, principally on human health, livelihoods and the environment (Philip, 2010). The rapid urbanization process of Abuja has its own consequences such as overcrowded dwellings, informal settlements, pollution, inadequate household facilities and carefree attitude of people toward poor environmental conditions

which have been the precondition for deteriorating environment (Ezeamaka, 2015). The indiscriminate disposal of wastes in the environment is an eyesore in many parts of the Federal Capital Tertiary (FCT) and mostly in informal settlements in Abuja. Parts of the city and mostly the informal settlements are usually dirty. Open spaces, market places, car parks and many other public and private places are littered with refuse. In most cases, gutter or drainages (open or closed) are clogged or totally blocked and many compounds are hemmed in by solid waste, posing health threats to residents, especially children who live and play around the area.

Environmental sanitation, therefore, is conveyed as the control of all the factors in man's physical environment that may exercise deleterious effect on human physical development, health and survival (WHO, 2011; Laoye, 1994; Owoeye and Sogbon, 2012). According to Adeniyi (1994), the environment should be protected through different means such as regular removal of wastes, maintenance of clean surroundings, good food and appropriate personal hygiene. It also involves regular supply of safe water, prevention of pollutions, and provision of decent housing with appropriate facilities essential for human conveniences.

The Abuja Environmental Protection Board (AEPB) is charged with the care of the environment in Abuja. AEPB and other agencies (public and private) are not adequately equipped with sufficient materials required to cope with the increasing challenges of maintaining an environment free of health hazards and problems occasioned by poor sanitation. Several efforts have been made by the AEPB to ensure that the city is always clean. However, the behavior and attitude of the inhabitants towards sanitation do not augment this effort. People do not seem to care about good environmental sanitation practices and constantly litter indiscriminately, without considering the future effects of these poor sanitation practices on their health. Poor environmental sanitation is a serious health risk and an affront to human dignity. Adequate environmental sanitation practices are more than just an inconvenience. It allows users' knowledge and experience to design and manage the facilities and services and to increase the likelihood that the services will be used sustainably. This paper therefore attempts to assess the effects of poor environmental sanitation practices in Abuja with references to informal settlements; Kuchigworo and Garamajiji along the Airport Road. To achieve this, this research assessed the socioeconomic characteristics of the residents; the availability of environmental sanitation facilities, services and also residents' environmental sanitation practices across the study area.

CONCEPTUAL FRAMEWORK

This research adopts the Nightingale's environmental

Figure 1. Nigeria Showing FCT, Abuja.
Source: AGIS (2018).

theory and sustainable development to illustrate relevant subject matters to the study. Nightingale (1860) postulated the environmental theory, which states how certain environmental factors affect health. These factors include pure fresh air, pure water, effective drainage, cleanliness and light. Nightingale (1860) is of the opinion that any deficiency in one or more of these factors could lead to impaired functions of life processes or diminished health. Cleanliness of the environment related directly to disease prevention and aspects of the physical environment influence the social and psychological environments of a person.

The concept of sustainable development is an essential tool necessary for the world to effectively deal with current global problems of the environment and the development process (Owoeye and Adedeji, 2013). Barton (1994) observed that development is not synonymous with destruction, and for the development to be meaningful, it must be sustainable (Okusipe, 1998). Sustainability has become a central theme of environmental, human development and resource use studies. Although the idea of sustainability has many facets, the central idea is that we should use resources in ways that do not diminish them (Menegat, 2002). An important question in environmental studies today is how continuous improvements can be made in human welfare within the limits of the earth's natural resources (Mitchell, 2002). This is because the problem of environmental pollution has assumed a serious and gigantic proportion

and this threatens the very existence of human society (Philip, 2010). Thus, there is dire need for a solution to this problem.

THE STUDY AREA

The Federal Capital Territory (FCT), Abuja falls within Longitudes 6° 45^{1}E and 7° 39^1 East and Latitudes 7° 25^1 N and 9° 20^1 North of the Equator as shown in Figure 1. It covers an area of about 8,000 km^2 (FCDA, 1979).

