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# PEOPLE'S PARTICIPATION IN ENVIRONMENTAL SANITATION IN NASARAWA TOWN, NASARAWA LOCAL GOVERNMENT AREA OF NASARAWA STATE, NIGERIA

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**Abstract**

Sanitation is an integral part of environmental protection which ensures a productive life. The contamination of the environment by wastes can be prevented by adequate environmental sanitation practices. This study examined people's participation in environmental sanitation in Nasarawa town, Nasarawa Local Government Area, Nasarawa State, Nigeria. The study was guided by five objectives. A systematic stratified sampling technique was employed to source data from 146 respondents from five areas in Nasarawa town. The data was analyzed using simple descriptive statistics and one way Anova statistics. The findings reveals that the most rated environmental problem was poor wate disposal (93.7%) followed by poor sewage disposal (97.2%). Most (76.3%) of the respondents participate daily in cleaning their homes and environment and observe it willingly [redacted] (68.2%). Only 27.1% of the respondents evacuate their refuse daily while dumping of wastes in gutters and streets was reported by 79.1% of the respondents. Majority (69.5%) were aware of the monthly environmental sanitation exercise and participation in the exercise differed significantly (F=9.076, df=5, P=0.000) among the study areas. Majority (77.3%) reported that they had access to environment facilities while water was available to 55.4% of the respondents and the

**Keywords:** Sanitation, Environment, People Participation, Waste, Nasarawa



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major source of water was tap water (55.4.%).Most (66.8%) of the respondents had toilets in their homes with majority of the study participants have flush toilets. Majority (66.9%) do not have drains in their homes with 23.3% having open drains. The study participants use different containers to store waste with Majority (68.1%) do not have waste storage facilities in their homes. It is concluded that the problem of poor sewage disposal and poor waste disposal exists in the study area and the study participants demonstrated that they understood the link between the environment and health. Government should enforce existing environmental sanitation regulations to sanction defaulters and house owners without basic environmental sanitation facilities.

## Introduction

In this modern concept, environment includes not only water, air and soil but also the social and economic conditions under which we live (Park, 2011). The key to man's health lies largely in his environment. Much of man's ill-health can be traced to adverse environmental factors such as water, soil and air pollution, poor housing conditions, presence of animal reservoir and insect vectors of diseases which pose threats to man's health. Often, man is responsible for the pollution of his environment through urbanization, industrialization and other human activities.

According to the National Sanitation Foundation of United State of America, the word sanitation is defined as a way of life that is expressed in the clean home, farm, business, neighborhoods and community (Park 2011). Also, World Health Organization (WHO) defines sanitation as the provision of facilities and service for the safe disposal of human urine and faeces (UNICEF AND WHO 2012). Hence, inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities.

The word 'sanitation' also refers to the maintenance of hygienic conditions through services such as garbage collection and waste-water disposal. In addition, environmental sanitation according to World Health Organization is the control of all those factors in man's physical environment which exercise or may exercise a deleterious effect on his physical development, health and survival. It could also be seen as the principle and practice of effecting healthful and hygienic conditions



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in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment (Alabi, 2010). The essential components of environmental sanitation include: solid waste management; medical waste management; excreta and sewage management; food sanitation; sanitary inspection of premises; market and abattoir sanitation; adequate potable water supply; school sanitation; pest and vector control; management of urban drainage; control of reared and stray animals; disposal of the dead animals; weed and vegetation control; hygiene education and promotion.

Community participation is also a continuous two-way process which involves promoting full public understanding of processes and mechanisms through which environmental problems are investigated and solved (Mustapha and Adamu, 2011).

**Statement of the Research Problem**

Sanitation is one of the environmental management issues that exist in the urban areas. It is one of the most basic services in human life. Thus, improving environmental sanitation is known to have positive impact on health of both households and the entire community. Coupled with the high population growth is the lack of institutional capacity to formulate and adopt strategies to ensure proper environmental management in Nasarawa town. The use of plastic bags as packages for drinking water and other wares, uncontrolled disposal of waste, other package food and can drinks and the indiscriminate disposal of these materials in the environment is an eye ore in Nasarawa town (NAPDA, 2010). Most part of the town is almost always dirty. Open spaces, market places, car parks, streets, major roads and many other public and private places are littered with refuse. In most cases, drains are clogged or totally blocked and many compounds are hemmed in by solid waste, posing health threats to the inhabitants and particularly children who play and live around the area.

Several efforts have been made particularly by Nasarawa Area Planning and Development Agency (NAPDA) and Nasarawa Urban Development Board (NUDB) to ensure that the town is always clean. It has engaged the services of individuals and in some cases the private waste management companies to ensure that streets are always cleaned and also to ensure that dumpsters are emptied regularly.


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Despite this, however, the behavior and attitude of the inhabitants towards sanitation is not augmenting and complementing this effort. The inhabitants 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. Thus, if appropriate efforts are not made to halt such practices, the city will continue to spend the greater part of her resources in an attempt to ensure good environmental sanitation without success. Poor environmental sanitation is a serious health risk and an affront to human dignity. There are many threats of pollution where there are no sanitation systems or where they do not work properly.

