

# Effect of Waste Dumpsites on Commercial Properties' Values in Igando, Alimosho Local Government Area of Lagos State, Nigeria

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## ABSTRACT

One of the problems in Lagos state is solid waste management. This study looked at the effect of dump sites on the rental value of surrounding commercial properties in Igando neighbourhood. The survey research study used questionnaire to gather data from users of commercial properties within a 0 – 900 meter radius of the dumpsites under investigation. The result shows that the distance from the dumpsite to the property is a strong predictor of the rental value of commercial properties, with  $P < 0.001$  and that, the age of the building has no effect on the commercial properties rental value in the study area. It was recommended among others that property development in close proximity to waste dumpsites should be discouraged. The dumpsites management should imbibe international standards. To discourage property development towards the dumpsites, a buffer zone of a suitable distance around the dumpsites should be established a ‘No-Development Buffer Zone’.

**Keywords:** Waste Dumping Sites, Commercial Real Estate, Property Value. Lagos State.

## INTRODUCTION

In Nigeria, the rate of solid waste generation has increased in lockstep with the nation's expanding urbanization. According to (Ezeudu, Agunwamba, Ugochukwu & Ezeudu, 2021) the garbage produced in Nigerian cities today is estimated to be 66,828 tons per day (TPD) with a total urban population of 106 million, while the estimated value by 2040 is estimated to be 125,473 TPD at a total urban population of 199 million. Most Nigeria cities generate high volume of waste that frequently exceeds what the capacity of the city infrastructure can absorb or handle. According to Adefemi and Awokunmi, (2009), human activities generate waste which is often inadequately managed in most Nigerian cities and this result to decline in the quality of the environment. Poor environment quality is caused by indiscriminate trash disposal, which accounts for 25% of all preventable illness worldwide (WHO 2002). Waste is collected and disposed of in unregulated dumpsites near residential and business premises in the majority of cases. These wastes are accumulated or burned, polluting the environment's water and air resources (Akpan.2004; Uffia et al. 2013). The impact of this is mostly on human health and properties in the surrounding area. Although locating dumpsites in urban areas are advantageous because they provide a convenient means of waste disposal, the adverse effect of this is not in all cases seen as problem (Arimah & Adinu, 1995).

The lapses in the administration of public land have often been blamed for the majority of dumpsites problems. They are most times initially positioned far away from residential and commercial properties but with passage of time, uncontrolled development of properties and man's indiscriminate use of land make people to build closer to the dumpsites thereby exposing them to the risks associated. The impact on property prices and the health of those living and working in close proximity to these dumpsites is tremendous (Njoku, Edokpayi & Odiyo, 2019). Ready (2010) adduced three reasons why one would want to know the extent to which dumpsites affect nearby property values. First, the welfare effects of dumpsites on the neighboring properties are revealed by changes in property values. Second, property owners are very

curious to know how much a landfill will reduce the value of their asset. Third, estimations of property value effects may be used as inputs in a regulatory impact analysis or cost-benefit analysis.

Numerous studies have been conducted to determine the impact of dumpsites on property values worldwide. (Hays et al., 1982; Bleich *et al.*, 1991; Adewusi & Onifade, 2006; Bello, 2009; Akinjare *et al.*, 2011; Wokekoro and Uruesheyi 2014. These and other studies' conclusions regarding how the investigated trash dump site affects property values are very varied. Individual property value is usually determined by their distinct features, which can be both intrinsic and extrinsic. The internal and outward attributes are related to economic influences and property's specific details (Bell 1999). These characteristics are important considerations in determining property values as the proximity of properties with unfavorable conditions such as dumpsite poses a negative impact on values and slow down property market transaction (Chalmers & Jackson, 1996). According to Bello (2009), dump sites have been seen to release significant amounts of poisonous and harmful substances into the air; this unfavorable externality may result in a poor public perception (stigma) and have an impact on the marketability and value of the nearby properties.