The study area is bounded to the north by Airport Road, and by Ring Road 2 to the East and South by Abuja Metro-Rail line and to the West by National Park as shown in Figure 2; and is located between Longitudes 7° 25^{1}E and 7° 26^1 East and Latitudes 9° 0^1 N and 9° 2^1 North of the Equator. Kuchigworo and Garamajiji are among the informal settlements in FCC and are located in Phase II of the Abuja Master Plan along the airport road. However, these settlements are considered informal settlement as the development and growth were carried out outside the provisions of the Master Plan (Ezeamaka, 2015). Zubair et al. (2015) acknowledged the sprang up and merge of squatter settlements and squalors have in and around the FCC due to poor housing scheme, city unaffordable rent, and failure of development plan. However, the numeration carried out by the Department of Resettlement and Compensation of the FCDA in 2016 reported a population of 2,101 for
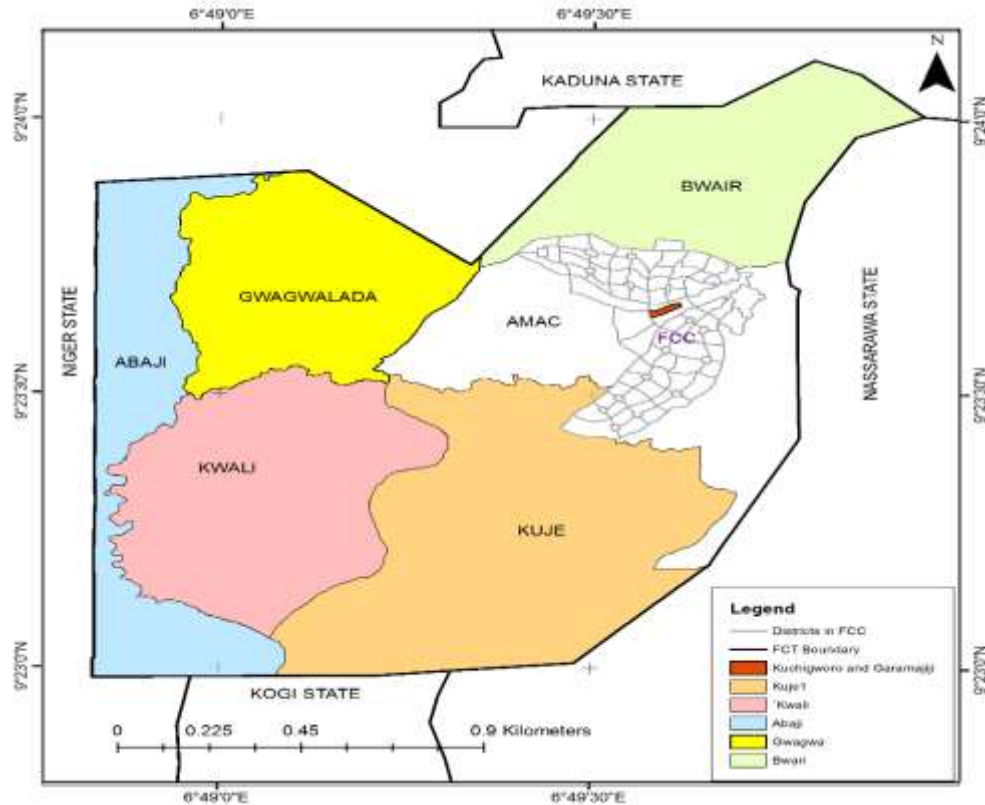
Figure 2. Abuja showing study area.
Source: AGIS (2018).

Kuchigworo and 1,385 for Garamajiji, with 850 households (FCDA, 2017). The land use is mainly residential with some commercial activities in Garamajiji and Kuchigworo satellite settlements along the airport road Abuja.

MATERIALS AND METHODS

Reconnaissance survey was conducted and oral interview was carried out on the residents of the study area. This enabled the researchers to have a better knowledge of the size of the study area. Furthermore, this also enabled the researchers to determine the relevant issues to be addressed in the questionnaire and to ascertain the most appropriate sampling method and suitable statistical analysis to employ. The study adopted direct field observation; it involved interview and physical assessment. The interview questions were administrated on each selected household. The information collected on site formed the major bulk of the data. Other information was obtained from the Abuja Master Plan and maps were from the Abuja Geographic Information Systems (AGIS). The data were presented in tables and charts, while data analysis were carried using simple percentages, and frequencies in Microsoft excel. The exponential model formula ($P_n = P_0 (1 + r/100)^n$) was applied to project for the 2018 population to 3,761 as shown in Table 1. Where P_n is projected population, P_0 is population of the base year, r is population growth rate and n is the number of years, which the population was projected (2018-2016= 2). This study collected socioeconomic data from the selected 233

households by interview. Systematic sampling technique was used to distribute the interview questionnaire by selecting at the interval of four households in each settlement.

RESULTS AND DISCUSSION

This section discusses the profile of the respondents, the available environmental sanitation facilities based on residential characteristics, and environmental sanitation practices in the study area. The social statuses were also considered with respect to the ownership of house of dwelling. This enables the study in understanding the dynamic of the relationship between the people and the environment.

Profile of the Respondents

The profile of the respondents discussed are the gender, age, educational status, marital status, occupation, income status and household size; all these are relative to their settlements which are more residential with very little commercial activities. Table 2 shows the distribution of demographic characteristics of the respondents, 114 respondents (48.9%) were male and 119 respondents

Table 1. Result of Survey Questions.

Settlement	2016 population	2018 population	Selected household
Kuchigworo	2,102	2, 267	140
Garamajiji	1,385	1, 494	93
Total	3,487	3,761	233

Source: Fieldwork (2018).

Table 2. Demographic characteristics of respondents.

Gender	Frequency	(%)	Educational Status	Frequency	(%)
Male	114	48.9	None	2	0.9
			Primary	72	30.9
Female	119	51.1	Secondary	116	49.8
			Tertiary	42	18
Total	233	100	No response	1	0.4
			Total	233	100
Age	**Frequency**	**(%)**	**Occupation**	**Frequency**	**(%)**
19 – 29	23	9.9	Student	17	7.3
30 – 39	139	59.7	Trading	83	35.6
40 – 49	56	24	Civil servant	71	30.5
>50	10	4.3	Others	49	21
No response	5	2.1	No response	13	5.6
Total	233	100%	Total	233	100

Source: Fieldwork (2018).

(51.1%) were female. This is an indication of the role women play in sanitation management in the various households in the study area. Traditionally, women by African culture are saddled with the responsibility of handling environmental sanitation and with greater sensitivity towards environmental issues were fully involved in the study.

This implies that the women are the home managers and they handle the care of the environment. A further probe into this shows that 75.3% of the men do not know much about the management and disposal of waste in their houses. The study discovered that, where many details were required for garbage disposal, men indicated that they knew little and thus either failed to respond to some of the questions or called a woman to ask for specific answers. Age is expected to play a significant role as maturity could affect level of environmental awareness. Schultz et al. (2005) as well as Mayer and Frantz (2004) opined that the higher one's age, the more the person is concerned about the environment. This implies that older residents are expected to be more environmentally conscious than the younger counterparts. 23 respondents representing 9.9% of the respondents were between ages 19-29 years; while 59.7, 24.0, and 4.3% were between ages 30-39 years, 40-49 years, greater than 50 years, respectively. Five respondents

(2.1%) did not respond on age group. Furthermore, a large percentage of the respondents had secondary school as their education status (49.8%) as shown in Table 2. Educational status of the respondents plays a significant role in environmental awareness. Studies such as Olofsson and Öhman (2006) as well as Theodori and Luloff (2002) opined that educated people are more concerned about the environment and place more emphasis on preserving the environment. The study also reveals that eighteen percent of the respondents have tertiary education while 30.9% have primary education and 0.9% no education. However, 0.4 of the respondents did not respond on the status of educational level obtained which may be attributed to shame of status.