**Research Questions**

The research intends to provide answers to the following questions:

i. What are the current environmental problems in Nasarawa town?
ii. What are the people's attitude and participation towards environmental sanitation in Nasarawa town?
iii. What are the environmental sanitation practices in Nasarawa town?
iv. What are environmental sanitation facilities available in Nasarawa town?

**Objectives of the Study**

The aim of this research is to examine the participation of people of Nasarawa town in environmental sanitation, to be enabled to suggest policies that will ameliorate the problem and ensure a safe and healthy environment. And the study is set to achieve the following specific objectives:

i. To examine the socio-economic characteristics of the respondents in the study area.
ii. To examine the current environmental problems in Nasarawa town.
iii. To examine the attitude and participation of the people of Nasarawa town in environmental sanitation.
iv. To examine the sanitation facilities available in Nasarawa town.
v. To examine the environmental sanitation practices in Nasarawa town.

**Significance of the Study**

This study will educate the people of Nasarawa town and general public on the concept of environmental sanitation and the need to maintain a healthy and safe

environment. It will enlighten the people of Nasarawa town and the public on effective management of sanitary condition for improvement of public health. It will also serve as a tool for promoting health, sustainable environment where people will act as advocate for health through addressing political, economic, social, cultural and environmental problems. The finding will also further help environmental planners and the government of Nasarawa to formulate policies and strengthen the existing laws that will enhance environmental awareness and practices for sustainable development in Nasarawa town, Nasarawa state and the country at large.

This study will also help government to have new information on environmental sanitation on the lives of the people in Nasarawa town. Considering the fact that environmental sanitation is of vital importance in the lives of people or individuals. Furthermore, the study will help the people to acquire relevant skill towards environmental sanitation. And enlighten the general public on the adequacy of the equipment and facilities for environmental sanitation. It will also reveal the sanitary conditions of Nasarawa town which in returned will assist in making the state government discover the areas for improvement.

## Conceptual Framework

### Environmental Sanitation Policy and Government Institutions

Environmental sanitation management necessarily requires the assignment of responsibilities to specialized institutions involved in overseeing the use of natural resources. As such, a number of institutions have been established to guide and co-ordinate all activities involving the appropriation of natural resources.

Benneh (2007) argues that, the successful management of environmental resources in any country depends to a large extent on the effectiveness of the institutional arrangements put in place by government for their management. These institutional arrangements refer to the types of organizational units involved, such as ministries, agencies, and committees, and to the responsibilities and authorities of these units, and the relationships between them.

NUDB and NAPDA are the lead agency in the sanitation sector. They are responsible for creating and coordinating sanitation policy, issuing guidelines on sanitation services and their management, and for supervising the' National Environmental Sanitation Policy In the state. In theory, institutional responsibilities for sanitation are clear, with the Federal Ministry of Environment having overall responsibility for formulating environmental sanitation policies

**Environmental Sanitation Life Cycle Components**

The study is anchored on the environmental Sanitation life cycle components framework (Titeje, 2012). There are three actors in environmental sanitation management. These include generators which comprise households, businesses and government institutions. They generate waste and use sanitation services. Service providers form the next group of actors and they include private companies contracted to provide sanitation services. The managers constitute the third group of actors and they include government agencies or departments in the Metropolitan Assembly responsible for planning, organizing, staffing, directing and controlling, activities to ensure good environmental sanitation in the metropolis. Managers and service providers are required to render satisfactory sanitation services. When these service providers fail to effectively carry out their responsibilities, it results in poor environmental sanitation condition. When the generators do not appropriately dispose of waste, they promote poor environmental sanitation condition in the environment. All these negative activities when left unchecked, lead to deteriorating health conditions of the people, increased health cost, environmental pollution and increased cost of providing sanitation services. These therefore, call for a new management approach to improve sanitation.

The two management strategies that could be adopted to improve environmental sanitation are behavioral management and regulatory management. These management strategies involve activities that would ensure that people understand the consequences of poor environmental sanitation practices and the benefits that would accrue to everyone if people adopt good behavior towards the sanitation. This could be done through education. The other complimentary management strategy is regulatory management. This involves activities that would ensure that people comply with good sanitation standards which can be done through enforcement of sanitation regulations. The tools for achieving these strategies are through education and enforcement. When people are well educated about environmental sanitation, they become proactive and can organize themselves to secure facilities that would ensure good sanitation condition in their locality, even when these are not provided by the local government. When these two management strategies are well implemented, they would lead to good environmental sanitation condition in the study area.