Lagos as a megacity and a major commercial nerve of Nigeria, has witnessed a tremendous investment in real estate development. With increasing commercial activities, many real properties have been developed to meet the commercial needs of the teeming population. In the same vein, Lagos has witnessed the proliferation of illegal dumpsites aside the authorized sites such as Olusosun dumpsite (the largest dumpsite in Nigeria), Igando landfill, Solous 1, 2 and 3, Abule Egba landfill, Surulere landfill etc. The choice of Igando dumpsite for this study is premised on its vintage location and surrounded by a number of residential and commercial land uses despite the perceived air and water pollution as established by the previous studies. There have been numerous research on the Igando dumpsites on issues bothering on its potential health hazards on the residents (Aliu, 2021; Abiola, Fakolade, Akodu, Adeyemi, Oyeleye, Sodamade, & Abdulkareem 2021), effect on the underground water (Ige, Owolabi, Olabode & Obasaju, 2022; Oyiboka, 2014), and its impact on the residential property values (Olasokan & Toki, 2022; Akinjare, Oloyede, Ayedun, & Oloke, 2011). None has examined how the dumpsite affects the value of commercial properties. This study aims to close the gap without assuming that commercial properties will behave similarly to residential properties in the study area; and to offer investment advice to those who are interested in commercial properties investment there. Following this section of this paper is the literature review (section two), preceding the research methodology (section three). Findings, recommendation and conclusion are section four and five respectively.

## LITERATURE REVIEW

There have been numerous studies on the relationship between dumpsites and land values, but with divergence outcomes. For example, Hays et al (1982) studied the effect of proximity of landfill on actual real estate sales price. In their studies, they separated the influence of the proximity from other variables. Essentially, the analysis found no solid evidence to support the claim that the community suffered harm because of the landfill's existence in the study area. The property features other than proximity to the dumpsites appeared to play a far larger role in determining pricing. It was concluded that, even in circumstances where distance to a disposal facility would be a major factor, the analysis found that there are factors that will prevent property devaluation.

The impact of landfills on neighborhood property values in Los Angeles San Fernando Valley was studied by Bleich et al (1991). Three communities were compared in the study. One with close proximity to the landfill and other two with same demographic and social economic features but were located far away from the landfill. The study found that a landfill can be a good neighbor and have no statistically detectable negative effects on the prices of nearby properties if it is properly constructed and maintained. Similar to this, Nwosu and Olofa (2015) also found that values of residential properties in close proximity to Awotan

dumpsite along Apete-Akufo Road, Ibadan are not significantly affected by the presence of the dumpsite. The study noted that the influxes of low-income earners who dominate tenement properties which are of very high demand in the neighbourhood are less bothered with the presence of the dumpsite.

Bello (2009) looked into how dumpsites affected property values in some locations at Lagos, Nigeria. The study focused on three dumpsites locations – Olusosun, Abule Egba and Solous. A concentric ring of 1km distance measurement was adopted for the 3 location and 334 residents from the three garbage dump locations were interviewed, as well as 107 firms of Estate Surveying and Valuation in Lagos. The study discovered that the relationship between the rental value and the occupants' satisfaction in the study areas was weak.

A number of studies however have established a negative effect of dumpsites on property values. For example, In Surulere, Lagos, Nigeria, Adewusi and Onifade (2006) conducted research on the impact of urban solid waste on property values. Data for the study were collected at random from local people and estate agents. Frequency tables and percentage rating were used to analyze the data. According to the study, rents for properties farther from dumpsites are higher than those for properties that are close to dumpsites. They also discovered in the study that when one gets closer to a dumpsite, property transaction rate is slow and unappealing. The study, however, did not specify the rate at which the value changes.

Akinjare et al. (2011) examined the pricing effects of dumpsite on residential housing in Lagos, Nigeria, in a related study. The study focused on the Gbagada, Olusosun, Abule-Egba, and Solous landfills in the city of Lagos. The survey covered a distance of 1.2-kilometer concentric zone from the center of the dumpsites, based on an interval of 300 meters. The results showed that properties between 601 meters and 900 meters from the landfill had the highest recorded property values, and that the landfill posed no threat to properties outside of the 900-meter concentric zone.

