

## INVESTIGATING THE SANITATION PROFILE OF HOUSEHOLDS IN OGUN STATE, NIGERIA

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### Abstract

*This study evaluates the sanitation profile of households in Ogun State Nigeria, with the view to suggesting sustainable sanitation measures to open defecation prevention. Adopting a four-level multi-stage approach, a total of 110, 100, and 120 questionnaires were respectively administered in Ogijo/Likosi, Ilaro I, and Sodeke/Sale-Ijeun I wards. The selected criteria reflect the variance in the populations of 1,250,435(33%), 1,112,761(30%), and 1,387,944(37%) for Ogun East, Ogun West and Ogun Central, respectively. About 73% of total households own toilets, while the remaining 90 (27%) do not own toilets. The study adopted simple univariate and bivariate tools, most especially Pearson Chi-squared test and Fishers Exact Probability test in analysing key data. The study, among all others, recommends the implementation of initiatives such as awareness raising and the marketing of the reuse potentials of faecal waste as an incentive for toilets construction and sustainable management by households, among others.*

**Keywords:** Faecal, Households, Profile, Sanitation, Sustainability, Waste

### Introduction

Lack of access to well managed toilets represents a great threat of human rights to healthy living and dignity. This explains the condition of 2.3 billion of global citizens who still lack access to basic sanitation and consequently either defecate openly (892 million), employ unimproved facilities such as pit latrines, sometimes without a slab, bucket latrines (856 million), and the remaining 600 million who employ improved sanitation facilities that are jointly used with other households (WHO/UNICEF JMP, 2017). Faecal waste needs to be safely stored, and the accumulated sludge, appropriately emptied, transported to a treatment plant, treated, and reused or disposed without constituting an eyesore and creating health and environmental challenge (Niwaqaba *et al.*, 2014). Faecal waste management still represents a challenge in Ogun State, Nigeria. According to Abiodun (2019), faecal waste challenges are enormous especially in Ogun State, including parts of the State's capital such as Itoko, Ake, Ilogbo, where due to the rocky nature of landforms, toilets are difficult to construct and access to water is also strained. Most households, especially those classified as being poor, in the absence of means to bore wells and maintain toilets, recourse to open defecation in bushes, on rocks, and in incidental open spaces (Olapeju & RafeeMajid, 2018).

This situation had been better statistically described by Shittu *et al.* (2014), which showed in their study that while 70% of rural households in Ogun State have access to toilets, majority of those (55.6%) who have toilets rather depend on unimproved sanitation systems like pit latrines. This lack of toilets, prevalence of unimproved sanitary facilities, and inadequate access to water, make open defecation a practice in 771 of 774 Local Governments in Nigeria, including all the 20 Local Governments in Ogun State (Vanguard Newspaper, 2018). A report of the Nigerian country home of UNICEF had put the number of open defecation free communities in Ogun State to be 257, out of the triggered communities of about 679. This implies households in about 62.2% of the communities across the 20 local government of Ogun State still practice open defecation (Federal

Republic of Nigeria, 2019). The recent cases of cholera and gastroenteritis in the State brings to fore the health risks associated with poor sanitations in affected parts of the study area (Vanguard Newspaper, 2013; The Guardian Newspaper, 2015; Vanguard News, 2016). There is an Ogun State Water corporation whose network covers most part of the State, but the services of the agency are grossly inefficient and inadequate. Hence, streams, wells, and boreholes are the essential sources of water supply in Ogun State. The boreholes are mostly constructed by NGOs, political representatives and private citizens. However, the location of water sources are usually too far from neighbourhoods, and trekking efforts impact most especially on children who get late to school on account of the stress they pass through before accessing water in the morning (World Bank, 2018). Currently, the Ministry of Environment interface with Rural Water Supply and Sanitation Agencies (RUWASSAs), a department inaugurated with the assistance of UNICEF have the mandate over sanitation in the study area. The Ministry of Urban and Regional Planning and the Ministry of Water Resources equally play roles that relate with sanitation, as development control and water management mandates have sanitation dimension. Moreover, departments of environmental sanitation and water supply departments exist in all the 20 local governments in the study area.

However, there is no detailed comprehensive documentary evidence of the sanitation situation in the study area, as the few research efforts have focused on specific settlements within the State, and had addressed limited themes. But preliminary surveys done in respect of this study corroborate existing findings that like, in most Nigerian settlements, residents of Ogun State largely still depend on unimproved toilets. Some households, which reside in the urban core or rural areas, still practice open-defecation, and this does not preclude supposed toilet owners. Some of the households who have good toilets that are not shared occasionally also indulge in open defecation at critical moments most defined by whenever their toilet systems malfunction or whenever they are outside their homes, in the absence of clean public toilets (Olapeju and RafeeMajid, 2018). The people of Ogun State rely on informal services of manual and mechanical emptiers for excreta evacuation and disposal. However, non-recovery management means such as burying of filled pits and application of chemicals to shrink sludge in filled pits is mostly adopted chiefly on account of their relative lower costs (Olapeju and RafeeMajid, 2019). Due to the activities of informal manual and mechanical operators and weak monitoring and enforcement of sanitation regulations, faecal waste is mostly disposed in river bodies, bushes, and buried onsite. The faecal waste is hardly considered applicable for beneficial use, including the traditional agricultural usage, as farmers consider cow dung and inorganic fertilizers as being better than the untreated and not well packaged sludge for the treatment of their lands. This is mainly due to unawareness about the reuse opportunities associated with faecal waste reuse, and then the absence of treatment plants, where faecal waste can be sustainably harnessed, with the products, in form of biogas, bio-char, and fertilizers, well treated and packaged for reusers. This study investigates the sanitation profile of households in Ogun State Nigeria, with the view to suggesting sustainable sanitation measures to open defecation prevention.