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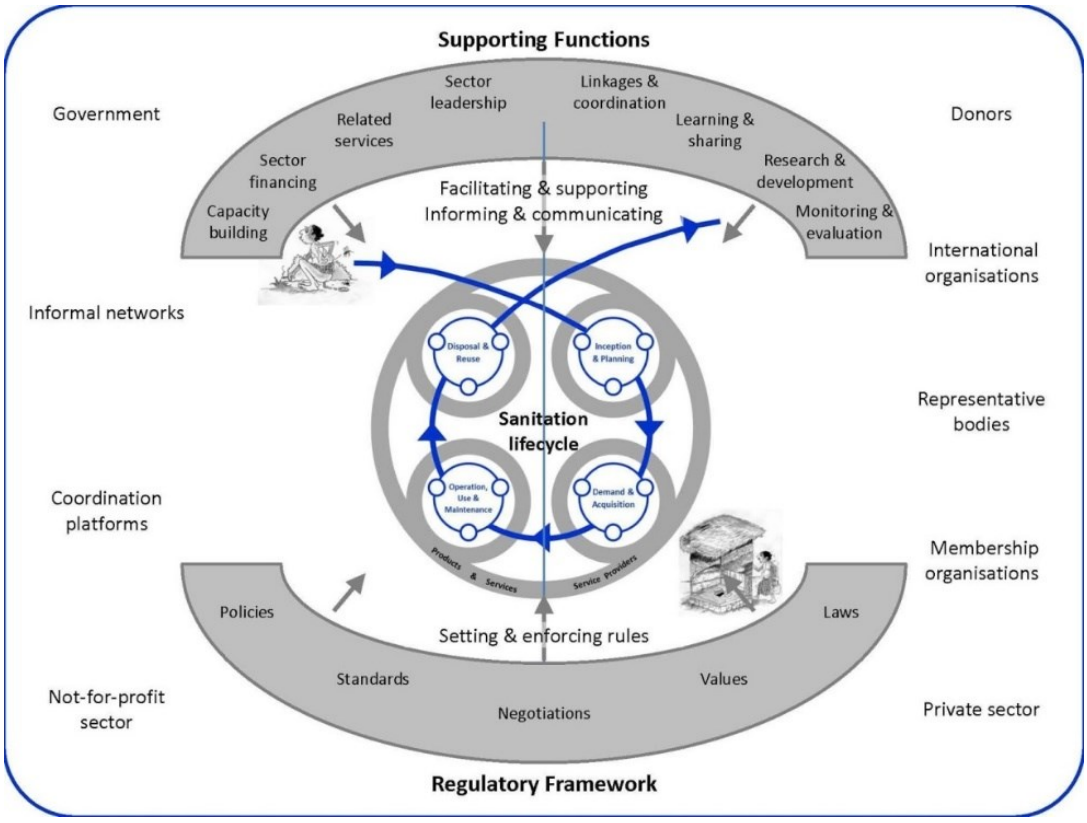



Figure 1: Environmental Sanitation life cycle components (Titeje, 2012)

**Concept of Health Knowledge**

Health knowledge is the understanding of scientific facts on personal hygiene, environmental and communicable diseases. According to Nkom and Essien (2002), the dimension of knowledge deals with peoples' basic understanding of what constitutes hygiene or unhygienic behavior, environmental cleanliness, wholesome or good quality water/food as well as the relationship between health and sanitation, hygiene or clean water. In other words, do people have the basic information to enable them to understand, analyze and arrive at rational conclusions about the nature, risks, and consequences of their behavior?

**Components of Environmental Health**

The kind of environment which people live affect their health, the air we breathe is constantly polluted with carbon monoxide from motorists, factories and industries. The water we drink is always half-way purified due to unconventional attitudes by some of those entrusted with the work. Most of the food is either not nutritious or polluted right from the source up to consumer end. The land we use

is always polluted as a result of some people's behavior of indiscriminate urination and defecation; the houses of most of our people are not adequately planned for ventilation and drainage which creates intensive heat and formation of many stagnant gutters where mosquitoes and other insects breed. Most of our peoples' life-style is discouraging because it endangers the health of the others. Smoking, drinking of alcohol, excessive eating of fatty food, sedentary life – style, unhygienic living, drug-abusing and excessive work without adequate rest and sleep, lack of love and trust among many people, poverty are indices that denies many people the right to live hygienically.

## Methodology

### Study Area

#### Location

Nasarawa state is located in north central zone of Nigeria, Coordinates 8°32'N, 8°18'E/ 8.533°N, 8.300°E, it has a land area of 27,117km$^2$ (10,470sq mi).

Nasarawa Local Government Area lies just north of a fork in the Okwa River found in Afo (Afao) tribal territory located at the intersection of local roads that lead to Benue River ports of Loko and Umaisha, it also lead to Lokoja through Abaji in FCT, and Keffi. It has a land area of 5,704km$^2$. Nasarawa is the Local Government Headquarters of Nasarawa Local Government Area given its strategic location to its Communities, and Development areas.