Wokekoro and Uruesheyi (2014) investigated the impact of irregular waste disposal on residential property rental values in Port Harcourt Rumuola and Rumuolumeni neighborhoods. The data was elicited by questionnaire, which were administered to the residents residing close and farther away to these dumpsites. The study looked at the residential properties' rental values in these areas. The results demonstrate a significant distinction between residential properties located close to the waste dumpsite and those located further away.

Olasokan and Toki (2022) examined effect that Igando (Solous) dumpsites has on the values of properties around it. The study obtained primary data from residents around the dumpsite and made a number of observations. There was found a higher vacancy rate in the properties as there is constant relocation away from the area to a less polluted areas; giving house letting agent some extra work to secure tenants for vacant houses. However, despite this, lands houses in the area keep appreciating in value year in year out; This may be attributed to a general very high demand for residential properties in the Lagos and specifically, the case study area (Jimi-Oni & Oluwatobi, 2017).

The properties build 500 meters radius to Eneka/Runkpoku, Elingbu and Rumuolumeni landfill sites in Port-Harcourt as studied by Mmom and Mbee (2013) shows a negative response to landfill presence. It was discovered that properties adjacent to landfills are poorly priced, and most of the time people are reluctant to live in or buy property there. The findings of Igbara, Eze, Nwogu, & Igbara (2016) on same Port-Harcourt few years after is not significantly different. A structured questionnaire was administered to several landlords and renters in the residential building nearby the study site's dumpsite and multiple regression was used to isolate the impact of the dumpsite while retaining the influence of other variables constant. The findings indicate that there is a sizable fluctuation in the rent that is due for the various types of residential properties near and far from the Rumuolumeni dumpsite. The study also showed that there is a rise in the length of time it takes to rent out residential properties that are close to the dumpsite, leading to a higher

vacancy rate for the different property types close to the dumpsite.

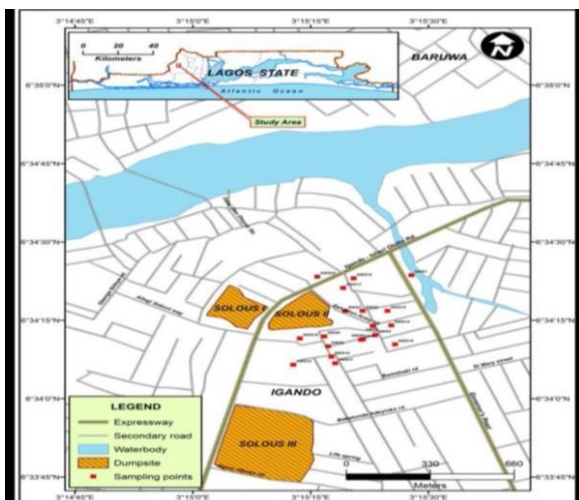
Ready (2010) studied three landfills at Berks County, Southeastern Pennsylvania. These are: Western Berks Landfill (accepted 2,400 tons per day), Rolling Hills Landfill (accepted 2,400 tons per day) and Pioneer Crossing Landfill (1,550 tons per day). Through meta-analysis, the study shows that residential property values next to landfills that take large amounts of waste (500 tons per day or more) are reduced by 13.7 percent on average. At a gradient of 5.9 percent per mile, the impact decreases with distance. With a gradient of 1.3 percent per mile, smaller dumps reduce the value of nearby properties by an average of 2.7 percent. While nearly all high-volume landfills have a negative influence on the property values in the area, 20–26% of low-volume landfills have no effect.

It is obvious from the literature reviewed that the response of properties to the presence of dumpsites does not follow a particular pattern even with residential property investments which dominate the available researches. The majority of these researches focused on residential properties with commercial properties receiving less attention. It is therefore imperative to know the response of commercial properties to the proximity to dumpsites with respect to their value; the gap which this study will fill. Prospect of rental income or capital values are among the indicators that guide property investors.

