

Spatial Analysis of Sanitation Facilities in Ado Ekiti, Ekiti State, Nigeria

Adeniyi Joshua .Olu¹ and Odogiyon Agunloye.H²

^{1,2}*Department of Urban & Regional Planning Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria.*

Abstract:-This work examined and analyzed sanitation facilities in residential districts of Ado-Ekiti, Nigeria. All the existing sanitation facilities in the study area were identified; Information and data were obtained directly from the targeted population using structured questionnaire. The questions provided in the questionnaire were directed to the household population in the area. Some of the variables considered are; types of toilet facilities used in the study area, anal cleaning materials, hand washing with soap, distance between well/borehole and leaching field/pit latrine, and interest in using improved sanitation facilities if provided. For the purpose of this research, multi-stage sampling technique was adopted in the administration of questionnaire on residents of the three residential zones in Ado-Ekiti. The targeted household population in the study area was thirty seven thousand four hundred and nineteen. (37419) and the sample size is 1.5% which translates to five hundred and twenty six (526) this becomes the total number of questionnaire administered for the study. Findings revealed high number of households using improved sanitation facilities; the analysis also indicate that, there are still some households who use bush and pit latrine without slab. The paper recommends among other things, that Ekiti State should evolve a well articulate policy that will enhance partnership with Federal Government and International Development Agencies to improve public health and sanitation.

Keywords: - Environment, Facilities, Household, Sanitation, Sustainable Development

I. INTRODUCTION

The rapid growth of cities strains their capacity to provide services such as energy, education, health care, transportation, sanitation and physical security (UN, 2008). Because governments care less on the basic upkeep of cities and provision of services, cities have become areas of massive sprawl, especially serious environmental problems and widespread poverty (UN, 2008). The critical and most immediate problems facing developing countries are the impacts of inadequate water, sanitation, drainage and solid waste services, poor urban and industrial waste management (Bartoneet *al.*, 2006). UNICEF, (2008) noted that poor sanitation, unsafe water and unhygienic practices cause millions of children in the developing countries to suffer needlessly from disease. (UNICEF, 2008) also concluded that water and sanitation related diseases despite being preventable, remain one of the most significant child health problems worldwide. U.N, (2008) observed that despite progress in the last two decades, 2.4 billion people around the world still lack access to basic sanitary facilities.

The Nigerian government has long considered the provision of water supply and sanitation services to be the domain of the Federal, State and Local governments. However, the public sector has not been successful in meeting more than a small portion of the demand for water and sanitation of residential and commercial users (Nigerian Water Supply and Sanitation Interim Strategy [NWSSIS], 2000). NWSSIS (2000) further infers that services are in critically short supply.

Ado-Ekiti is one of the many cities in Nigeria that have witnessed rapid urbanization in the recent time. This is largely explained by its transformation from a Local Government headquarter to state capital following the creation of Ekiti State in 1996. It is therefore the desire of this study to ascertain sanitation facilities in the city in order to know if it could meet.

The sanitation target of the sixth Sustainable Development Goal (SDG) which is to achieve access to adequate and equitable sanitation for all by the year 2030.

The Study Area

Ado-Ekiti situates in the South West Nigeria. It is the capital city of Ekiti State. It is located on latitude 7° 37' 16" North of the equator and longitude 5° 13' 17" East of the Greenwich meridian. The total land area is 293sq km, it is on the elevation of 455m. The population in 1991 was 127,579 (1991 National Population census figure). The people of Ado Ekiti are mainly of the Ekiti sub-ethnic group of the Yoruba. Ado Ekiti parades several educational institutions and government establishments including the University of Ado Ekiti now Ekiti state University a privately own University-the AfeBabalola University, Ado-Ekiti, The Federal Polytechnic, Ado Ekiti, has two local television and radio stations- NTA Ado Ekiti, Ekiti State Television (BSES), Radio Ekiti, Progress FM Ado Ekiti. Various commercial enterprises operate in Ado Ekiti. The city is the trade centre for a farming region where yams, cassava, grain, and tobacco are grown. Cotton is also grown for weaving. Over the years, Ado-Ekiti has played prominent role in political administration in Nigeria. In January, 1913, it was made the headquarters of Ekiti district by the colonial administration. The town continued to enjoy political relevance until 1996 when it became the state capital. Traditionally and culturally, Ado-Ekiti is headed by the Ewi, the sovereign head of Ado-Ekiti kingdom.