Location of Nasarawa State in Nigeria



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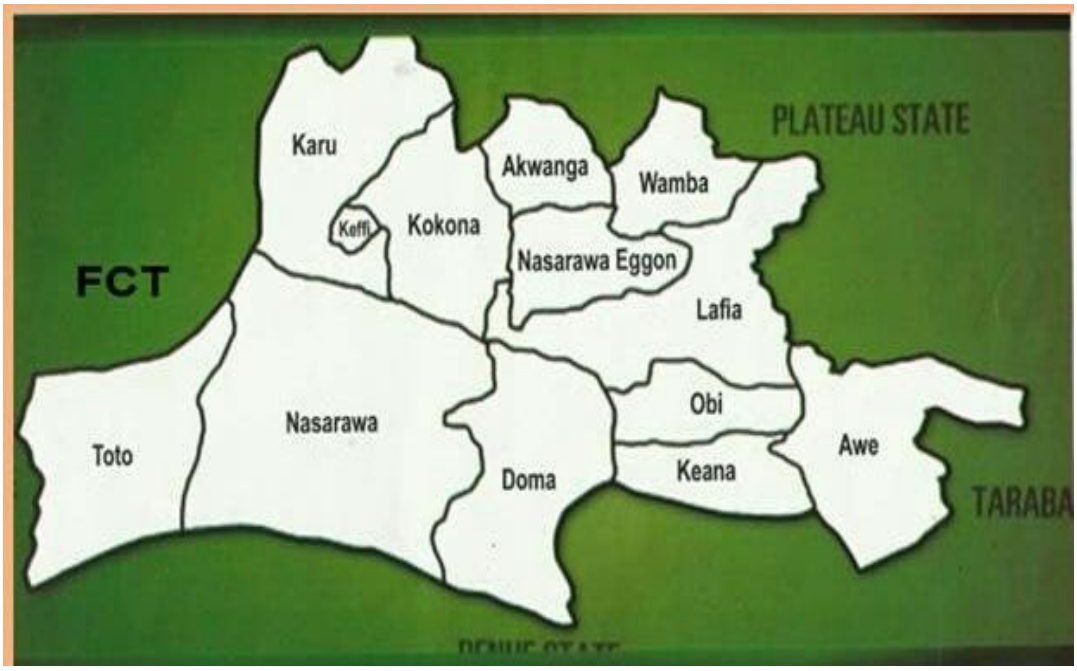



Figure 2: Nasarawa State showing the study area.
Source: Internet

**Research Design**

The study employed a cross sectional survey design using quantitative and qualitative tools to generate data.

**Research Population**

The target population for this study will be residents of Nasarawa town in Nasarawa Local Government Area, Nasarawa state. It will also consist of environmental sanitation officers in the LGA.

**Sources and Types of Data Required**

The sources of data for this study were primary and secondary. The primary data include information derived from questionnaire administration, In-depth interviews, field observation, and photographs. Secondary data was source from internet search, textbooks, journals, monographs, thesis and dissertations.

The types of data required are as follows:

1. Socio-economic and demographic data of the respondent's.
2. Knowledge on environmental sanitation.



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3. Environmental sanitation facilities available in Nasarawa town.
4. People's Participation in environmental sanitation.
5. Participation in monthly environmental sanitation.
6. Waste collection and disposal methods.
7. Environmental sanitation practices.
8. Perception of Environmental problems.

**Sample Size Determination**

The sample size required for this study was calculated according to a formula developed by Cohran (1963) as described by Glenn (2010). The formula is given as:
Where:
n= desired sample size.
Z = standard normal deviate (1.96 for a 95% confidence level).
p = Participants in environmental sanitation, 76%.
q = 1-p (proportion in the population that does not have the characteristics being measured).
e= desired level of precision 0.05
$n= 1.96^2 \times 76 \times 0.25/0.05^2= 292$
Thus, the study will involve 146 a target population of less than 5,000; hence it was adjusted as shown below
N = population size of expectant participants in environmental sanitation).
n = desired sample size (when the population is more than 5,000).
nf = desired sample size (when the population is less than 5,000)
= 292/1 + [(292-1)/292] = 292
Therefore, a total of 146 copies of questionnaire will be administered for this research.

**Sample Selection and Sampling Technique**

The study population was conducted through a double-stage systematic sampling procedure, in the selection of five areas from Nasarawa town. The population of the study was drawn from these areas Mangorogoma, Tahma, Oversea, Tuduwada and Kotto. A total of 146 questionnaires were administered proportionally to the selected areas (Table 3.1).
The selection of areas at specified intervals of either every two or four building from a starting number (determined randomly) depending on the area and the

total number of houses in those areas. In each of the selected household, an eligible respondent for selection was any member of the household above 18years, which were selected systematically.

Table 1: Areas and number of People sampled.

| S/N | Areas | Number of Households | Households Sampled |
|---|---|---|---|
| **1** | Tahma | 214 | 34 |
| **2** | Mangorogoma | 182 | 24 |
| **3** | Kotto | 174 | 23 |
| **4** | Tuduwada | 164 | 19 |
| **5** | Oversea | 248 | 46 |
| **Total** | | **882** | **146** |

Source: Field Survey, 2019.

**Instrument Used for Data Collection**

The following methods are used in data collection:

i. An open ended questionnaire was administered to 146 household above 18years.
ii. Field survey was carried out to observe the environmental sanitation condition in the study area.
iii. Photographs were used to show the environmental sanitation conditions in the study area.
iv. In-depth interviews with some Local government environmental sanitation officers in the study area.
v. Field work was also employed to observe solid waste management of the study area.

**Data Analysis**

The Statistical Package for Social Science (SPSS) program was used to create frequencies and perform descriptive and inferential statistical analysis of the data. The questionnaire data was summarized using tables, percentage and frequencies count. Anova statistical analysis was used to test for differences in participation in monthly environmental sanitation of the areas in Nasarawa town. The data was generated and in-depth interview was analyzed also by using content analysis.