## STUDY AREA

There are several dumpsites in different locations in Lagos State. One is at Abuja Egba which has a land area of approximately 10.2 hectares. Another dumpsite is located in Olusosun which is part of the Ikeja Local Government. It is said to be Nigeria's largest dumpsite and receives the most waste generated in Lagos. Other dumpsites of various sizes can be found all around the states. The study area includes the three dumpsites along Igando-Egbeda road. The location was chosen because it contains a mixed developments and previous studies focused on dumpsite effects on residential property values with little attention paid to the effects on commercial property values, despite the consistent increase in commercial activities in the location. Igando is a community in Lagos State, located within Alimosho Local Government area. It is about halfway between Ikotun and Iyana Iba. These dumpsites were previously located on the outskirts of town, but due to population growth they are now surrounded by business and residential properties which include a general hospital and a nursing school. Two of these dumpsites (Solous 1 and 2) are just across the road from each other while the third (Solous 3) is just few meters away on the right side of the road towards Iyana Iba. Figure 1 shows the locations of the three dumpsites using the Global Positioning System (Solous 1,2,3). Solous 1 is a 7.8-hectare plot of land. Solous 2 is around 3.2 hectares in size, whereas Solous 3 is approximately 5 hectares (Longe & Balogun 2010). Solous 1 and 2 were put to use since 1994 and 1996 respectively, while Solous 3 commenced in 2006.

**Figure 1: Location of Solous 1, 2 and 3 dumpsites**



Source: Olasokan and Toki (2022)



## MATERIALS AND METHODS

The study used a field survey research design that involved administering questionnaires and taking direct field measurements. In order to determine the distribution of commercial properties near the dumpsites at Igando's Solous 1, Solous 2, and Solous 3, a preliminary reconnaissance survey/observation was carried out in the field. This was followed by identification of commercial properties within the 900 meters radius of each of the dumpsites. Data from the tenants of commercial properties in the area, including stores, office buildings, warehouses, and filling stations, among others, was gathered using a structured questionnaire. It was a self-administered questionnaire and the tenants of the selected commercial properties in the study formed the study populations. A total of 795 commercial properties were enumerated within 900 meters radius of the three waste dumpsites in concentric rings. Previous studies such as Akinjare et al (2011), Nwosu and Olofa (2015), Olasokan and Toki (2022) among others, have measured the effect of dumpsites on properties within a distance up to 1.2 kilometers to dumpsites depending on the spread of the studied properties. Akinjare et al (2011) posited that dumpsites pose no threat to properties beyond the 900-metres circular ring. Thus, the 900m radius of the dumpsites was adopted for this study.

Yamane (1967)'s formula for sample size calculation was used to obtain 265 out of the identified 795 commercial properties. The sample was chosen using a systematic random sampling technique, with every third commercial property on the enumeration list being chosen from the study area. The 265 questionnaires were distributed to the respondents but only 243(91.70%) of the retrieved were found suitable for the data analysis. In addition to the data on the respondents' demographics, the questionnaire also covered information on the rent they pay on their shops or offices and as well as their thoughts on the motive of investing in close proximity to the dumpsites. The study's goals guided the design of the questionnaire.

The distance between each of the selected properties and the dumpsite's edge was measured in meter, and the current rental per square meter (as a proxy for the capital value of the commercial properties) were obtained from the properties' occupants. Multiple regression analysis and descriptive statistics were used to analyze the field data. By the use of multiple regression analyses, the rental values of the commercial properties being the dependent variable was regressed against some independent variables that affect the rental value besides proximity to waste dumpsite; the age of the structure and the number of parking spaces are two of these considerations. The operationalization of variables used in the study is presented in Table 1.