II. LITERATURE REVIEW

Concept of Equity

Equity is of intrinsic worth. It is a concept that set standard for something good or right that is working to change society to help people get more chances in life, it is more than just a means to an end, and it is also a means to guarantee sustainable development. Hence, it is imperative that the concept is reviewed in order not to misplace priority when sanitation facilities in Ado-Ekiti are given needed attention.

Harry (2009) noted that equal concern for people's need; some goods/services are matters of necessity and that they should be distributed proportional to people's level of need and nothing else. He further stated that, principle of equity relates to the sorts of goods and services that people are said to need; shelter, physical security and environment, health care, water and sanitation, food and nutrition, a basic education and so on. He posited that, these are things a person must have within a certain time period if they are to avoid suffering adverse effects on their wellbeing and that, these are goods which are required despite what one chooses, and which perhaps no person would rationally decide to go without. There are different levels of need of course, ranging from basic needs, which are pressed from a simple passion to subsist (Wiggins, 1998) and required as a result of simple laws of nature or human constitution, to the broader set of goods and services that are a prerequisite to people being able to take full part in society.

Adebiyi (2016) concluded that, the concept of equity, which is seen as fairness in the distribution of the impacts of resource allocation by authority, becomes relevant in urban and regional planning in view of the complexities and the dynamic environment which planning has to contend with. To arrive at sound decisions, combat environmental challenges and as position physical planning towards achieving its goals and objectives calls for a pragmatic approach in the examination and analysis of contemporary issues for proper placement with utilities in the urban spatial structure.

III. METHODOLOGY

This study focuses mainly on the spatial analysis of sanitation facilities in Ado Ekiti, Ekiti State, Nigeria. The study embraces both primary and secondary sources of information. These were obtained from the field through the use of research instrument such as administration of questionnaires, and observations. Secondary information was collected from reports, (published and unpublished sources), textbooks, journals, file of government agencies and parastatals. These include the National Population Commission, and Internet, among many others.

The population of Ado Ekiti as at 1991 was 127579 (National Population Commission, 1991). This was projected to 261932 using 2.7% growth rate. Minimum average households in Nigeria are 7 persons per household (National Population

Commission, 2006). The targeted household population in the study area translate to thirty seven thousand four hundred and nineteen. (37419) and the sample size is 1.5% which translates to five hundred and twenty six (526) and this becomes the total number of questionnaire administered for the study. Essentially, there are traits of homogeneity in the habitability of the people in the area. Therefore, the proportion of the households considered as sample size is quit plausible.

The research adopts multi-stage sampling technique in the research procedure. First stage is the delineation and dividing Ado Ekiti into three residential zones. They are: the urban core, the transitional zone and the urban periphery. Second stage is the identification of the buildings in each of the zones by systematic sampling technique. All buildings in each zone were arranged serially, from which the sampled buildings were selected. The 67th building forms the nth term while every 67th building was sampled from each zone.

A randomly sampling technique was adopted in the third stage for the selection of household head sampled. This sampling method was based on household size in selected residential building. Household with highest number of people was selected.

Finally, in each of the zones, questionnaires were administered systematically and randomly selection of household head on every 67th buildings in each zone. Fifty percent (50%) which is two hundred and sixty three (263) of the questionnaires were administered at the urban core; being the most traditional area in the city and inhabited by indigenes that appear inclined to living in the area due to traditional tie. Population density at the transitional zone appears to be at medium level when compared with urban core and the urban periphery; hence, thirty five percent (35%) which is one hundred and eighty four (184) questionnaires were also administered. The remaining fifteen percent (15%) which is seventy nine (79) questionnaires were administered in the periphery of Ado-Ekiti, because modern buildings and development dot the area.

IV. RESEARCH FINDINGS

A total of five hundred and twenty six (526) questionnaires were administered on the representatives of houses in the study area and all of them were returned, though in some cases not all the questions were answered some respondents declined in responding to some of the issues raised. Hence, the results are discussed in relation to the study.