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**Result and Discussion**

Socio-economic and demographic characteristics of Respondents

Table 1 contains information on the Socio economic and demographic characteristics of the respondents. The table shows that (42.7%) of the respondents were males while, majority (57.3%) were females. This is perhaps an indication of the role women play in sanitation management in the various households in Nasarawa town. The table also shows that 26% were from Tahma, 19.6% from Mangorogoma, 14.4% from Kotto, 8.8% from Tuduwada while 31.2% were from Oversea. The table also reveals that 6.9% of the respondents were aged 20-24 years, 9.2% were aged 25-29 years , 17% were aged 30-34 years, 19.4% were aged 35-39 years and 20.3% were aged 40-44 years, 17.5% were aged 45-49 years, 9.7% were aged 50 years and above. The respondents were of age that could make them environmentally concerned and thereby appreciate the essence of their participation in environmental sanitation. The educational status of the respondents shows that majority 29.6% had post primary education, 24.1% had primary education, 27.8% had tertiary education, 8.2% had other forms of education while, 10.3% had no formal education. Educational level plays a significant role in environmental awareness. Olofsson and Öhman (2006) and Theodori and Luloff (2002) opined that educated people are more concerned about the environment and placed more emphasis on preserving the environment. 65.4% of the respondents were into business/trading, 16.2% were farmers, 14.1% were civil servants and 3.3% were housewives Majority (69.6%) of the respondents were married, 14.9% were single while 6.7% and 8.8% were into other forms of marriages such as those separated and divorced.

**Table 2: Socio-economic and demographic characteristics of respondents**

| Characteristics | Variable | Frequency | Percentage (%) |
|---|---|---|---|
| **Sex** | Male | 65 | 42.7 |
| | Female | 81 | 57.3 |
| **Total** | | **146** | **100** |
| **Areas** | | | |
| | Tahma | 34 | 26.0 |
| | Mangorogoma | 24 | 19.6 |
| | Kotto | 23 | 14.4 |

| | | | |
|---|---|---|---|
| | Tuduwada | 19 | 8.8 |
| | Oversea | 46 | 31.2 |
| **Total** | | **146** | **100** |
| **Age group** | | | |
| | 20-24 | 15 | 6.9 |
| | 25-29 | 18 | 9.2 |
| | 30-34 | 20 | 17.0 |
| | 35-39 | 26 | 19.4 |
| | 40-44 | 29 | 20.3 |
| | 45-49 | 21 | 17.5 |
| | 50 and above | 17 | 9.7 |
| **Total** | | **146** | **100** |
| **Educational status** | | | |
| | No formal education | 13 | 10.3 |
| | Primary | 36 | 24.1 |
| | Secondary | 44 | 29.6 |
| | Tertiary | 42 | 27.8 |
| | Others | 11 | 8.2 |
| **Total** | | **146** | **100** |
| **Occupation** | | | |
| | Farming | 26 | 16.2 |
| | Business/Trading | 87 | 65.4 |
| | Civil Servants | 24 | 14.1 |
| | Housewife | 9 | 3.3 |
| **Total** | | **146** | **100** |
| **Marital status** | | | |
| | Married | 92 | 69.6 |
| | Single parent | 27 | 14.9 |
| | Divorced | 11 | 6.7 |
| | Others | 16 | 8.8 |
| **Total** | | **146** | **100** |

Source: Field Survey, 2020.



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**Respondents perceived Environmental problems in Nasarawa town**

Table 4.2 presents information on respondent's perception of environmental problems in Nasarawa town. The most environmental problem in Nasarawa town was poor waste disposal (90.2%) and poor sewage disposal (67.7%). Mr. Gbeshomi Ogaga (2018) also reported poor waste disposal (88.2%) in his findings on Assessment of environmental sanitation practice in Effurun, Uvwie Local Government Area of Delta State. The high number of respondents indicating the presence of solid waste in the environment, this is an indication that the problem also exists in his study area. This waste can serve as breeding ground for disease vectors.



Plate 1: Street in Tahma without drains and waste dispose along the street. Nasarawa town.
Source: Field Survey, 2020.

The presence of solid and liquid waste in Nasarawa town can cause aesthetic nuisance and the offensive odour from the refuse dumps can diminish the aesthetic quality of the environment. The source of water can be contaminated by seepage from refuse dump sites and both underground and surface water could be polluted by refuse dumps. The study participants were aware that some

diseases can be prevented if solid wastes are properly managed. They open up that they understand that there is a link between the environment and health. A participant from Mangorogoma also opened up and said polluted air from refuse dumping sites brings out odour and it always causing respiratory diseases in their resident. He further stated that, sources of water in mangorogoma due get contaminated when heavy rain falls due to seepage from refuse dump sites.

Air pollution (62.9%) was also mention as the most important environmental problem in Tahma and Oversea. Urban heat (97.2%), overcrowding/population increase (75.4%) was mention in Tuduwada and Tahma, water pollution (94.1%), poor urban planning (93.7%) and flooding (61.7%) these were mention in Kotto, Oversea and some part of the ward in Mangorogoma. Other reported environmental problems were noise pollution (67.5%) and poor sewage disposal (67.7%) while the least reported environmental problem was erosion (32.3%) this was specifically in Tahma opposite Federal Polytechnic Nasarawa.