The survey also revealed that 35.6% (83) of the respondents are traders and 30.5% (71) are civil servants. About 3% of the respondents are professionals; while 7% are welders and 14% of the respondents have mini-Jobs (tailoring, seller girls, house-help), which make up the 21% of others as shown on Table 2. Further probe reveals 5.65% of the respondents who did not respond are jobless and applicants. The study further revealed that 45.7% of the respondents were married, while 30% were single, 12.9% were widowed, and 11.4% divorced. This implies that a very young and active age group occupies the settlements.
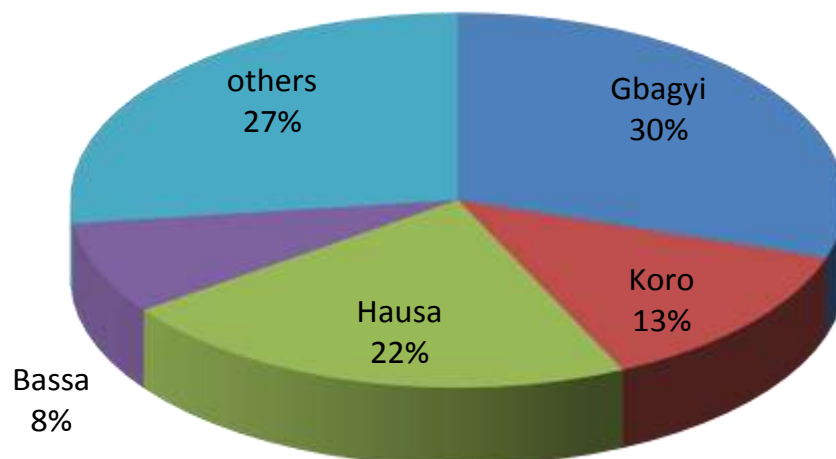
Figure 3. Ethnic Groups of Respondents.
Source: Fieldwork (2018).

On the ethnic groups in settlements, Gbagyi had 30%, followed by Hausa 22% and other tribes such as Igbo, Yoruba and the rest had 27% as shown in Figure 3. This means that the communities shared a good substantial number of other tribes in almost a mix ratio which makes the community to interact well especially in the area of business and social exchange of culture values and norms. Further probe disclosed that most of the Hausas are migrants. The survey further discovers that 52% of the household have a size of 1-5 person per family, 25% have 6-8, and 16% have 9-12 and 6.5% have 13 and above person per family. Thus, due to high cost of living, people in the community tend to control their family birth rate.

Closely related to residents' marital and education status is their income level. The field survey revealed that 47% of the respondents earn average monthly income of below ₦20, 000, 25% earn above ₦20,000 and below ₦50, 000, while 15% earn above ₦50, 000 and 13% has no job. Results also show that 80% of the respondents live in rented houses and 12% are living in personal houses; while 8% do not respond if their houses are personal or rented. Further probe indicate that the house owners do not have any legal title but bought the land from village heads. The implications are that the respondents do not have the economic power to afford land in Abuja.

Environmental sanitation

Information on residents' of environmental sanitation facilities is presented in this section. It is also imperative to consider the environmental sanitation facilities available to residents. This is necessary because availability of facilities may influence resident's environmental sanitation practices.

Water

The major source of water in the study area was well/boreholes (79.8%) and only 3.9% get their water from community tap as shown in Table 3. The community taps (one at each settlement) was constructed by the FCT Administration under the millennium development goals (MDGs) Projects (FCDA, 2017). This prevailing situation does not guarantee quality water supply in the area as the water obtained from these sources are not treated before used. Hence, the people stand a greater risk of serious water borne diseases. Also, further probe into the storage system for water reveals that 75.5% of the respondents store water in closed containers. There is less access to the community water as its centrally located and most residents found out waste of time to walk over 3km to take drinking water. This may be also the reason why most houses have borehole or well.

Toilet

Table 4 reveals that 74 (31.7%) respondent had access to flush toilets, 127 (54.6%) make use of pit latrine. 62.7% of the respondents claimed that they sometimes covered their toilets, while 25.7% never covered their toilets. In addition, 13.7% washed toilets daily while 55.8% washed their toilet on alternate days with the use of Izah (41.6%) and Dettol (37.8%).

Refuse disposal

The state of refuse disposal is generally absurd which emanate from laissez-faire approach of the people towards indiscriminate dumping of refuse and delay in evacuation by the waste management authority. Over

Table 3. Source of Water and Method of Storage.

Variables	Frequency	(%)
Source of water supply		
Community Tap	9	3.9
Well/boreholes	186	79.8
Others	38	16.3
Total	233	100
Method of water storage		
Open containers	14	6.1
Closed containers	176	75.5
Direct from source	24	10.3
Others	15	6.4
No response	4	1.7
Total	233	100

Source: Fieldwork (2018).

Table 4. Toilet Use and Toilet Hygiene Practices by Respondents.