Types of Toilet Facilities in Ado-Ekiti

The major type of toilet facilities accessed by respondents in Ado-Ekiti include flush toilet (42.6%), pit latrine with slab (18.8%), households without toilets facility who use bush, open field or undeveloped plots (15.2%). Other toilets facilities which are of less significance include pit latrine

without slab (9.1%), ventilated improved pit (8.2%), and sanitation platform latrine (2.7%). (Table 1).

The above pattern of results, however, varies from zone to zone (Table 1) in the urban core, (40.3%) of the respondents use flush toilets, (21.7%) pit latrine with slab, (16.0%) have no toilets facility, they either make use of nearby bush or open field, 10% of the respondents use pit latrine without slab, (7.6%) ventilated improve pit, and (2.2%) sanitation platform latrine. Households in the transitional zone depend largely on flush toilets (45.7%), respondents with no toilets facilities who use bush, open field, or nearby undeveloped plots (16.8%), pit latrine with slab (15.2%), ventilated improved pit (10.9%) pit latrine without slab (9.8%), very few of the respondents (1.1%) use sanitation platform latrine.

Respondents in urban periphery depend mainly on flush toilets (43.0%) and pit latrine with slab (17.7%) others like those who do not have toilets facility at their various houses,

who use bush, open field or nearby undeveloped plots (8.9%), sanitation platform latrine (7.6%), pit latrine without slab (5.1%), ventilated improve pit (3.8%). It becomes obvious from this pattern that the most available toilet facility in each zone is flush toilet. It was recorded that more than 40% of the respondents use flush toilet. It was also revealed that pit latrine with slab has become popular in the urban core where it ranks after flush toilets as 21.7% of the respondents use this toilet facility, 17.7% of the respondents use this facility in the urban periphery, it is a different case in the transitional zone where 16.8% have no toilet facilities in their homes and they use either bush, open field or near by undeveloped plots. As it could be seen in fig. 5, where most of the undeveloped plots have been turned to refuse dump site and toilet. Specifically, only 1.1 and 2.2% of the households in both the transitional zone and urban core uses sanitation platform latrine respectively.

Table 1: Types of Toilet Facilities in Ado-Ekiti

Type of Toilet	Urban core		Transitional zone		Urban periphery		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Improved								
Flush toilet	106	40.3	84	45.7	34	43.0	224	42.6
Ventilated pit	20	7.6	20	10.9	3	3.8	43	8.2
Sanitation platform latrine	6	2.2	2	1.1	6	7.6	14	2.7
Pit latrine with slab	57	21.7	28	15.2	14	17.7	99	18.8
Unimproved								
Plat latrine without slab	26	10.0	18	9.8	4	5.1	48	9.1
No facilities use bush or field	42	16.0	31	16.8	7	8.9	80	15.2
No response	6	2.2	1	0.5	11	13.9	18	3.4
Total	263	100.0	184	100.0	79	100.0	526	100.0

Source: Authors' Field Survey, 2017.

Types of Anal Cleaning Materials used in Ado-Ekiti

This is a measure of anal cleaning materials which, is largely determined by the materials mostly used by the households in cleaning their anal after defecating. However, the household that uses water to wash their anal after defecating dominate Ado-Ekiti with 35.9% they are closely followed by those who use toilet paper 31.9%. These two are the anal cleaning materials considered as improved materials to be used by households (UNICEF, 2010). From table 2, it

could be deduced that it was at the transitional zone that more people use water than every other zones in Ado-Ekiti (40.3%).

It could also be seen from the same table 2 that, there are still some households in this age that uses maize cob to clean their anal after defecating. The expectation of WHO/UNICEF is that by now it should be zero percent usage of maize cob as anal cleaning materials. The interpretation is that there are still some households particularly in urban core (4.9%) and transitional zone (4.3%) that does not practice the use of improved materials like water and toilet paper in their homes.