Plate 2: Poor Sewage caused erosion in Tahma area, Nasarawa town:
Source: Field Survey, 2020.

It is not surprising that air, water and noise pollution including urban heat were reported that common environmental problems. Also, there is the problem of gas being flared. Overcrowding/population as a common environmental problem in the study area is not surprising because population surges has given rise to a heavily built up environment where houses are most closely built than before this can been seen in Tahma. This has resulted in the dumping of more refuse on the streets. A walk through the town revealed that there is an increase in the disposal

of household refuse carelessly on the road sites by student of the Federal Polytechnic and the residents owners that lives in their houses, drains, bank of streams, in public places and waste parked in cellophane bags and drop it at the middle of highways which link to Abaji in FCT Abuja.




Plate 3: Block qutter along Nasarawa, Abaji express, Nasarawa town.
Source: Field Survey, 2020.

**Table 3: Respondents perception in Environmental problems in Nasarawa town**

| S/N | Environmental Problem | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | Poor urban housing | 102 | 90.2 |
| 2 | Overcrowding/population | 92 | 75.4 |
| 3 | Poor waste disposal | 114 | 93.7 |
| 4 | Air pollution | 89 | 62.9 |
| 5 | Noise pollution | 98 | 67.5 |
| 6 | Poor sewage disposal | 126 | 97.2 |
| 8 | Deforestation | 70 | 52.6 |
| 9 | Urban heat | 97 | 67.7 |
| 10 | Flooding | 88 | 61.7 |
| 11 | Erosion | 52 | 32.3 |
| 12 | Water pollution | 109 | 94.1 |

Source: Field Survey, 2020.

**Attitude and Participation of Respondents in Environmental Sanitation**

Table 4. presents information on respondent's attitude towards environmental sanitation and their participation in the exercise. The table revealed that 76.3% of the respondents participate daily in cleaning their homes and environment while, 23.7% do not. Those that observe their home sanitation daily did it willingly (68.2%)

while 31.8% were compelled by law to sanitize their environment. This implies that environmental sanitation exercises are conducted willingly by the majority of residents of Nasarawa town and is an indication that the residents are aware of the need to keep their environment clean as healthy living and clean environment which are factors of good economic growth. Majority (71.3%) of the respondents evacuate their refuse daily while 51.3% urinate indiscriminately. This is an indication that more than half of the respondents were aware of the consequences of indiscriminately urinating in public places. This is not good because a dirty environment can breed diseases which can cause high mortality rate on humans. The finding also indicates that majorities of the respondents viewed that, living in dirty environment does have effects on the inhabitants. Dumping of wastes in gutters and streets was reported by 79.6% of the respondents. The responses demonstrate that 20.4% were not aware that dumping of refuse/waste in gutters or streets can deteriorate the sources of domestic water and its negative effects on humans and the environment. It also means that most waste in Nasarawa town is not dumped in dumpsites.



Plate 4: Waste dumped and erosion along the street in Mangorogoma, Nasarawa town.

Source: Field Survey, 2020.



Plate 5: Waste dumped along the street in Oversea, Nasarawa town.
Source: Field Survey, 2020.



Plate 6: Waste dumped in drainage in Nasarawa town.
Source: Field Survey, 2020.



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The implication of the findings in this study is that indiscriminate disposal of waste is commonly practice in Nasarawa town. This is worrisome because indiscriminate disposal of waste is a threat to human health. The health implication of improper waste disposal is enormous and should not be ignored by the residents of Nasarawa town. Studies have revealed that wastes that are not properly managed can cause water pollution, which may breed diseases such as cholera and typhoid (Bartone, 2000; Buckle and Smith, 2000). Perhaps, that is why Adebukola (2001) asserted that inadequate disposal of wastes is a major factor in the spread of gastrointestinal parasites diseases primarily caused by vectors.

**Table 4: Respondents attitude towards Environmental Sanitation**

| Attitude towards environmental sanitation | Frequency | Percentage (%) |
|---|---|---|
| **Daily participation in home sanitation** | 92 | 76.3 |
| **Willingness to observe home sanitation** | 84 | 68.2 |
| **Evacuate refuse daily** | 89 | 71.3 |
| **Indiscriminate urinating** | 69 | 51.3 |
| **Dumping of wastes in gutters and streets** | 97 | 79.1 |
| **Awareness of monthly environmental exercise** | 77 | 69.5 |
| **Participation in monthly environmental exercise** | 65 | 46.3 |

Source: Field Survey, 2020.

The attitude of respondents was assessed base on awareness and their participation in the monthly environmental sanitation exercise (Table 4.3). Majority (69.5%) were aware of the monthly environmental sanitation which was introduced by Federal Government while 30.5% were not aware of the exercise. This implies that most people are aware of monthly environmental sanitation. This knowledge will help to make the environment clean and healthy for human living. When asked whether they observed the monthly sanitation exercise, only 46.3% responded in the affirmative-indicating that majority do not observe the exercise. Participation in monthly environmental sanitation differed significantly (F=9.076, df=5, P=0.000) among the wards in Nasarawa town.