Toilet	Frequency	(%)	Regularity of Washing	Frequency	(%)
Water system	74	31.7	Daily	60	25.8
Pit latrine	127	54.6	Alternate days	130	55.8
Others	30	12.8	Weekly	32	13.7
Total	233	100	Occasionally	11	4.7
			Total	233	100
Toilet covered	**Frequency**	**(%)**	**What do you Use?**	**Frequency**	**(%)**
Always	26	11.2	Dettol	88	37.8
Sometimes	146	62.7	Izah	97	41.6
Never	60	25.7	Bleach	41	17.6
Total	233	100	Others	7	3
			Total	233	100

Source: Fieldwork (2018).

40% dispose their refuse indiscriminately, out of which 30.0% burnt theirs within the residential environment thereby causing air pollution. 24.5% of the respondents dispose theirs in open spaces and drainages without minding the effect. The implications constitute breeding grounds for rodents, flies, mosquitoes, snake and harbour for other dangerous animals as well as cause serious degradation of the environment resulting in a myriad of health hazards (Plates 1 and 2).

In addition, water sources near such waste dumps easily become contaminated and can lead to disease epidemic such as cholera and Lassa fever among others (Table 5).

Furthermore, liquid wastes are poorly managed. Wastewater from bathrooms, laundries and kitchens are not properly disposed; hence, they constitute foul smelling water for breeding of mosquitoes and dirty ponds for pigs and ducks as shown in Plate 3. Most of the residents affirmed to treating malaria fever several times yearly. Figure 4 reveals that 44.2% of the respondents are of the perception that their environment is clean, while 15.9% admitted to having very dirty environment when asked to assess the environmental sanitation condition of their area. Further probe reveals that the respondents have fair understanding of the effects of poorly kept environment. Majority of the respondents believe that the AEPB is not covering their locality and that only the waste disposed along the Airport Road are removed weekly. The study further questioned the respondents on the role of AEPB of which 92% agreed to know that the agency collects money from the traders. The study probes deeper into the environmental health knowledge of the respondents, 55% of the respondents agreed that the environment is not healthy

Plate 1. Refuse littered around the study area.
Source: Fieldwork, 2018.

Plate 2. Open drainage.
Source: Fieldwork, 2018.

but required more personal and community efforts to clean it up. The respondents also agreed that drying and eating are carried out along the dirty environment as shown in Plate 4.

Conclusion

This study assessed the environmental sanitation practices and conditions of Kuchigworo and Garamajiji informal settlements along the airport road in Abuja, Nigeria. The study observed that well/boreholes were the major source of water supply and water was stored mostly using closed containers. Water system was found to be common in the areas. From the study, it can be established that the sanitary conditions of the study area

is moderate although there were still some negative environmental practices like dumping of refuse indiscriminately, which causes pollution and exposure to diseases. In addition, the heaps of refuse that are seen commonly in the study area have a negative impact on the beauty of the city. The study further recommends the following to enhance sanitary conditions in the study area and even Nigeria at large:

(i) The first thing that needs urgent attention is in the area of public enlightenment on environmental and health education. Without grassroots environmental education and enlightenment, enforcement of environmental sanitation laws has very little prospect of success. There is therefore a need to educate the people about the danger of living in disheveled environment, particularly

Plate 3. Open drainage.
Source: Fieldwork, 2018.

Table 5. Refuse disposal.

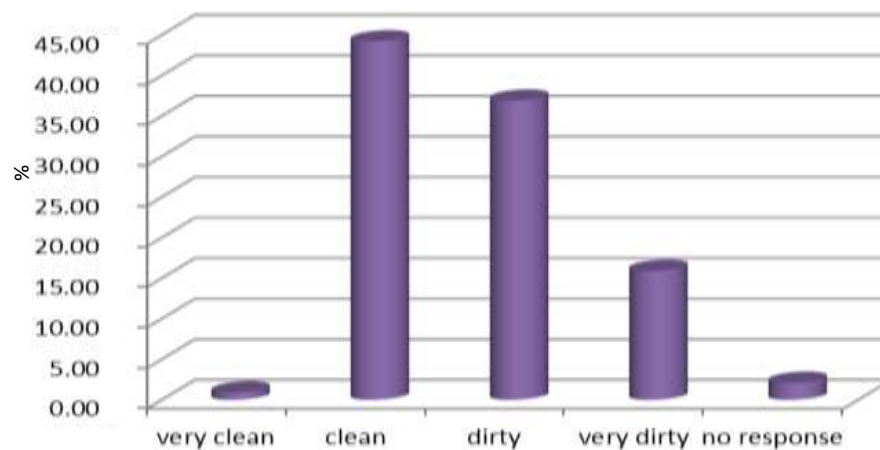| How often is waste collected	Frequency	(%)
Daily	57	24.5
Once a week	108	46.4
Others	68	29.1
Total	233	100
Method of disposal		
Burning/incinerating	70	30.0
Open spaces/roadside	57	24.5
Controlled tipping	65	27.9
Others	41	17.6
Total	233	100

Source: Fieldwork (2018).

Figure 4. Assessment of environmental sanitation condition by respondents.
Source: Fieldwork (2018).

Plate 4. Food packs kept near an open drainage.
Source: Fieldwork, 2018.

Nigeria, where effective and enforceable environmental policies are difficult to implement.

(ii) The government at all levels should continually review and update existing legislation with respect to urban planning, building standards, infrastructure and environmental regulations in order to make them more realistic, attainable and compatible with local conditions.

(iii) Regular collection of garbage by AEPB and other agencies.