Table 2: Types of Anal Cleaning Materials

Type of Anal cleaning materials	Urban core		Transitional zone		Urban periphery		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Maize cob	13	4.9	08	4.3	-	-	21	4.0
Toilet paper	86	32.7	52	28.3	30	38.0	168	31.9
Water	94	35.7	74	40.3	21	26.6	189	35.9

Any paper	27	10.3	17	9.2	09	11.4	53	10.1
Anything	43	16.4	30	16.3	19	24.0	92	17.5
No response	-	-	03	1.6	-	-	03	0.6
Total	263	100.0	184	100.0	79	100.0	526	100.0

Source: Authors' Field Survey, 2017.

Since sanitation is the act of separating human faeces from human contact. There is need to ensure that hands which is commonly used to eat in this part of the world (developing countries) is expected to be clean always. Hence, this research looked into the hand washing practice in Ado- Ekiti.

Although majority (43.3%) of the respondents throughout the city always wash their hands immediately after using the toilet. While some (16.5%) wash their hands twice daily, some few respondents (14.5%) wash their hands only when they want to eat. It is unbelievable that some households (6.5%) only wash their hands once in a day, regardless the number of times they eat or visit the toilet. Table 3.

Table 3: Hand Washing With Soap

Time of washing	Urban core		Transitional zone		Urban periphery		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Once daily	17	6.5	11	6.0	06	7.6	34	6.5
Twice daily	36	13.7	33	17.9	18	22.8	87	16.5
Immediately after using the toilet	101	38.4	84	45.7	43	54.4	228	43.3
Before eating	30	11.4	40	21.7	06	7.6	76	14.5
Anytime	49	18.6	07	3.8	06	7.6	62	11.8
No response	30	11.4	09	4.9	-	-	39	7.4
Total	263	100.0	184	100.0	79	100.0	526	100.00

Source: Authors' Field Survey, 2017.