Interviews were held to ascertain the compliance level of residents to the environmental sanitation exercise. They were asked how often they participated in cleaning activities during the monthly sanitation exercise and particularly their

compliance with restriction of movement during the monthly sanitation days. Their responses showed that even though they complied with restriction orders, they don't really participate substantially in cleaning their surroundings. Others said they participated only when they are able to or had the chance to participate. It is evident from the responses that, even though residents compulsorily stayed home on environmental sanitation days, many have not been participating in cleaning their environment. Others merely cleaned their surrounding as they normally do every weekend. Sanitation and the health officers revealed that Nasarawa local Government Area doesn't observe monthly sanitation exercise for a long time now, the level of participation in sanitation exercise was generally poor. They said that despite the fact that they monitor compliance and use taskforce to ensure non movement during the period by law enforcement agents before now, participation in sanitation was still poor. The sanitation officers reported that they do not carry out enlightenment programmes on environmental sanitation regularly and that the enlightenment programme is not effective. He attributed the ineffectiveness due to the fact that it does not cover large area and it is not carried out on a regular basis. The sanitation officer further stated that, any resident defying the authorities were promptly arrested and prosecuted using the mobile courts. Fine, sealing off of premises or jail awaited defaulters. The officers agreed that, the change in attitude towards any sanitation program in Nasarawa town would have be better achieved through communication. The communication information is necessary because people need to be aware of the implications of their actions on the environment; most especially as it affects their health. Lives are lost every year to environment-related diseases such as cholera, diarrhea, malaria fever and river blindness among others.

**Access to environmental facilities**

Table 4 shown that, information is needed because availability of facilities may influence the participation of the resident's in environmental sanitation. The availability of these facilities is necessary because a healthy environment remains an important source of well-being which can make people to live healthier life, live longer, more productive and more satisfying life. This can only be achieved if residents pay attention to what they do to their environment. Majority (77.3%) of the respondents reported that they had access to environment facilities while (22.7%) said they did not. Water was available (99.9%) of the respondents while

(0.1%) did not have access to water. The sources of water were tap water (11.9%), borehole (32.7%) and well (55.3%). The major source of water in Nasarawa town was well and borehole water while, the least was tap water. This finding is inconsistent (Not consistent) with Mr. Gbeshomi Ogaga (2018), where availability of water was 100%, and pipe borne water (54.8%), borehole (41.7%) and vendors (3.5%). Which Access to water by community members in his finding, was similar to the one reported by Oluwole and Oluwaseun (2016) where majority of the residents of Osogbo town in Nigeria had access to water supply. There were different sources from which respondents get water.

**Table 5: Respondents access to environmental facilities**

| Variable | Characteristics | Frequency | Percentage |
|---|---|---|---|
| **Availability of environmental facilities** | Yes | 96 | 77.3 |
| | No | 48 | 22.7 |
| **Availability of water** | Yes | 131 | 93.7 |
| | No | 13 | 6.3 |
| **Source of drinking water** | Pipe-borne | 17 | 11.9 |
| | Borehole | 58 | 32.7 |
| | well | 69 | 55.4 |
| **Availability of toilet** | Yes | 103 | 66.8 |
| | No | 41 | 33.2 |
| **Type of toilet used** | Flush | 71 | 47.5 |
| | VIP | 19 | 14.9 |
| | Pit latrine | 54 | 37.3 |
| **Availability of drain** | Yes | 102 | 66.9 |
| | No | 42 | 33.1 |
| **Types of drain** | Open | 71 | 47.5 |
| | Covered | 38 | 29.2 |
| | Piped | 35 | 23.3 |

Source: Field Survey, 2020.

**Environmental sanitation practices**

The respondents waste sanitation practices is presented in Table 4.5. The table shows that 31.9% of the respondents had waste storage facilities in their homes

while (68.1%) do not have waste storage facilities. This is an indication that majority of the residents do not have designated containers for effective waste collection in their homes. According to Table 4.5, respondents with containers such as lid container, basket, bolket, polythene bags to store waste are 62 respondents representing 31.9% other methods of storing waste (68.1%) representing 82 respondents.



Plate 7: Waste collection containers in Tuduwada, Kotto and Tahma, Nasarawa town.

Source: Field Survey, 2020.