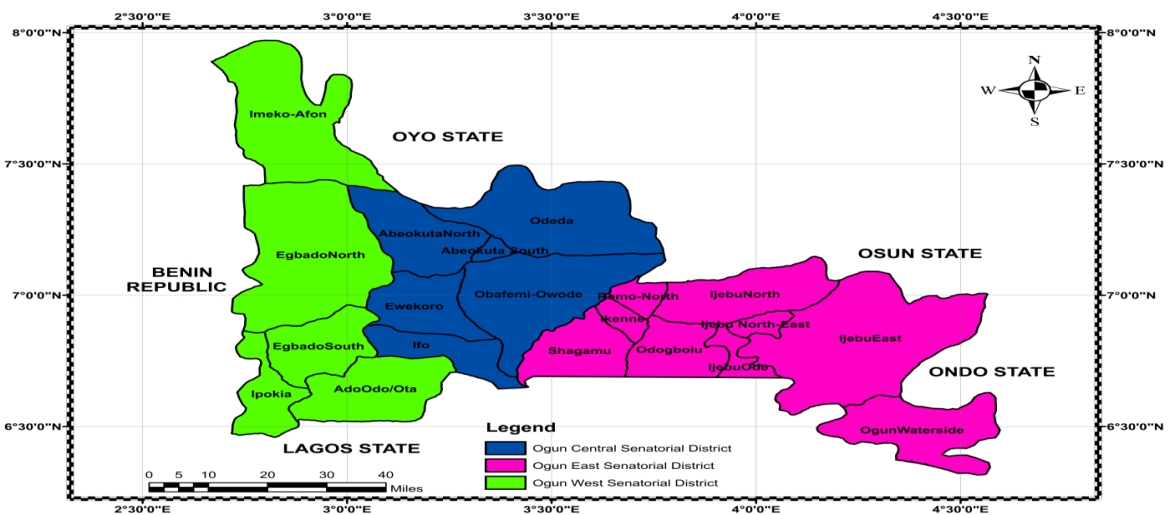
### **Methodology**

The study adopted the convergent parallel variant of the mixed-mode technique, which involves the conflation of quantitative and qualitative method of data collection. For the quantitative element, the multistage approach, in a four level manner, was adopted. This is inclusive of all political divisions in the study area. Foremost, as shown in Figure 1, Ogun State is shown as one of the 36 States in Nigeria. Ogun State was classified on the basis of its three main senatorial districts, which are Ogun Central Senatorial District, Ogun East

Senatorial District, and Ogun West Senatorial District, as shown in Figure 2. These geographical groupings represent the three major regional divisions within the State. Further, Ogun East Senatorial District consists of nine local governments, which are: Ogun Waterside, Ijebu East, Odogbolu, Ijebu North, Ikenne, Ijebu North-East, Ijebu-Ode, Sagamu, and Remo North. Yewa North, Ado-Odo/Ota, Yewa South, Ipokia, and Imeko-Afon are the five local governments in Ogun West Senatorial District. Moreover, Ogun Central Senatorial District encapsulates six local governments, which are: Odeda, Obafemi/ Owode , Abeokuta South, Abeokuta North , Ewekoro and Ifo.



**Figure 1: Map of Nigeria**



**Figure 2: Map of Ogun State**

The second stage involves the random selection of Sagamu, Yewa South, and Abeokuta South Local Governments as the sampling Local Governments in Ogun East Senatorial District, Ogun West Senatorial District, and Ogun Central Senatorial District, respectively. The third stage involves the random selection of a representative ward, based on the wards and polling unit delineations of Independent National Electoral Commission (INEC), from each of the sampling Local governments. In Sagamu Local Government, which consists of 15 political wards namely: Oko/Epe/Itula I; Sabo I, Oko/Epe/Itula II; Sabo II;

Ayegbami/Ijokun; Isokun/Oyebajo; Ijagba; Ode-Lemo; Latawa; Ogijo/ Likosi; Simawa/Iwelepe; Surulere; Isote; Ibido/Ituwa/Alara, and Agbowa, Ogijo/Likosi ward was randomly selected as the sampling ward. Out of the 10 political wards in Yewa South, namely Ilobi/Erinja, Ilaro I; Iwoye; Ilaro II; Idogo ; Ilaro III; Owode I; OkeOdan; Owode II; and Ajilete, Ilaro I was randomly selected as the sampling ward. Further, Sodeke/Sale-Ijeun II was randomly selected as the sampling ward in Abeokuta South Local Government, which encapsulates 15 political wards, namely, Ake I; Keesi/Emere; Ijemo; Ake II; Ake III; Itoko; Erunbe/OkeIjeun; Ijaye/Idi-Aba; Sodeke/Sale-IjeunI; Ago-Egun/Ijesa; Sodeke/Sale-Ijeun II; Imo/Isabo; Igbore/Ago Oba; Ibara I; and Ibara II.