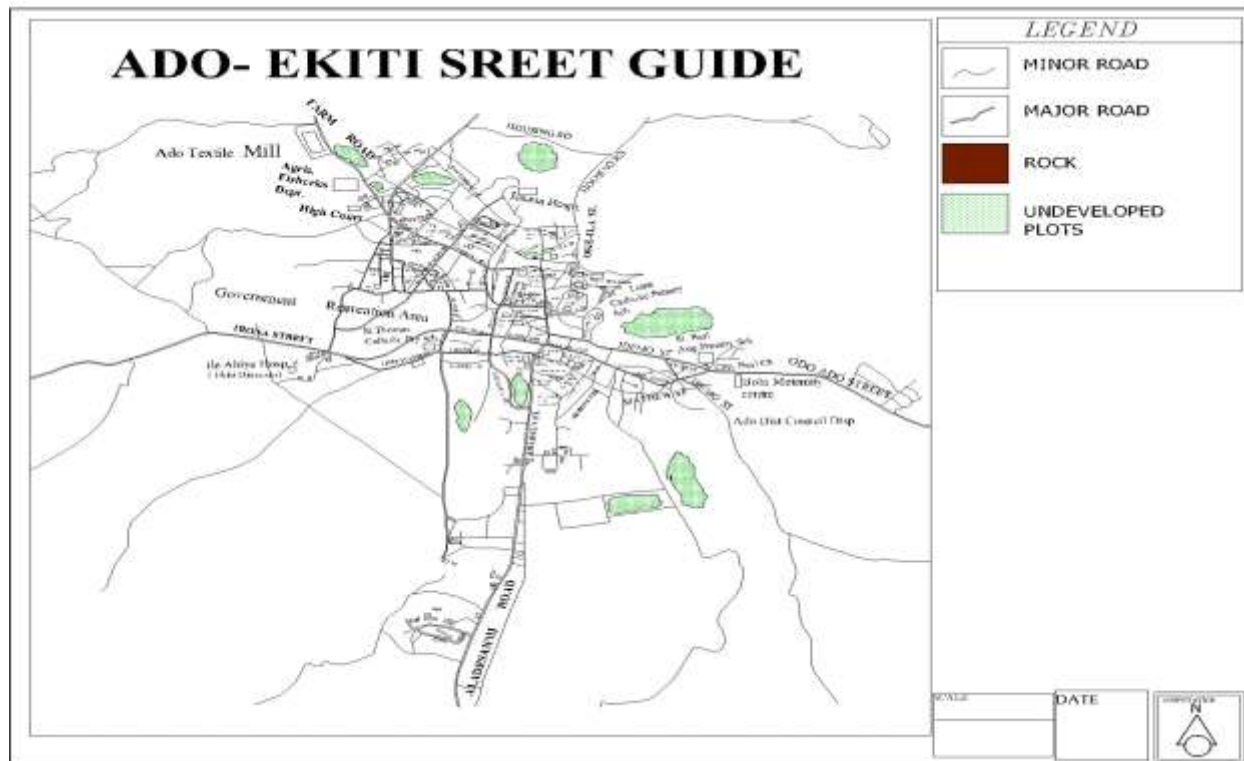


Fig. 1: Ado Ekiti Street Guide with some undeveloped plots, being used for open defecation

Source: Authors' Field Survey, 2017.

Distance between the Well/Borehole and Leaching Field / Pit Latrine

In high water table or flood situations, the pits or containers for excreta are made watertight in order to minimize contamination of groundwater and the environment, (Centers for Disease Control and Prevention, 2009). They also says the minimum distance between well/borehole and leaching field/pit latrine is three meters (3m). In Ado-Ekiti, 12.6% of the respondents have well/borehole and leaching field /pit latrine at a distance less than three meters (3m) between them. Again, 22.2% confirmed that the distance between these two facilities in their compounds is between 3-3.9 meters. It was also observed that 22.6% of them confirmed that the distance between these facilities is between 4 and 5 meters. While, 12.7% said the distance between them in their own compound is more than (5m) five meters.

A further attempt was made to disaggregate these data according to various zones (table 4). Important conclusion that could be drawn from this analysis is that 57.5% of the households in Ado-Ekiti have their wells/ boreholes at distance between three (3) and more than five (5) meters from the leaching field/pit latrine respectively. While 13.6% of the households in the transitional zone have their wells/boreholes at a distance less than three (3m) meters from the leaching field/pit latrine. From these data, one becomes more apprehensive when one observes that there are still dwelling areas where pit latrine/ leaching field is less than three meters (3m) from well/borehole; then where is the place of monitoring among the physical planning process if these building plans were approved by Town planners but not monitored.

Table 4: Distance between the Well/Borehole and Leaching Field/Pit Latrine

Distance (metre)	Urban core		Transitional		Urban periphery		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
< 3	32	12.2	25	13.6	9	11.4	66	12.6
3 – 3.9	58	22.1	41	22.3	18	22.8	117	22.2
4 – 5	64	24.3	36	19.6	19	24.1	119	22.6
> 5	37	14.1	19	10.3	11	13.9	67	12.7
No response	72	27.3	63	34.2	22	27.8	157	29.9
Total	263	100.0	184	100.0	79	100.0	526	100.0

Source: Authors' field Survey, 2017.

Interest of the people in using improved Sanitation Facilities

Analysis of the level of interest in the provision of improved sanitation facilities in this research is borne out of the conviction that the long term sustainability of sanitation facilities can only be guaranteed, if the people are willing to use the facilities.

This research considers the willingness of the people to use improved sanitation facilities and the amount which they could afford to pay for the provision, maintenance and improvement of these facilities if provided.

This research reveals that 55% of the respondents sampled expressed willingness to use the improved sanitation facilities in their houses, while 27.2% felt that it should be government responsibility to provide the facility. Of the total respondents, 10.3% are not willing to use the facility (Fig 2). Interestingly, 53.3% of the respondents at the urban core are willing to use the facility, but higher in both the transitional zone and urban periphery (56.5% and 59.5%) respectively (Fig. 2). This might be the consequences of the low level of

improved sanitation facilities among households in the urban core; and it increases as one move away from the urban core. In addition, since the urban poor predominates the urban core, it is the general believe that they would be reticent at paying for such purpose.

Although majority (39.3%) of the respondents did not respond to the issue of payment as their contribution to the provision of improved sanitation facilities. however, 43.9% of the remaining 60.7% who responded was not ready to contribute more than (N1, 000) one thousand naira per house per month. In a similar trend, this increase away from the urban core to the urban periphery. Specifically, the percentage of the amount which respondents are willing to contribute is almost uniform in all the three identified zones in Ado-Ekiti. That is, 40.5%, 43.4%, and 46.2% of the respondents in urban periphery, urban core, and transitional zone respectively (Fig. 2).