(iv) Legislations should enforce a law concerning indiscriminate dumping of refuse at road-sides and non-participation in the regular community sanitation exercise. Defaulters should be made to face the full wrath of the law.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

An assessment of youths' perception and participation on environmental management undertakings: Empirical evidence from Youth Development and Change Package implementation in Southern Ethiopia (SNNPRS)

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The participation of youths is important in the management of environmental problems. Environmental problems such as deforestation, overgrazing, soil erosion, and improper waste disposal are common in most parts of Ethiopia. Inappropriate environmental policies, population growth, climate change, and low level of awareness and less participation of the public are the major factors responsible for the problems. These environmental problems are affecting the overall agricultural productivity of the country necessitating corrective measures. The participation of youths in environmental management activities is important not only because they are the most productive group of society, but also because they constitute a significant number (30 and 28% of the Ethiopian and the Southern Nations Nationalities and Peoples Regional State (SNNPRS) total population, respectively). This article, in line with the Ethiopian Youth Development and Change Package which is a program designed to materialize the Ethiopian Youth Policy (2004), discusses the success achieved and the challenges encountered in the implementation of the program in SNNPRS. The study is based on primary data collected by household survey from 7,630 youths all over the region. Other relevant secondary data were obtained from different sources. The findings have indicated that significant integrated watershed management activities have been undertaken in the region and as a result, some of the degraded lands rehabilitated, and urban greening and sanitation have improved. However, lack of autonomous organizational structure, weak coordination, lower youths' participation and perception regarding their responsibility in managing the environment, lack of follow up for environmental management activities, absence of civic societies working in environmental management in the region are found to be problems to be resolved. Deforestation is found now to be the major environmental problem in the region.

Key words: Southern Nations Nationalities and Peoples Regional State (SNNPRS), environmental degradation, youth participation, environmental management.

INTRODUCTION

Ethiopia, the second most populous country in Africa next to Nigeria with a total population of 96 million, is a country endowed with enormous natural resources and biodiversity that are the results of its diverse agro ecology (Asefa, 2003; Negash and Niehof, 2004). However, because of inappropriate polices, poor agricultural practices, and environmental and demographic changes, the country has been experiencing environment

degradation of different forms among which are deforestation, soil erosion, over grazing, improper waste disposal, and loss of biodiversity (Dejene, 1990; Tedla and Lemma, 1997, 1999; Taddese, 2001; Bewket, 2003b; Haile, 2004; Birhanu, 2014; Bekele and Hailemariam, 2010). The highlands of Ethiopia, constituting nearly 45% of the total area of the country and a place where 80% of the Ethiopian population resides, are becoming less productive because of overgrazing, deforestation, population growth, soil erosion and climate change (Keeley and Scoones, 2000; Zeleke, 2000; Holden and Shiferaw, 2004; Hurni et al., 2005; Ludi, 2004)

These environmental problems are not without consequences. They are affecting environmental productivity as well as the socioeconomic development of the country (Leach and Mearns, 1996; Devereux and Sussex, 2000; Berry, 2003; Birhanu, 2014; Amsalu and Gebremichael, 2010). Though the actual rates of soil erosion and deforestation are debatable, there is an agreement that both are happening on a large scale in most parts of the country. The former one is believed to have affected 82% of the country; and the forest cover of the country which was nearly 40% at the beginning of the 20th century has now declined to less than 3% (Tedla and Lemma, 1997; Bewket, 2002; Feoli et al., 2002; Hurni et al., 2005; Kristen, 2007; Gessesse, 2010).

The Ethiopian environmental concern came to government attention during the 1950s when the government responded by designing policies and establishing different institutions to deal with the mushrooming environmental problems (Hoben, 1996; Tedla and Lemma, 1997). A case in point was the Ethiopian Wildlife Conservation Organization (EWCO) which was established in 1965. Environmental management policy was also formulated though it did not acknowledge traditional land uses and had limited success in achieving the intended goals (Pausewang, 2002).

The socialist Derg (1976-1991) also attempted to introduce different programs to rehabilitate the environment through reforestation, terracing, and other methods mainly in the 1980s though the rehabilitation policies opted for were coercive, top-down, and hence detested by many. Despite the aforementioned limitations, the forest cover of the country was temporarily improved, but was not sustained after the downfall of the regime mainly because the policy was coercive (Leach and Mearns, 1996; Keeley and Scoones, 2000).

The incumbent regime, after coming to power in 1991, responded to the environmental problems of the country by launching a new National Environmental Policy (1997) which opts for enhancing the quality of life of its people by promoting sustainable development through environmental management and the wise use of its natural resources. Though the policy has been criticized for its failure to be translated into practical measures, and for its non-participatory approach by many scholars (Keeley and Scoones, 2000; Rahmato, 2008), some of its goals include: preserving essential ecological processes, life support systems, and biological diversity; encouraging sustainable exploitation of nonrenewable resources; improving the environment of human settlements; and promoting understanding of the essential linkages between environment and development (EPA,1997). Despite the critics, various programs have been implemented based on the policy including reforestation, construction of erosion control structures, integrated watershed management and the Productive Safety Net Program (PSNP) (Bewket, 2003a; Sharp et al., 2006; Damtie, 2010).

Despite the pressing nature of environmental problems to the overall socioeconomic development of the country and the vital roles that the youths can play in environmental management activities, little empirical research has been done in the domain of youths' participation in environmental management issues in the country and in the Southern Nations Nationalities and Peoples Region (SNNPR). Therefore, the overall objective of this study is to assess the perception and the roles of youths in environmental management activities since 2005 in Southern Nations Nationalities and Peoples Regional State (SNNPRS).

Overview of environmental management policy in Ethiopia

The 1995 Ethiopian constitution in its article 44(1) stated that '' all citizens have the right to a clean and healthy environment.'' Based on the constitutional provision, different national polices have been formulated and international conventions signed to manage the environment, and to use its resources for overall development.