The fourth stage involves the random selection of polling units in each sampling ward, and the random selection of buildings occupying targeted households and locating within 1 kilometre radius from the polling units. The polling units are nationally recognized landmarks for further categorising spatial entities into smaller homogenous units. All the polling units in each of the sampling wards were identified. In Ogijo/Likosi ward, out of the available 19 polling units, 10 namely: St Paul's school Igbode; U.A.M.C School Iraye; St Micheal RCM Fakale; LG school Erefun; St Francis school Igbosoro; St John school Ogijo I; LG school Igbaga; Wesley school Sotunbo; A.U.D school Imushin-Ogijo; and CAC school Ogijo I, were randomly selected. In Ilaro I, out of the available 17 polling units, 10 namely: State hospital; Idowu's house (Otegbeye street); Opp Soyinka's house I; U.A.M.C school Pahayi; Eleja(Oke-Ola); Poly gate; OritaKajola; Egbo Alaparun; Library/rural health care center; and Ita Iyalode, were randomly selected. In Sodeke/Sale-Ijeun II, out of the available 25 polling units, 10 namely: Onijoko Mosque OkebodeII; Opp Oke-Itoku Mosque II; Ile Ogboni OkeItoku; Near Town Planning; Open space Ojulakijena; St Joseph RCM. Oke-bodeI; Primary school Idipape I; All saint school Kobiti; Open space Kemta Odutolu Mosque; and Opp. Bus Stop Bata Itoku, were randomly selected. This made the total number of polling units within the radius of which households were surveyed in the study area to be 30. Systematic random sampling approach on the basis of the 5<sup>th</sup> building interval was adopted in selecting 11 household administered questionnaires within 1 kilometer radius of each of the 10 randomly selected polling units in Ogijo/Likosi ward; 10 households administered questionnaires within 1 kilometer radius of each of the 10 randomly selected polling units in Ilaro I; and 12 households administered questionnaires within 1 kilometer radius of each of the 10 randomly selected polling units in Sodeke/Isale-Ijeun II.

Systematic random approach adopted is to the extent of making the selection of households an entirely random process that disregards the arrangements and physical outlook of the buildings in a manner that can suggest the response patterns of households. The questionnaire distribution ratio 1.1: 1.0: 1.23 adopted dovetails with the population variance across the three senatorial districts in Ogun State estimated as 1,250,435(33%), 1,112,761(30%), and 1,387,944(37%) for Ogun East, Ogun West and Ogun Central, respectively, as sourced from NPC(2010). This implies that 110, 100, and 120 questionnaires were administered in Ogijo/Likosi; Ilaro I, and Sodeke/Sale-Ijeun II, respectively, making a total of 330 households that were surveyed, which represents about 0.06% of the estimated 535,877 households in the study area. Households represent the unit of data collection, and the household heads were the respondents that gave information about their households. The actual quantitative survey was conducted within the first 3 months of the 4 months and two weeks allocated for data collection in the research schedule. Public holidays, mostly Saturdays, which is not a religion sensitive day in Nigeria, were selected as the visitation days for household surveys. This is to ensure high response rates, prevent the disruption of the systematic random approach and the attendant introduction of sampling error that can be caused by respondents' absence, as most potential respondents will be at home on

Saturday. It therefore means that surveys were conducted for 12 days in the entire 3 months period.

The research assistants were equally divided into three groups, and distributed across the 3 sampling wards. Each of the 11 trained research assistants administered an average of 30 questionnaires on a face-to-face basis to households for the entire period, at an average of 2-3 questionnaires per Saturday. The face-to-face survey is imperative to ensuring all research questions are well understood by respondents, especially those without sufficient education. The minimal nature of workload on the research assistants offered the benefit of ensuring the exercise did not become too monotonous, rushed, and error prone. The qualitative data adopted the interview approach. The interviews were conducted within the last month of the 4 months and two weeks allocated for data collection in the research schedule. It involved the adoption of flexible semi-structured instrument to interview key informants, which are knowledgeable in key aspects of the research. Altogether, as shown in Table 1, the total number of interviews conducted in respect of qualitative data is 33. Data collected for this study was checked for errors, and necessary corrections made. Coding of variables as well as classification of data was equally carried out to facilitate analysis. Missing data were adequately taken care of, as the face-to-face questionnaire administration method adopted by the study through well trained survey assistants ensured the minimization of missing data. Missing cases only effectively existed in variables expecting responses from exclusive groups, for instance households that use a specific faecal waste management means. However, the exclude cases pair wise option adopted ensured that all observations to the extent that they have necessary information were included in the analyses. In the course of analysis, outliers not exceeding the 3-box lengths from the edge of the plot box were retained, while the values of the extreme cases were changed to less extreme values in a manner that does not distort the originality of the statistics. Qualitative data exacted from interviews offered insights that were complementary to data collected through the quantitative process.