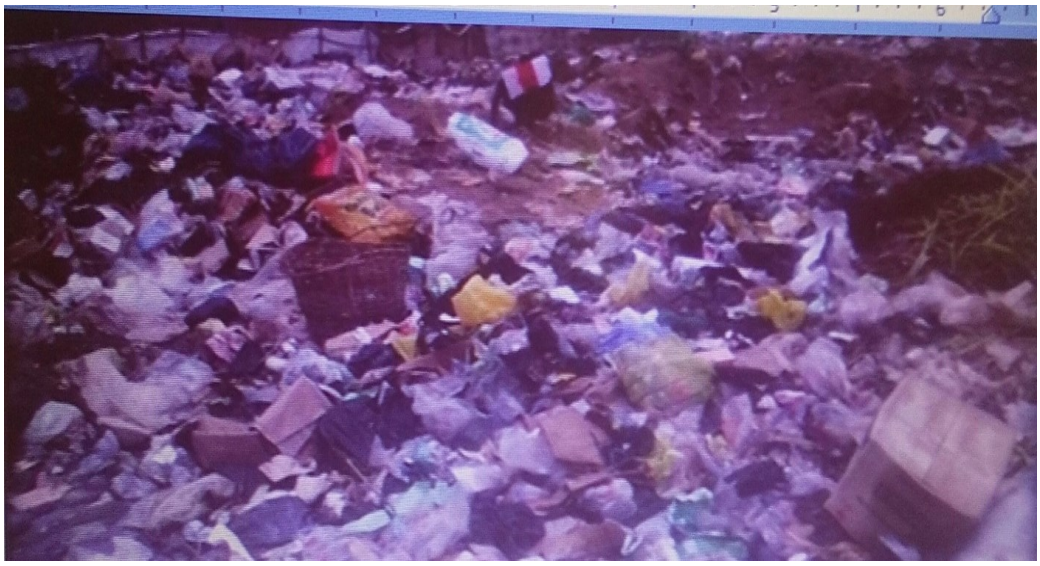


Plate 8: Waste dumped at public site. Source: Field Survey, 2020.

The common waste disposal method was public site (57.5%). The percentage of respondents that responded to dumping of waste in public site in Nasarawa town is higher than other methods. Others dump their waste in the pit (4.7%) and road site (15.1%) while 22.7% burnt their waste. This is also inconsistent with Mr. Ogaga's (2018), findings on Assessment in environmental sanitation in Uvwie Local Government Area of Delta State where disposal method public site was (43%). The percentage of respondents that reported dumping of waste in public sites in his findings was lower. Dumping of wastes in pits on open space in the long run constitute temporary/permanent filth nuisances in the residential areas (Oluwole and Oluwaseun,2016). Sanitation officers reported that the LGA use the door to door and central neighbourhood waste collection points while open dump/land fill was the common solid waste disposal method.

Table 5 also presents information on the frequent refuse evacuation and disposal. The results revealed that 60.2% of the respondents dispose their waste daily, 20.9% dispose theirs after two to three days, 13.1% on weekly and 5.8% on monthly basis. Cleaning of drains was done by 3.3% of the respondents daily, 12.3% weekly, 13.5% monthly while, majority 70.9% clean their drains after 2 months or more. Lack of cleaning drains poses serious environmental sanitation threats as wastewater is not able to flow freely and causes disease vectors and stench which are detrimental to the health of inhabitants.



Plate 9: Refuse dumped in qutters market road, Nasarawa town.
Source: Field Survey, 2020.



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Interviews with environmental sanitation officers revealed that LGA is not yet reading to do anything about the problem of wastewater not flowing freely.

**Table 6: Environmental sanitation practices**

| Variable | Characteristics | Frequency | Percentage (%) |
|---|---|---|---|
| **Availability of waste storage facilities** | Yes | 33 | 13.9 |
| | No | 111 | 86.1 |
| **Type of waste storage facility** | Polythene bag | 32 | 15.1 |
| | Basket | 9 | 4.5 |
| | Container | 21 | 12.3 |
| | Others | 82 | 68.1 |
| **Waste disposal methods** | House to House | 00 | 00 |
| | Road site | 23 | 15.1 |
| | Burning | 42 | 22.7 |
| | In pit | 10 | 4.7 |
| | Public site | 69 | 57.5 |
| **Frequently of waste disposal** | Daily | 74 | 60.2 |
| | After 2-3 days | 40 | 20.9 |
| | Weekly | 19 | 13.1 |
| | Monthly | 11 | 5.8 |
| **Cleaning of drains** | Daily | 8 | 3.3 |
| | Weekly | 22 | 12.3 |
| | Monthly | 27 | 13.5 |
| | 2 months and above | 87 | 70.9 |

Source: Field Survey, 2020.

**Conclusion**

The problem of poor waste disposal exists in Nasarawa town and the results demonstrated that they understood the link between the environment and health. There is an increase in the disposal of household refuse carelessly on the streets, drains, in public places and wastes parked in cellophane bags and droping

it at the streets. Yet, the residents of the Nasarawa town are aware of the need to keep their environment clearn and carried out environmental sanitation exercises willingly. Indiscriminate disposal of waste is a common practice in the study area. Most people have knowledge on monthly environmental sanitation but participation was very low.

**Recommendations**

Based on the findings of this study, the following are recommended to improve Nasarawa town in environmental sanitation exercise.

1. There is need for the community members to provide environmental sanitation facilities for household members while, the government and Community Based Organizations (CBOs) should provide community environmental sanitation facilities and services to the community;
2. Government should enforce existing environmental sanitation regulations to sanction defaulters and house owners without basic environmental sanitation facilities so as to improve environmental sanitation exercise;
3. Pro-environmental sanitation practices depend on effective environmental literacy. Thus, campaign to raise public awareness about environmental sanitation is essential in achieving success in environmental issues. This mind-set reorientation can be achieved through recruitment of trained young men and women who would engage residents one on one especially in the core on the need to be environmentally concerned.
4. Community Based Organizations (CBOs), NGOs and government should engage in environmental sanitation awareness and regulation.
5. Sanitation promotion messages need to be continually reinforced in order for changes in behavior to be long lasting; this can be done through proper channels of communication to the right category of people. E.g., media, newspaper, house to house orientation, and sensitization.

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