In the last two decades, the Ethiopian Government has put in place a number of policies, strategies and laws that are designed to support sustainable development taking into consideration environmental management as one of its pillars (Lemenih and Woldemariam, 2010). Some of these polices and strategies include: The Conservation Strategy of Ethiopia (April 1997), The Environment Policy of Ethiopia (April 1997), The National Agricultural Research Policy and Strategy (October 1993), The National Policy on Disaster Prevention and Management (1997), The National Policy on Biodiversity Conservation and Research (1998), National Biodiversity Strategy and Action Plan (2005), Development, Conservation and

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Utilization of Wildlife Proclamation (No. 541/2007), Forest Development, Conservation and Utilization Policy (2007), Forest Development, Conservation and Utilization Proclamation No 542/2007, Environmental Impact Assessment Proclamation 299/2002, and Pollution Control Proclamation 300/2002.

Ethiopia is also a signatory to a number of international agreements that have implications on the sustainable development efforts of the country. The country has signed and/or ratified many of the international conventions and protocols. The United Nations Framework Convention on Climate Change (UNFCCC, 1994) was signed by Ethiopia during the 1992 Rio Conference in Brazil and was ratified in May 1994. So as to implement the convention and provide a legal basis for its implementation, the Framework Convention on Climate Change Proclamation 97/1994 was put in place.

The participation of all stakeholders, including the youths, is important for the successful implementation of policies and strategies including the environmental management policy and affiliated packages. Considering the significant role of youths in the overall development of the country, and recognizing their unbalanced representation in most sectors of development, the Ethiopian Government has designed the Ethiopian Youth Policy (2004). In order to materialize the policy, a Youth Development Package was also developed in 2005. The major goal of the policy and the package among others include: enabling the youths to play an active role in building a democratic society and good governance, enabling the youths to benefit from the overall development of the country as well as involving the youths in social, environmental and economic development of the country.

The Growth and Transformation Plan (GTP) 2010/2011-2014/2015 has also revealed a policy direction for the youths by addressing their needs through boosting their participation to ensure that they benefit from the socio-economic development in the country. Though encouraging progress is made regarding the issuing of environmental laws, lack of commitment to implement some of the laws, the absence of a comprehensive land use plan, emphasis on the potential economic values of the environment at the expense of other aspects, and considering the land as an 'infinite resource' are the major constraints in the institutional and legal frameworks.

As one of the regional states of the FDRE, the SNNPRS has been implementing the Youth Development and Change Package since 2007. This study is, therefore, aimed at assessing the successes or otherwise of the package in this region.

MATERIALS AND METHODS

Brief description of study area

The SNNPRS, is one of the nine regional states that constitute the Federal Democratic Republic of Ethiopia (FDRE). The region is located in the southern part of the country with astronomical location of 4° 43' and 8° 58' North latitude and 34° 88' and 39° 14' East longitude with a total area of 113,539 square kilometers. The region shares the boundary with Oromia region in the north, east and southeast. SNNPRS also shares international boundaries with Kenya in the South, and with South Sudan in the southwest. Administratively, the region is divided into 14 zones, one city administration and 4 special woredas/districts. These include Sidama, Hadiya Gedio, Silte, Gurage, Kambata Tembaro, Gamo Goffa, South Omo, Bench Maji, Kafa, Sheka, Dawro, Wolyta and Segen people's zones and Basketo, Yem, Konta, and Halaba special woredas. Hawassa City, one of the fastest growing cities in Ethiopia, is the administrative seat of Sidama Zone, and the region (BoFED, 2006). The region is the mosaic of diverse ethnic groups with 56 nations and nationalities living together.

Data and methods

The study used both primary and secondary data. The primary data were collected from youth (15-29 years of age based on the Ethiopian Youth Policy, 2004) by using household survey and focus group discussions. A total of randomly selected 7,630 youth from the 14 zones, 4 special woreds/ districts and one city administration were included in the survey from all over the region. A structured questionnaire was distributed to the youths and required data were collected. The secondary data are collected from reports, policy documents and other studies in the area. The present study adopted a mixed method approach. The primary data were thus generated using both qualitative and quantitative procedures while secondary data were gathered from official government statistical reports and administrative data. Interpretations and analyses of primary and secondary data were undertaken using qualitative and quantitative analyses.

RESULTS AND DISCUSSION

This part of the study focuses on the background of the respondents, the perception of the youths concerning environmental management, the status of environmental management activities, youths' participation, and achievements and challenges in environmental management in the region with emphasis on the role of youths.

Respondents' background

The respondents included in the study are in the age range (15-29) who are designated as youths by the Ethiopian Youth Policy (2004) (Table 1).

Of the total respondents, 45% were females and the remaining 56% were males. Regarding their academic background, 7% of the respondents were illiterate, and 64% of them were unmarried and nearly 82% of the respondents live in rural area.

Youths' perception about the responsibility of environmental management

Youths constitute 30 and 28% of the Ethiopian and the

Table 1. Socio-demographic profiles of the study participants.

Socio-demographic variable	Categories	N (%)	Chi-square
Age	15-30	7633 (99.7)	
	31-45	17 (0.2)	15190.26 (2)
	46 >=	2 (0.001)	
Gender	Female	3503 (45.1)	
	Male	4263 (54.9)	74.38 (1)
Marital status	Never married	4982 (64.4)	
	Married	2596 (33.7)	
	Divorced	106 (1.4)	8660.20 (3)
	Widow/er	29 (0.4)	
Education	Illiterate	542 (7)	
	ANFE	184 (2.4)	
	Primary	3563 (46.1)	
	Secondary	2609 (33.8)	7997.94 (5)
	TVET Diploma	612 (7.9)	
	Degree & above	217 (2.8)	
Place of residence	Rural	5687 (81.9	
	Urban	1258 (18.1)	
Employment status	Farmer	3835 (50.3)	
	Employed	3835 (5.83)	
	Merchant	3835 (11.25)	
	SMEs	3835 (3.14)	5119.73 (5)
	Unemployed	3835 (23.3	
	Others	3835 (5.8)	

Source: Household Survey (2015).