**Table 1: Operationalization of Variables**

Variablecode	Variable Description	Measurement	Operationaldefinition
<b>Dependent Variable</b>			
PropRent	Rent on Property per Sqm	Actual Rent/m <sup>2</sup> in Naira	Continuousvariable
<b>Independent Variables</b>			
DumpDist	Distance from Dumpsites	Actual Perimeter run	Continuousvariable
ParkNum	Number of Parking lots	Actual Number	Continuousvariable
PropAge	Age of Property	Actual in years	Continuousvariable

For the purposes of this study the following multiple regression function was specified:

$$PropRent = \beta_0 + \beta_1(DumpDist) + \beta_2(ParkNum) + \beta_3(PropAge) + \varepsilon$$

Where:

$\beta_1$  to  $\beta_4$  is the regression coefficients

$\varepsilon$  represents the error term.

## RESULTS AND DISCUSSION

### 4.1 The commercial properties and demographic data of the respondents

Shops, offices, warehouses, and gas stations are the different kinds of commercial properties that can be found in the study area. Table 2 lists this information along with other respondents' demographics including gender, property occupancy status, and length of time conducting business in the research area.

**Table 2. Types of Commercial Property and demographic data of the respondents**

Variables	Frequency	Percentage (%)
<b>Types of commercial properties</b>		
Shops	131	53.91
Office Space	68	27.98
Warehouse	24	9.88
Filling Station	20	8.23
<b>Total</b>	<b>243</b>	<b>100</b>
<b>Gender</b>		
Male	99	40.75
Female	144	59.25
<b>Total</b>	<b>243</b>	<b>100</b>
<b>Property Occupancy Status</b>		
Landlord/property owner	92	37.86
Tenant	151	62.14
<b>Total</b>	<b>243</b>	<b>100</b>
<b>Respondents' Length of time of carrying out business in the study area</b>		
Less than 5 years	40	16.46
Between 6 years – 10 years	71	29.22
Between 11 years – 20 years	117	48.15
Above 20 years	15	6.17
<b>Total</b>	<b>243</b>	<b>100</b>

The Table1 reveals that shop is the most popular commercial property in the study area with 53.91%. This is followed by the office spaces (27.98%). The high number of shops may be due to the nature of business it provides, that is, can house many artisans and may not require too much capital to develop. The table revealed the occupancy status of the respondent in the study area. Out of the two hundred and forty-three (243), ninety-two (92) of the respondents, representing 37.86% are landlords/property owners while one hundred and fifty-one (151) of the respondents, representing 62.14% were tenants. The table further revealed the respondent's length of carrying out business in the study area. Out of the total respondents, one hundred and seventeen (117) and fifteen (15) respondents representing 48.15% and 6.17% respectively had been carrying out business in the study area between a period 11 years to 20 years and over 20 years respectively. The findings indicated that most of the respondents have operated their businesses in the vicinity for a considerable amount of time and are aware of the difficulties that the close proximity of the dumpsites posed to their property.

#### 4.2 The Development of Commercial Property in the study area

The study area has a mixed development. It has a mixture of residential and commercial developments with commercial properties cluster along the roads. Commercial activities are carried out in all the streets alongside the residential purpose served by the area. The details of the commercial properties development in the area are shown in Table 3.

**Table 3: The commercial properties development in the study area**

Period when property was developed	Selected Properties within 0 to 300 meters		Selected Properties within 301 to 600 meters		Selected Properties within 601 to 900 meters	
	Frequency	%	Frequency	%	Frequency	%
Built before 1994	5	10.20%	20	58.82%	95	59.37%
Built between 1995 to 2003	24	49%	6	17.65%	43	26.87%
Built between 2004 to 2012	15	30.60%	1	2.94%	11	6.88%
Built between 2013 to 2021	5	10.20%	7	20.59%	11	6.88%
Total (243)	49	100%	34	100%	160	100%
% of Total (100)	20.16%		14%		65.84%	