**Table 1: Showing the distribution of interviewees considered for the study**

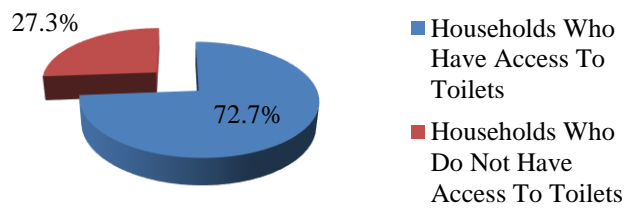
Category of Interviewee	Sagamu Local Government Authority	Yewa South Local Government Authority	Abeokuta South Local Government	Total
Faecal Waste Emptiers				
Manual Emptiers	2	2	2	6
Mechanical Emptiers	2	2	2	6
Potential Reusers				
Crop Farmers	2	2	2	6
Fish Farmers	2	2	2	6
Brick Industry	2	2	2	6
Regulatory Authorities.				
Environmental Sanitation and Water Supply Departments.	1	1	1	3
				33

## Discussion and Analysis

### Households' Ownership of Toilets

Majority of the households in the study area (240), representing about 73% of total households own toilets, while the remaining 90 (27%) claimed not to have toilets. This

profile reflects a larger national concern and practically close to the revelation of WHO (2017a) that Nigeria is among such countries where at least one person in five cannot access improved sanitation services.



**Figure 3: Households’ Access to Toilets**

In the ranking of the important reasons why the 27.3% of the households do not have toilets, it is evident from Table 2 that lack of pressure from environmental authorities with the mean value 4.26 ranks highest as the reason households do not have toilets. This is followed by the factor of space (3.54); unsuitability of the soil condition of households’ sites to support the construction of the type of latrines they can afford (2.94); non-affordability of the cost of maintenance of toilets (2.27); and non-affordability of the cost of construction of toilets (1.96).

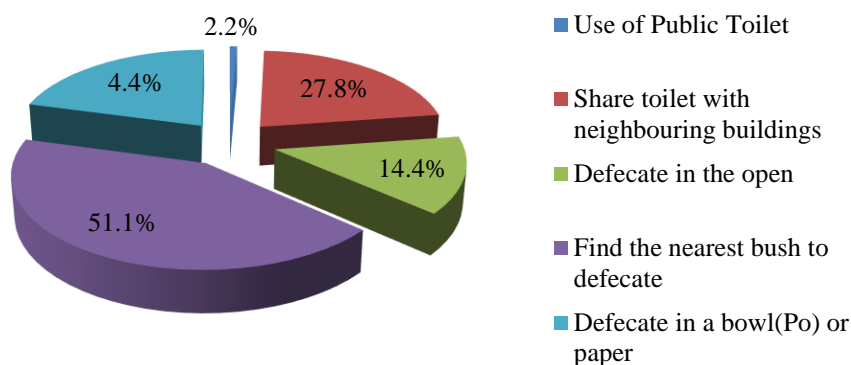
The lack of pressure from environmental authorities could be due to inadequate monitoring as a result of staff’s paucity. Interviews conducted to directors of environmental sanitation departments in the study area, which responsibilities are to ensure sanitation within the local government by inspecting schools, industries, residential milieus, and commercial precincts, and also issue certificate of habitation to premises, reveal that the departments across the three regions where interviews were conducted are grossly understaffed, and this constrains their ability to optimally perform their duties.(Ogun State Government, Personal Communication, February, 2019).

**Table 1 : Reasons Households Do Not Have Toilets**

Reasons For not Having Toilets	Number	Mean
Lack of pressure from environmental authorities	90	4.26
No space.	90	3.54
Unsuitable condition of soil in the building's site	90	2.94
Unaffordability of cost of maintenance.	90	2.27
Unaffordability of the cost of construction.	90	1.96

Mean is calculated as responses’ aggregate average based on the likert scale of 1= strongly disagree, 2= disagree, 3= undecided, 4= agree, 5= strongly agree.

However, for the 27.3% of households who do not have toilets, and as shown in Figure 4, the greatest chunk of them (51.1%) finds the nearest bush to defecate. This is followed by 27.8% who share toilets with neighbouring buildings; 14.4% who just find a space, not necessarily bushy, to defecate; 4.4% who defecate in bowls, known in local parlance as ‘Po’, and subsequently throw away in the open; and 2.2% who patronize public toilets.



**Figure 4: How Households Who Do Not Have Toilets Defecate**

Out of the total number of households who do not have toilets, about 69% of the members claimed they practice open defecation on daily basis. This is followed by about 20% who defecate in the open every other day; 7% who defecate occasionally; 3% who defecate 3 days a week; and about 1% who claimed never to defecate openly. The latter are most likely households who use their neighbours toilets or public latrines all the time.