The reason could be that communal self-help developments are endemic of the socio-cultural milieu of the people of South Western Nigeria (Olajuyigbe, 2007).

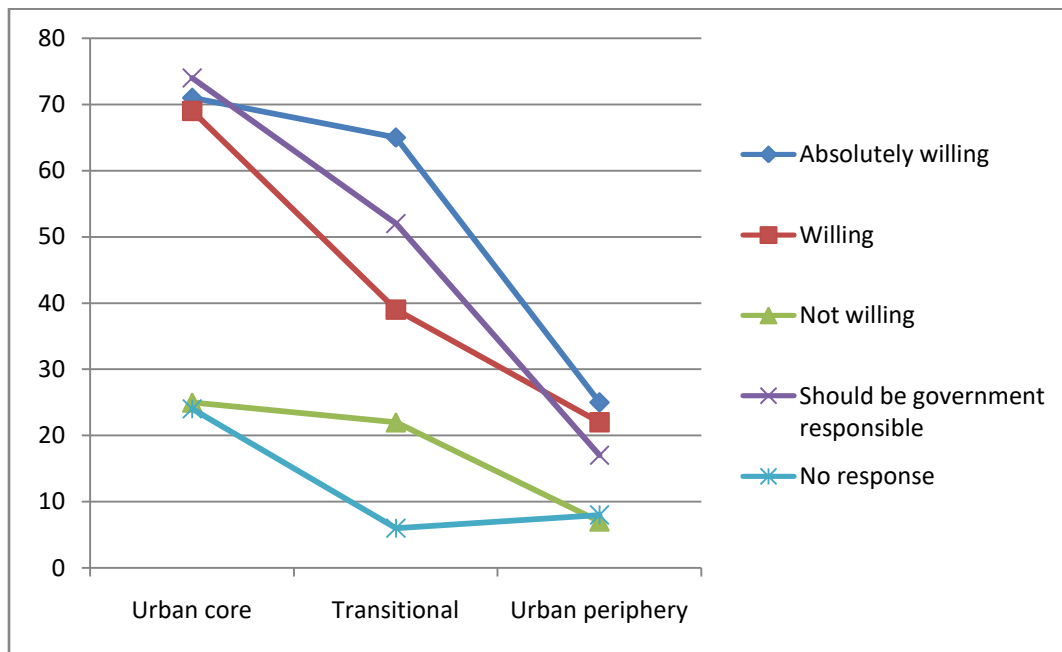


Fig. 2: Level of Interest in using improved Sanitation Facilities

Source: Authors' Field Survey, 2017.

Table 5: Amount Willing to Contribute Monthly

Amount (₦)	Urban core		Transitional		Urban periphery		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
< 500	87	33.1	63	34.2	22	27.8	172	32.7
501- 1,000	27	10.3	22	12.0	10	12.7	59	11.2
1001 – 2000	17	6.4	10	5.5	4	5.1	31	5.9
2001 – 3000	14	5.3	5	2.7	5	6.3	24	4.6
3001 – 4000	5	1.9	4	2.2	2	2.5	11	2.1
4001 – 5,000	2	0.8	5	2.7	3	3.8	10	1.9
> 5000	3	1.1	3	1.6	6	7.6	12	2.3
No response	108	41.1	72	39.1	27	34.2	207	39.3
Total	263	100.0	184	100.0	79	100.0	526	100.0

Source: Authors' Field Survey, 2017.

V. RECOMMENDATIONS AND POLICY GUIDELINES

This study has examined and analyzed sanitation facilities in Ado-Ekiti, Ekiti State, Nigeria.

It has therefore become imperative and urgent for Ekiti State to evolve a well articulate policy on improved environmental health and sanitation. We wish to suggest that the policy thrusts should include among others;

- Enhancement of partnership with Federal Government and International Development Agencies to improve public health and sanitation.
- Encouragement of community participation through organization of public enlightenment campaign for

the people in the study area on the importance of using improved sanitation facilities always.

- Organizations (both public and private) should be encouraged to provide toilet and other sanitation facilities in all public places in the study area.
- Town planners must advise developers on sustainable sanitation facilities before buildings plan could be approved.

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