Table 3 revealed that 49 of the selected commercial properties representing 20.16% were located within 0 meter – 300 meters of the study area, while 34 and 160 properties representing 14% and 65.84% respectively were located within a distance of 301 meters – 600 meters and 601 meters – 900 meters respectively. The table further revealed that, 5 commercial properties representing 10.20% of the 49 properties located within the 0 meter to 300 meters concentric zone were developed before 1994 when the first dumpsite (Solous 1) was established, while 24 commercial properties, representing 49% were developed between the periods of 1995 to 2003. 15 commercial properties representing 30.60% and 5 commercial properties representing 10.20% were developed between 2004 – 2012 and 2013 – 2021 respectively. We can as well see from the table that 20 commercial properties representing 58.82% of the 34 properties located within the 301 meters to 600 meters concentric zone were developed before 1994, while 6 commercial properties, representing 17.65% were developed between the periods of 1995 to 2003. 1 commercial property representing 2.94% and 7 commercial properties representing 20.59% were developed between 2004 – 2012 and 2013 – 2021 respectively. The table also revealed that 95 commercial properties representing 59.37% of the 160 properties located within the 601 meters to 900 meters concentric zone were , representing 26.87% were developed between the periods of 1995 to 2003. 11 commercial properties representing 6.88% were developed each

between 2004– 2012 and 2013 – 2021 respectively. This shows that most of the developments were carried out after the establishment of the dumpsites in 1994, 1996 and 2006 when Solous1, Solous2, and Solous3 were established respectively.

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### 4.3. Analysis of Dumpsite Proximity to Commercial Property using Multiple Regression

The effect of dumpsite proximity on commercial property values in the three dumpsites is calculated using the regression coefficient. Tables 3 and 4 show the results of the test in the study region, which included both independent and dependent variables. The R, which is the correlation between the dependent variables observed and the anticipated value has a range of values from -1 to 1. The direction of the relationship is indicated by the R symbol (Positive or Negative). The strength of a relationship is determined by the total value of R. The bigger total values suggest stronger relationships. Adjusted R squared tries to fix R squared so that it more accurately reflects the model’s goodness of fit in the population. This is shown in Table 4 below.

**Table 4: Regression model summary**

#### SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.914
R Square	0.835
Adjusted R Square	0.833
Standard Error	889.281
Observations	243

The R squared value of 0.835, indicates that the selected independent variables (distance to dumpsite (DumpDist), number of available carparks (ParkNum), age of the commercial properties (PropAge) accounts for 83.50 percent of what determines the rental values of commercial properties in the study area.



#### 4.4 The Dumpsites Impact on Commercial property Rental Values

The significant of the dumpsites' proximity to commercial properties Rental Values was tested, using a Regression Model. The results are shown in the table below:

**Table 5: Analysis of Variance**

ANOVA				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Regression	3	954090541	318030180	402.152
Residual	239	189006331	790821	
Total	242	1143096872		

Table 5 shows that the distance between a property and waste dumpsite is highly statistically significant in determining the commercial properties' rental value in Igando, Lagos State. This implies that there is a strong relationship between the rental value of commercial properties and the distance between the dumpsites. The analysis of variance (ANOVA) for the multiple regressions gave an F-ratio of 402.152, which was significant at 0.05, according to the results.

#### 4.5 Determinants of Commercial Property Rental Values in the Study Area.

The influence of the distance to the waste dumpsite, parking and the age of the building on the Rental Values of Commercial Properties in the study area was investigated. The result is shown in Table 6 below:

**Table 6: Regression coefficients**

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower</i>
Intercept	5661.616	161.042	35.156	0.000	5344.
Average Distance from Dumpsite (Metres)	7.148	0.251	28.427	0.000	6.653
Parking space (Area in Metres)	1.771	0.689	2.572	0.011	0.415
Age of the building	-4.736	4.746	-0.998	0.319	-14.08

The relative contribution of the independent variables to the dependent variable is shown in Table 6. It shows that variable 1 (distance of the dumpsite to the property) strongly has impact on the rental values of commercial properties with p-value of 0.000 indicating  $p < 0.001$ . Therefore, the null hypothesis is rejected. Variable 2 (Parking space) with p-value of 0.011 could be said to have slight significance on the commercial properties' rental values. This means that if the distance to the waste dumpsite is changed while the other variables remain constant, the rental values of commercial properties in the study area will change. This results is consistent with that of Adewusi and Onifade (2006) and Wokekoro and Uruesheyi (2014), who claim that rental paid on properties adjacent to waste dumpsite are lower than rents paid on identical properties further away. Their research was focused on residential properties. This means that the impact of a waste dumpsite on commercial property rental values is similar to the impact on residential property rental values.