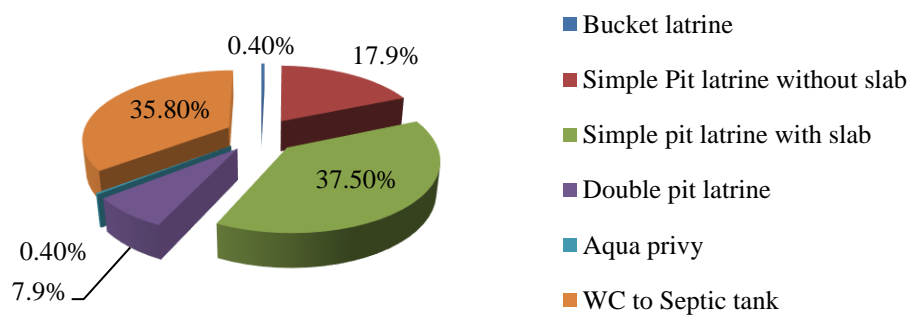
**Table 2 : Frequency of Open Defecation by Household members in Households Who Do Not Have toilets**

How Often Households Who Do Not Have Toilets Defecate in the Open	Frequency	Percentage
Daily	281	68.7
Every other day	81	19.8
< 3days a week	12	2.9
Occasional	30	7.3
Never	5	1.2
<b>Total</b>	<b>409</b>	<b>100.0</b>

The foregoing are not far off from the 2017 findings of Joint Monitoring Programme— a body set up by UNICEF and the World Health Organization as reported by Thisday (2017) that 26% of Nigerians practice open defecation. World Bank (2012) had earlier revealed that persons practicing open defecation in Nigeria expends practically 2.5 days a year finding a private location to defecate, leading to huge economic losses (USD3 billion cumulatively) and production of unhealthy flies and pathogens. Poor water, sanitation and hygiene equally contribute significantly to neglected tropical diseases like schistosomiasis, trachoma and intestinal worms, which affect over 1.5 billion people every year (WHO, 2015). Diarrhoeal diseases related deaths in Nigeria reached 130,610 and 6.85% of total deaths (WHO, 2017). Around 60,000 children under the age of five in Nigeria die from diarrhoeal diseases essentially caused by the country’s poor levels of access to water, sanitation and hygiene (Thisday, 2017).

### Technology of Households Latrines and Related Sanitary Issues

As evident in Figure 5, the hugest chunk of households who have toilets in the study area (37.5%) depend on simple latrine with slab. This is followed by those who use on-site WC to septic tank system (35.8%); 17.9% who use simple latrine without slab; 7.9% who use double pit latrine; 0.4% who use bucket latrine; and 0.4 who use aqua privy toilet type. The sanitary technologies adopted by households, though vary in levels of sanitary improvement, can allow recovery of faecal waste, if households would be willing to adopt faecal waste management methods that are recovery based.



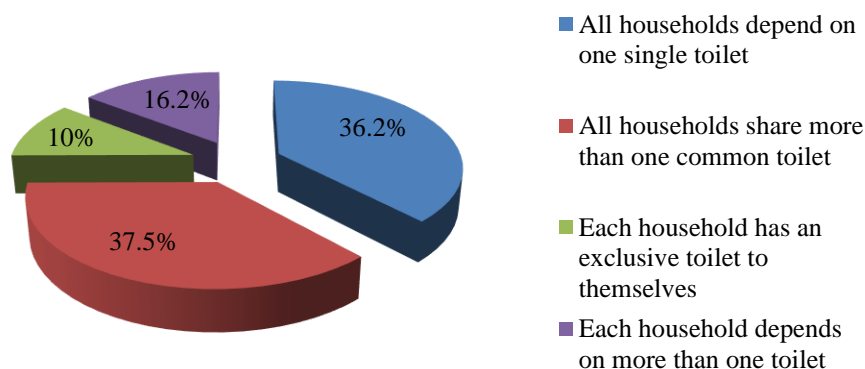
**Figure 5: Technology of Households' Latrines**

As shown in Table 4, only 27.5% of households who have toilets claimed to have wash-hand basins in their toilets. The other 72.5% do not have wash-hand basins.

**Table.3: Availability of Wash-hand Basins in Toilets.**

Availability of Wash-hand Basin	Frequency	Percentage
Yes	66	27.5
No	174	72.5
<b>Total</b>	<b>240</b>	<b>100.0</b>

A high proportion of households who have toilets (37.5%) share more than one toilet. This is followed by 36.2% who share just a single toilet; 16.2% who do not share toilets and depend exclusively on more than one toilet; and 10% who do not share toilets but have just one exclusive toilet to themselves.