SNNPRS population, respectively. It is strongly believed that youths play a significant role in the overall socio-economic development of the region and country. Thus, environmental management and other development endeavors need to encourage youths to participate. The participation of the youths in environmental management is partly a function of their perception on who is responsible for managing the environment. Hence, identifying their perception regarding the responsibility of managing the environment is important.

Regarding the primary responsibility of taking care of the surrounding environment, the youth have different perceptions. Of the 7,617 youth respondents included in the study, 55% (n=4174) believe that all stakeholders are responsible for managing the environment. Some 20% (n=1524) of the respondents perceive that parents are responsible, 19% (n=1462) believe that government bodies are responsible, 6% (n=457) of the respondents believe that conserving the environment is the responsibility of youths. From the responses, it is possible to understand that most of the youths in the region do not consider themselves as the main caretaker of the environment (Table 2).

The perception of the youths on the main environmental problems in their surroundings is also different. Of 7,711 respondents involved regarding the major environmental problems in their surroundings, 39% (n=2977) of them believe that their environment has no major problem. Some 30% (n=2346) of the respondents believe that deforestation is the major environmental problem in their environment, whereas 13% (n=1007) and 18% (1381) respectively of the respondents believe that poor waste disposal and soil erosion are the major environmental problems, respectively.

Environmental management activities and youth participation

Since the implementation of the youth's development

Table 2. Youths' perception on who is responsible for managing environment.

Who is responsible for managing the environment?	Yes [N (%)]	No [N (%)]
All stakeholders	4174 (55)	3443 (45)
Parents	1524 (20)	6093 (80)
Government	1462 (19)	6155 (81)
The youth	457 (6)	7160 (94)

Source: Household Survey (2015).

Table 3. The extent of youths' participation in managing environment activities.

How often do you participate in environmental management activities?	Yes [N (%)]	No [N (%)]
Occasionally	3252 (44)	4209 (56)
Always	2942 (39)	4519 (61)
Do not participate	1118 (15)	6343 (85)
No such activities	149 (2)	7312 (98)

Source: Household Survey (2015).

package in 2008, various environmental management activities are carried by the youths of the region. The major environmental management activities undertaken include: environmental sanitation, environmental greening, afforestation, integrated watershed management, and rehabilitation of mountain and degraded lands.

Respondents (85 and 80%) agree that afforestation and watershed management, respectively, are carried out in their environment. Some 76 and 71% of the respondents also responded positively respectively on the activities of environmental greening and environmental sanitation. Regarding rehabilitating mountains and degraded lands, relatively fewer positive responses are reported. Some 65% of the respondents agree that activities of rehabilitating degraded land was carried out in their surrounding and the remaining 35% of the respondents responded negatively.

The participation of the youths on environmental management activities on a regular basis is very much limited. When we see the participation of the youths in environmental management activities of the region, of 7455 youths asked about their habit of participation in environmental management activities, only 39% (n=2942) reported regular participation. Some 44 (n=3252) reported that they participate occasionally. The remaining 15% (n=1139) responded that they did not participate in any environmental management activities (Table 3).

The reasons for less participation in environmental management activities, based on focus group discussion with the youths, are mainly associated with their perception on the responsibility of protecting the environment, lack of training and the support given to the youth by different stakeholders. Of the 7464 youths asked whether they had received training in environmental management or not, only 45% (n=3375)

reported that they were trained regarding environmental management activities. The remaining 55% (n= 4089) reported that they were never trained about environmental management.

Absence of civic societies and NGOs working on environmental management in the region also constrained the participation of the youths in environmental management undertakings. Civil societies and environmental activists play a significant role in environmental management activities. However, of the 7431 youths asked about the presence of environmental activists and civil societies working on environmental management activities in their area, only 36% (n= 2685) of them reported the presence of such groups in their environment. The remaining 64% (n= 4746) reported that there are no civil society groups working on environmental issues.

Achievements and challenges in environmental management activities

Since the implementation of the Youth Development Package in the region, many environmental management activities have been carried out. The major ones include: environmental sanitation, environmental greening, afforestation, integrated watershed management; and mountain and degraded lands rehabilitation. Because of the aforementioned activities, the youths responding to this study reported that improvements are noticed on some of the environmental issues. Of 6,728 respondents asked about improvements in environmental greening and hygiene, 74% (n=4956) agreed that environmental aesthetic value has improved. The remaining 26%(n=1772) responded negatively.

Table 4. Distribution of the youth by their response on achievements because of environmental management.

Major achievements of environmental management	Yes [N (%)]	No [N (%)]	Total
Change in ecosystem	4788 (71)	1912 (29)	6700 (100)
Environmental beauty and aesthetic value increased	4956 (74)	1772 (26)	6728 (100)
Agricultural Productivity increased	4894 (73)	1777 (27)	6671 (100)

Source: Household Survey (2015).

Regarding improvements in agricultural productivity because of environmental management activities, 73% (n=4894) agree that there has been improvement in agricultural productivity because of environmental management activities carried out. Some 71% (n=4788) respondents believe that there has been improvement in the overall ecosystem of their surroundings due to the management activities.

There have been several challenges in practicing environmental management activities in the region. The major ones identified by this study include: lack of coordination, shortage of resources to do the activities, and lack of continuity of the work (Table 4).

A total of 7,594 youths responded to the major challenges of environmental management activities. Out of this number, 34% (n=2603) reported that they faced no problem in protecting their environment. This indicated that some activities had been done in supporting and encouraging the youths of the region to engage themselves in environmental management activities. The remaining 66% of the respondents reported problems in conducting management activities.