## CONCLUSION AND RECOMMENDATIONS

The study has measured the effect of Solous 1, 2, and 3 dumpsites at Igando, Lagos on commercial property developments whereas the previous studies have looked into the residential properties. The study found that the distance between commercial properties and dumpsites is a major determinant of commercial property

rental values. According to the survey, 89.80 percent of the commercial properties in close proximate of 0 to 300meters around the dumpsites were developed after the siting of the 1<sup>st</sup> dumpsite, indicating that the community grows closer and closer to the dumpsites. The distance of the commercial properties to the dumpsites has been established to be a major determinant of rental values of commercial properties in the area.

Arising from the findings of this study, it is hereby recommended that property developments in close proximity to waste dumpsites should be discouraged. The Lagos state government and the dumpsites management should imbibe international standards in their operation to ensure a minimal effect of dumpsites and the people. To discourage property development towards the dumpsites, a buffer zone of a suitable distance around the dumpsites should be established as a “No-Development Buffer Zone”. Finally, the three studied dumpsites should be relocated and the land remediated to curb further negative effect.

## REFERENCES

1. Abiola, A. H. O., Fakolade, F. C., Akodu, B. A., Adejimi, A. A., Oyeleye, O. A., Sodamade, G. A., & Abdulkareem, A. T. (2021). Comparison of respiratory and skin disorders between residents living close to and far from Solous landfill site in Lagos State, Nigeria. *African Journal of Primary Health Care & Family Medicine*, 13(1), 1-7.
2. Adefemi, S. O., & Awokunmi, E. E. (2009). The impact of municipal solid waste disposal in Ado-Ekiti metropolis, Ekiti-State, Nigeria. *African Journal of Environmental Science and Technology*, 3(8), 186-189.
3. Adewusi, A. O. and Onifade, F. A.(2006). The effects of urban solid waste on physical environment and property transactions in Surulere local government area of Lagos state. *Journal of Land use and Development Studies*, 2(1), 71-90.
4. Agunwamba, J. C. (1998). Solid waste management in Nigeria. *Problems and Issues*, 22(6), 849-856.
5. Akinjare, O. A., Oloyede, S. A., Ayedun, C. A., & Oloke, O. C. (2011). Price effects of landfills on residential housing in Lagos, Nigeria. *International journal of marketing studies*, 3(2), 64.
6. Akpan, A. Y. (2004). Physico-chemical studies on the pollution potential of Itu River, Akwa Ibom State, Nigeria. *World J. Agric. Sci.*, 5(1), 1-4.
7. Aliu, I. R. (2021). Socio-Environmental, Residential and Health Effects of Waste Dumpsites in Igando-Alimoso area of Lagos, Nigeria. *Journal of Applied Sciences and Environmental Management*, 25(6), 977-984.
8. Arimah, B. C., & Adinnu, F. I. (1995). Market segmentation and the impact of landfills on residential property values: empirical evidence from an African city. *Netherlands journal of housing and the built environment*, 10(2), 157-171.
9. Bell, R. (1999). The impact of detrimental conditions on property value. *The Appraisal Journal*, 66(4), 380-391
10. Bello, V. A. (2009). *The effects of waste dump sites on proximate property values in Lagos Nigeria*. (Unpublished Ph.D Dessert) Federal University of Technology, Akure, Nigeria.
11. Bleich, D. H., Findlay III, M. C., & Phillips, G. M. (1991). An evaluation of the impact of a well-designed landfill on surrounding property values. *The Appraisal Journal*, 59(2), 247-252
12. Chalmers, J. A. & Jackson, T. O. (1996). Risk Factors in the Appraisal of Contaminated Property. *The Appraisal Journal*, 64(1) 44-58.
13. Ezeudu, O. B., Agunwamba, J. C., Ugochukwu, U. C., & Ezeudu, T. S. (2021). Temporal assessment of municipal solid waste management in Nigeria: prospects for circular economy adoption. *Reviews on Environmental Health*, 36(3), 327-344.
14. Hays B. Gamble, Roger H. Downing, James S. Shortle and Donald J. Epp.(1982), “Effects of Solid Waste Disposal Sites on Community Development and Residential Property Values, Pennsylvania State University Institute for Research on Land and Water Resources, Research Dept. LW 8214, Final Report for the Pennsylvania Bureau of Solid Waste Management, Department of Environmental Resources
15. Igbara, S. A, Eze, M. U. Nwogu, N. and Igbara N. A. (2016). “Measuring the Effect of Dumpsite on