**Figure Error! No text of specified style in document.: How Toilet Facility is Shared by Households**

The above analysis on how households share toilets, coupled with the fact that 31.6% of the households who have toilets do not have access to water suggest that majority of



households in the study area have sanitary facilities that essentially fall within the category of limited improved. Service levels of sanitation vary from safely managed improved facilities, which also include wash-hand basin, cleaning soap and sanitizers, that are not shared with other households and where excreta are safely disposed of in-situ or transported and treated offsite; basic improved facilities that are not shared with other households; limited improved facilities shared between two or more households; unimproved pit latrines without a slab or platform, hanging latrines or bucket latrines; to open defecation— disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or others (WHO/UNICEF JMP, 2017). Moreover, as shown in Table 5, which shows the means of households' rankings of the important factors that informed their latrine type, availability of water with 4.61 mean value ranks highest reason households choose their latrines. This is followed by prestige at 4.53 mean value; population of users at 4.5; safety at 4.15; nature of soil at 4.05; cost of construction of toilet at 3.1; and convenience at 2.99.

**Table 4 : Reasons Households Chose their Latrine Type**

Latrine Type Selection Factors	Number	Mean
Availability of water	240	4.61
Prestige	240	4.53
Population of users	240	4.51
Safety	240	4.15
Nature of soil in the site	240	4.05
Cost of Construction	240	3.11
Convenience	240	2.99

Mean is calculated as responses' aggregate average based on the likert scale of 1= strongly disagree, 2= disagree, 3= undecided, 4= agree, 5= strongly agree

Further, the Fisher's exact probability test was used in place of chi-square, given the fact that less than 80% of the cells have expected frequencies of 5 or more, as recommended by Pallant (2005), to test the significance of the relationship between technology of latrine adopted by households and their incomes. The Fisher's exact probability test, as seen in Table 6, with an Exact Significance (2-sided) of 0.00 (< 0.05) suggests that there is significant difference in income between households adopting the 5 major latrine technologies prevalent in the study area.

**Table Error! No text of specified style in document.: Relationship Between Technology of Households' Latrines and Monthly Incomes of Households**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.308E2 <sup>a</sup>	25	.000	.000		
Likelihood Ratio	143.463	25	.000	.000		
Fisher's Exact Test	.000			.000		
Linear-by-Linear Association	93.918	1	.000	.000	.000	.000

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N of Valid Cases      240

- a. 24 cells (66.7%) have expected count less than 5. The minimum expected count is .02.
- b. The standardized statistic is .000.
- 

The cross tabulation, expressing the relationship between technology of household's latrine and income of household, as shown in Table 7, reveals the difference more numerically in a manner that suggests the improvement of the sanitary system adopted depends on income of households. From the table, it is evident that 100% of households who still use bucket latrines earn between ₦7500–15,000 (USD21– USD42). About 58.1% of households who use simple pit latrine without slabs earn between ₦16,000–₦30,000 (USD44–USD83).

This is followed by 27.9% of households who use simple pit latrine without slabs and earn between ₦7500–15,000 (USD21– USD42); 7% of households who use simple pit latrine without slabs and earn less than ₦7500 (USD21); followed by another 4.7 % of households who use simple pit latrine without slabs and earn between ₦31,000 – ₦60,000 (USD86–USD167); and 2.3% of households who use simple pit latrine without slabs and earn between ₦61,000–₦100,000 (USD169–USD277).

The table further shows that about 42% of households who use simple pit latrines with slabs earn between ₦31,000–₦60,000 (USD86–USD167). This is followed by about 27 % of households who use simple pit latrines with slabs and earn between ₦61,000–₦100,000 (USD169–USD277); about 22% of households who use simple pit latrines with slabs and earn between ₦16,000–₦30,000 (USD44– USD83); about 7% of households who use simple pit latrines with slabs and earn between ₦101,000–₦150,000 (USD281–USD416); and about 2% of households who use simple pit latrines with slabs and earn between ₦7500–15,000 (USD21–USD42). Majority of households who use double-pit latrines (94.7%) earn between ₦16,000–₦30,000 (USD44–USD83), and the rest (5.3%) earn between ₦61,000– ₦100,000 (USD169–USD277).

Aqua-privy, which is rare in the study area, is in use mainly by a household whose monthly income is between ₦16,000– ₦30,000 (USD44–USD83). Lastly, the highest number of households who use water closet-to-septic tank system, the most improved sanitary facility in the study area (40.3%) earn between ₦31,000– ₦60,000 (USD86–USD167).

This is followed by 27.5 % of households who use water closet-to-septic tank system and earn between ₦61,000–₦100,000 (USD169–USD277); 21.4 % of households who use water closet-to-septic tank system and earn between ₦16,000–₦30,000 (USD44–USD83), 8.8 % of households who use water closet-to-septic tank system and earn between ₦101,000–₦150,000 (USD281–USD416) 1.7% of households who use water closet -to -septic tank system and earn between ₦7500–15,000 (USD21–USD42).