Of the total respondents, 32% (n=2395) reported that lack of continuity is a major problem in environmental management activities. This indicates that most of the time environmental management activities are being done in the form of a campaign. However, there is a need to ensure sustainability of the activities because activities like planting trees, cleaning wastes, watershed management and rehabilitation of degraded land require continuous follow ups to be more effective. The other important problem identified in relation to Afforestation and watershed management is lack of follow ups for the seedlings planted. The FGD participants in different zones informed the survey that only half of what is planted usually grows up. This is more serious for seedlings planted in communal lands.

Lack of coordination is also reported as a major challenge in performing environmental management activities in the region. Of the 7,594 youths responded to the major challenges in performing environmental management activities, 21% (n= 1627) reported that lack of coordination is a major problem in doing environmental management activities. Some 13% (n=969) reported lack of resources as a major problem in doing the management activities.

Despite encouraging progress of environmental management activities in the region in the areas of afforestation, watershed management, and environmental sanitation and greening, there are some gaps and challenges identified by this study. There is no autonomous environmental management institution in the region that coordinates environmental management activities like other regional states of the country. The environmental department that is accountable to the Bureau of agriculture is not capable of leading environmental management undertaking because of its structural and resources capacity.

The perception of the youths on the responsibility of conserving the environment is found to be less than expected. Nearly 40% of the youths involved in this study believe that the primary responsibility of protecting their environment is a mandate of their parents and the government. Thus, extensive environmental management awareness creation needs to be done to boost the perception of the youth in managing their environment. Despite the environmental management activities carried out in the region, deforestation is reported to be the major environmental management problem followed by soil erosion, and poor waste disposal. Besides, compared with other environmental management activities (afforestation, watershed management, environmental sanitation, and greening) relatively less work was done in rehabilitating degraded lands in the mountains.

The participation of the youths in environmental management activities is found to be lower. Only 39% of the respondents participated regularly in environmental management activities. The remaining 44 and 15% of the respondents reported that they participated occasionally and never participated at all respectively. Lack of training on the issues of environmental management activities are reported as another gap in environmental management in the region. Only 45% of the youths reported that they got training on the issues; the remaining 55% of the respondents did not get any training. Training all the concerned stakeholders in general and the youths in particular in the area of environmental management will be pivotal for environmental management undertakings in the study area.

Absence of civil societies and environmental activists is identified as another gap in engaging the youth in environmental management activities. Civil society groups and environmental activists working on environmental management activities need to be

supported because they can easily mobilize the youth in environmental management activities. Compared with youth associations and government bodies, the parents, religious and community leaders are reported to be relatively less aware of environmental management activities. Lack of continuity of environmental management activities is reported as the main challenge in environmental management activities followed by weak coordination and lack of resources to do the activities. Moreover, there is little follow up for the trees planted. Environmental management activities should be carried out continuously and there should be a separate structure that coordinates the management activities and sufficient resources need to be allocated for environmental management activities.

Conclusion

Ethiopia is a country endowed with rich and diverse natural resources because of its diverse agroecology. These resources have been underutilized and subjected to mismanagement because of the lack of appropriate policy, low awareness concerning its management, and also because of various environmental problems. The common environmental problems in the country and in the region include: deforestation, soil erosion, improper waste disposal, population growth, and climate change. These environmental problems are affecting the overall agricultural productivity of most of the rural area and thereby deteriorating the food insecurity issue in rural areas.

The incumbent Ethiopian Government, so as to manage the existing environmental problems and minimize their impact on the overall growth of the nation, has been working on various policy and institutional issues in the last two decades. Environmental management activities need to involve the youth of the nation and the SNNPR state because they constitute nearly one third of the total population and they are also the most productive group of society. Taking into consideration the role of youth in the overall development of the country and recognizing their unbalanced representation in most sectors of the development, the national government has designed the National Youth Policy (2004). To activate the policy, the Youth Development and Change Package was designed and is being implemented since 2005. Some of the major goals stipulated in the policy and the package include: enabling the youth to play an active role in building a democratic society and good governance, benefiting the youth from the overall development of the country as well as involving the youth in social, environmental and economic development of the country.

In the SNNPRS region, the implementation of the package has resulted in some achievements and has had this study, integrated watershed management activities have been undertaken in different parts of the region with the participation of the community, including the youths and as a result some of the degraded lands have been rehabilitated and their productivity has increased. Significant work has been done in the areas of urban greening and sanitation which enabled some of the towns to be greener and relatively clean. However, there is weak coordination among the stakeholders both vertically and horizontally in carrying out the management activities. There is no autonomous organizational structure at regional and lower levels that can lead to the management activities. The existing office of environmental management is weak in capacity and accountable to the regional bureau of Agriculture. Thus, the government needs to establish an autonomous institution that coordinates environmental management activities. Most of the youths are not participating in environmental management undertakings regularly. Only 39% of the respondents participated regularly in environmental management activities. Lower youths' participation and perception regarding their responsibility in managing the environment is mainly attributed to lack of training on environmental management activities, and absence of civic societies working in the area. The government should work on improving the perception of the youths on environmental management undertaking and need to work with civic societies on the area of environmental management. Most environmental management activities are carried out in the form of campaigns and they lack follow up and hence their sustainability is in doubt. The government and all concerned stakeholders should monitor and support environmental management activities in a continuous manner to ensure sustainability of the outcomes. Despite the environmental management activities in the region, deforestation is found to be the major environmental problem in the region followed by soil erosion and improper waste disposal. Besides, compared with other environmental management activities (afforestation, watershed management, environmental sanitation, and greening) relatively less work was done in rehabilitating degraded lands in the mountains.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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