16. the Urban Residential Property Market in Port Harcourt Metropolis”, *International Journal of Innovative Research in Social Sciences and Strategic Management Techniques*. 3(1) 192 – 202
17. Ige, O. O., Owolaby, A. T., Olabode O. F., Obasaju, D. O. (2022). Groundwater quality evaluation: a case study of Igando waste dumpsite, southwestern Nigeria. *Applied water science*. 12(4), 79 – 92.
18. Jimi-Oni, M., & Oluwatobi, A. O. (2017). Impact of Road Rehabilitation on Property Value: A Case of Lasu-Isheri Road, Igando, Lagos State. *Covenant Journal of Research in the Built Environment*. 5(2), 75-88
19. Longe, E.O. and Balogun, M.R. (2010). Groundwater\quality assessment near a municipal landfill, Lagos, Nigeria. *Research Journal of Applied Science, Engineering and Technology*.2(1):39-44.
20. Mmom, P.C. and Mbee, M.D. (2013). “Impact of Landfill Site on real Estate Values in Port Harcourt Metroplois, Nigeria”. *Journal of Humanities and Social Sciences*, 10(6): 34-39.
21. Njoku, P. O., Edokpayi, J. N., & Odiyo, J. O. (2019). Health and environmental risks of residents living close to a landfill: A case study of Thohoyandou Landfill, Limpopo Province, South Africa. *International journal of environmental research and public health*, 16(12), 2125.
22. Nwosu, A. E. & Olofa, S. A. (2015) Effect Of Waste Dumpsites On Proximate Residential Property Values In Ibadan, Oyo State, Nigeria. *Ethiopian Journal of Environmental Studies & Management* 8(Suppl. 2): 976 – 982,
23. Olasokan, O. O., Toki, E. O. (2022). The effect of waste pollution on property value and residents around Igando dumpsite, Nigeria. *Global Scientific Journal*, 10(2), 1321 – 1342.
24. Oyiboka, I. J. (2014) Effect of Landfill sites on groundwater quality in Igando Alimosho Local Government Area, Lagos State. (Unpublished M. Sc Dessert), University of South Africa
25. Ready, R. (2010). Do landfills always depress nearby property values? *Journal of Real Estate Research*, 32(3), 321-340.
26. Uffia, I. D., Ekpo, F. E., & Etim, D. E. (2013). Influence of heavy metals pollution in borehole water collected within abandoned battery industry, Essien Udim, Nigeria. *J. Environ. Sci. Water Resources*, 2(1), 022 – 026.
27. Wokekoro, E., & Uruesheyi, L. (2014). The impact of open waste dumps on rental values of residential properties in Port Harcourt, Nigeria’. *International Journal of Science and Research*, 3(3), 226-230.
28. WHO (World Health Organization). (2002). *Water, Sanitation and Hygiene*. World Health Organization, Geneva.
29. Yamane, T. (1967). *Statistical; An introductory Analysis*. 2<sup>nd</sup> Edition. New York. Harper and Raw