The pattern suggesting affordability of healthier sanitation technologies depends on income is not just informed by the higher cost of installing sanitary facilities, as their level of improvement relatively gets higher, but also due to the cost of maintaining the facility. For instance, the cost of constructing water-to-septic tank system would be a function of the ability to dispose off a chunk of income in respect of payment for the cost of regular evacuation of septic tanks, and ability to afford regular supply of water for congenial toilet usage. The fact that majority of households in the study area fall between the poor and the floating category of the middle class (USD61–USD124), explains why the most optimal on-

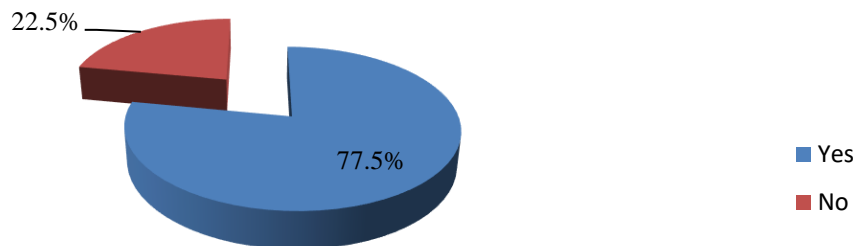
site sanitary facility is not the dominant technology in use by households. The limited coverage of water schemes, from which conduits can connect water to buildings; the high cost of digging wells or boring boreholes as a result of the mostly rocky topography of the study area; lack of subsidies on sludge evacuation, effectively compounds the problems of the mostly poor people, and leave them with the more affordable choices of sanitary technologies, which level of improvement is limited.

**Table 5: Cross-tabulation of Technology of Households' Latrines and Incomes of Households**

		Monthly Income of Households						Total
		N7500	N7500- N15,000	N16,000 - N30,000	N31,000 - N60,000	N61,000- N100,000	N101,000 - N150,000	
<b>Bucket latrine</b>	Count	0	1	0	0	0	0	1
	%Latrin	.0%	100.0%	.0%	.0%	.0%	.0%	100.0
<b>Simple Pit latrine without</b>	Count	3	12	25	2	1	0	43
	%Latrin	7.0%	27.9%	58.1%	4.7%	2.3%	.0%	100.0
<b>Simple pit latrine with</b>	Count	0	2	20	38	24	6	90
	%Latrin	.0%	2.2%	22.2%	42.2%	26.7%	6.7%	100.0
<b>Double pit latrine</b>	Count	0	0	18	0	1	0	19
	%Latrin	.0%	.0%	94.7%	.0%	5.3%	.0%	100.0
<b>Aqua privy</b>	Count	0	0	1	0	0	0	1
	%Latrin	.0%	.0%	100.0%	.0%	.0%	.0%	100.0
<b>WC to Septic tank</b>	Count	0	1	18	34	24	9	86
	%Latrin	0	1.7%	21.4%	40.3%	27.5%	8.8%	100.0
<b>Total</b>	Count	5	36	114	52	27	6	240
	%Latrin	2.1%	15.0%	47.5%	21.7%	11.2%	2.5%	100.0

#### **Open Defecation Behaviour of Households Who Have Toilets**

It is important to interrogate the widely held belief that open defecation is mainly due to the fact that most households do not have toilets, as different plausible factors can explain why households who are not deprived of toilets can also defecate in the open. As evident in Figure 7, majority of households who claimed to have toilets (77.5%) still defecate in the open. Only 22.5% of respondents claimed they, under whatever circumstance, do not openly defecate.



**Figure 7: Open-defecation by Households with Toilets.**

However, as shown in Table 8, majority of people who have toilets (67%) claimed to only defecate openly occasionally. This is followed by about 20% who claimed they do not defecate in the open, under whatever circumstance, about 6% that claimed to defecate openly on daily basis; 4.2 % who openly defecate within three days in a week; and 3.6 % who claimed they practice open-defecation every other day. Such occasion of open-defecation arise in instances when households' latrines get filled and yet not evacuated; sewers linking water closets to septic tanks get clogged; water extremely scarce; and most importantly when household members are not at home when pressed (O.T. Saburi, Personal Communication, January, 2019).

**Table 6: Frequency of Open- Defecation by Members of Households Who Have Toilets**

How Often Households Who Have Toilets Defecate in the Open	Frequency	Percentage
Daily	64	5.6
Every other day	41	3.6
< 3days a week	48	4.2
Occasional	767	66.6
Never	232	20.1
<b>Total</b>	<b>1152</b>	<b>100</b>

Moreover, Table 9 provides a gender classification to households' members open defecation behaviour. The Pearson chi-square test, as seen in the table, has an asymptotic significance (2-sided) value of 0.590 ( $>0.05$ ). This however suggests that the proportion of male members of households who have toilets and still defecate in the open is not significantly different from the proportion of female members of households who have toilets and still defecate in the open.

**Table 7: Relationship between Open Defecation and Gender of Household Members**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.290 <sup>a</sup>	1	.590		
Continuity Correction <sup>b</sup>	.218	1	.641		

Likelihood Ratio	.290	1	.590		
Fisher's Exact Test				.617	.321
Linear-by-Linear Association	.289	1	.591		
N of Valid Cases <sup>b</sup>	1152				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 113.76.

b. Computed only for a 2x2 table

In numerical terms, as evident in Table 10, majority of household members (54.6%) who claimed to still sometimes openly defecate, despite having toilets are male, while the rest (45.4%) are female. Similarly, majority of household members (56.5%) who claimed not to sometimes openly defecate are male, while the rest (43.5%) are female. The differences observable in the figures in terms of the dominance of the male gender in the responses are statistically insignificant and rather more of a reflection of the preponderance of the male gender in the research population (55.8%).

**Table 8: Cross-tabulation of Open defecation and Gender of Households' Members**

		Gender of household member		Total
		Male	Female	
<b>Does Household with toilets still sometimes defecate in the open</b>	Yes Count	491	408	899
	% within Does Household with toilets still sometimes defecate in the open	54.6%	45.4%	100.0%
	% within gender of household member	77.4%	78.8%	78.0%
	% of Total	42.6%	35.4%	78.0%
	No Count	143	110	253
	% within Does Household with toilets still sometimes defecate in the open	56.5%	43.5%	100.0%
<b>Total</b>	Count	634	518	1152
	Expected Count	634.0	518.0	1152.0
	% within Does Household with toilets still sometimes defecate in the open	55.0%	45.0%	100.0%
	% of Total	12.4%	9.5%	22.0%

% within Gender of household head	100.0%	100.0%	100.0%
% of Total	55.0%	45.0%	100.0%

Also, the Pearson chi-square test, which examines the age classification to households' open defecation behaviour, as shown in Table 11, has an asymptotic significance (2-sided) value of 0.05. This suggests that there are no significant differences in the ages of members of households who have toilets and still defecate in the open.

**Table 9: Relationship between Open Defecation and Age of Households' Members**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.600 <sup>a</sup>	5	.005
Likelihood Ratio	17.122	5	.004
Linear-by-Linear Association	9.007	1	.003
N of Valid Cases	1152		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.93

Most households members that reported to still defecate in the open, despite having toilets (28.6%) were between 13-19 years. This is followed by those between 20-35 years (26.3%); those between 36-50 years (21.5%); those between 6-12 years (13.7%); those above 50 years (7.6%); and those within the range of 0-5 years (2.4%). Observable differences are only due to chance and not statistically significant.

**Table 10: Cross-tabulation of Open Defecation and Age of Households' Members**

			Age of household members						Total
			0-5 years	6-12 years	13-19 years	20-35 years	36-50 years	> 50 years	
<b>Does Household with toilets still sometimes defecate in the open</b>	Yes	Count	22	123	257	236	193	68	899
		% within Does Household with toilets still sometimes	2.4%	13.7%	28.6%	26.3%	21.5%	7.6%	100.0%
		% within Age of household member	81.5%	86.6%	82.1%	72.4%	76.6%	73.9%	78.0%
		% of Total	1.9%	10.7%	22.3%	20.5%	16.8%	5.9%	78.0%
No	Count	5	19	56	90	59	24	253	

	% within Does Household with toilets still sometimes defecate in the open	2.0%	7.5%	22.1%	35.6%	23.3%	9.5%	100.0%
	% within Age of household member	18.5%	13.4%	17.9%	27.6%	23.4%	26.1%	22.0%
	% of Total	.4%	1.6%	4.9%	7.8%	5.1%	2.1%	22.0%
<b>Total</b>	Count	27	142	313	326	252	92	1152
	% within Does Household with toilets still sometimes defecate in the open	2.3%	12.3%	27.2%	28.3%	21.9%	8.0%	100.0%
	% within Age of household member	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	2.3%	12.3%	27.2%	28.3%	21.9%	8.0%	100.0%

## Conclusion

The paper explores the sanitation profile of households in Ogun State, Nigeria and offers insights that can assist government policy makers, Non-governmental Organizations and International stakeholders to grapple with the open defecation scourge and the quest to ultimately meet sustainable development goal 6 and its target B. Experiences of developing economies have shown that adopting strict punitive measures as a means of promoting sanitation do not give desired results. Instead, awareness raising and the marketing of the reuse potentials of faecal waste as an incentive for toilets construction and sustainable management by households has started to gain traction. From the planning point of view, planning initiatives such as planning and landscaping of open spaces, provision of bus terminals with adequate toilets, in the event that households members are pressed while travelling, installations of signpost warning against open defecation, connecting all residential developments to comprehensive water schemes, and enlightenment campaigns against open defecation by the authority, would go a long way in discouraging open defecation. Hence, these planning measures should be mainstreamed in cities' master plans of Ogun State and implemented effectively. At the point when the country's road map to open defecation eradication clearly espouses a tier inclusive approach in agenda implementation, it is imperative that the local government authorities are empowered technically, fiscally, and in terms of man-power requisite to effectively play their constitutional role towards achieving effective faecal waste management.

## Acknowledgements

We profoundly appreciate the students of Urban and Regional Planning, Federal Polytechnic Ilaro, Ogun State Nigeria for their patience, time, sacrifice, and understanding in the course of data gathering for the study.

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