



The Generation Pattern of Municipal Solid Waste in Lagos Metropolis

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ABSTRACT: Municipal solid waste generation in Lagos Metropolis is on the increase both in quantities and variety as a result of urbanization and its impact on the environmental challenges of Lagos State. This paper examines the generation pattern of household and market waste in Lagos Metropolis. The household and market solid wastes generated during a period of 48 days by a sampling of 200 households and 40 market waste samples of different socio – economic characteristics were classified and weighed at source between March 2004 and February 2006. The mean waste generated per household per day was 3770.41 + 208.16g, 2711.90 + 109.44g, 2000.47 + 110.53g and 1945.61 + 75.03g for Ikoyi, Ebute-Metta, Gbagada and Mushin, respectively. The average waste generated per capita per day was 372.63g/capita/day and for the four Local Government Areas were 385.24 + 3.18g, 374.18 + 1.47g, 368.65 + 0.99g and 362.46 + 2.66g, respectively. The average weights of market waste generated per day for the four Local Government Areas were 3350.84 + 35.51g, 3959.32 + 35.48g, 3971.92 + 89.07g and 4848.68 + 77.35g, respectively. The seasonal generation showed an increase during the wet season compared to the dry season. There is need for Lagos State Government to institute an integrated Waste Management approach that will encompass all sectors of the economy to be able to cope with the increase.

Keywords: Waste generation rate, household waste, Market waste, Lagos metropolis, integrated waste management.

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INTRODUCTION

Waste is an inevitable by-product of our use of natural resources and it is generated at every stage of process of production and development. According to the Organization for Economic Cooperation and Development (OECD) (2010), municipal waste is waste collected and treated by or for municipalities. It covers waste from households, including bulky waste, similar waste from commerce and trade, office buildings, institutions and small businesses, yard and garden waste, street sweepings, the contents of litter containers, and market cleansing waste. This excludes waste from municipal sewage networks and treatment, as well as waste from construction and

demolition activities. The amount of municipal waste generated in a country is related to the rate of urbanization, the types and patterns of consumption, household revenue and lifestyles (OECD, 2004).

Solid waste is any solid material which is discarded by its owner, user or producer. Solid wastes are left-over arising from human, animal or plant activities that are normally discarded as useless and not having any consumer value to the person abandoning them (Oyedele, 2009). Solid waste is the most visible environmental problem among many in urban areas. Increased solid waste generation creates more environmental problems in this region, as many

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cities are not able to manage it due to institutional, regulatory, financial, technical, and public participation shortcomings (Visvanathan and Glawe, 2006). The quantity and rate of solid waste generation in the various states of Nigeria depends on the population, level of industrialization, socio-economic status of the citizens and the kinds of commercial activities being predominant (Sridhar and Adeoye, 2003). The rate of waste generation in Lagos State is increasing, covering community activities such as commercial, institutional, industrial and markets. It is also related to the economic level of different sectors in the community such as low, medium and high class residential area. According to Kaufman *et al.*, (2004) United State generates the highest amount of waste per person in the world.

Lagos, the commercial nerve centre of Nigeria presents a typical case of the most industrialized areas of Nigeria, hosting over 60% of the industries in the nation within its relatively small landed area (Odunaiya, 2002). The total average waste generation in Lagos metropolis is over 10,000 tons per day (Lagos State Government, 2004). Despite the concerted efforts of the waste management systems at combating the menace of solid waste from commercial and domestic sources in Lagos Metropolis, the environmental scenario in the state remains a far cry from being acceptable.

This paper is necessitated by the need for detailed information on the quantity and pattern of waste generation in the state to enable the existing management systems put in place appropriate strategy that allows for reduce, reuse and recycle of waste in order to maintain conducive environment in the state.

MATERIAL AND METHOD

Sample Collection

Domestic waste for this study is defined as the waste generated by the activities of families at their homes. The study area covers four (4) Local Government Areas (LGAs) of the state (Fig. 1). These settlements are classified according to the category of the inhabitants and their population densities. The settlements are: Ikoyi, in Eti-Osa Local Government Area; this is a planned low density settlement which is predominantly inhabited by a mixture of the high income class and the middle class. Ebute-Metta, in Lagos Mainland Local Government Area; this is a planned high density settlement, occupied mainly by a mixture of the middle income class and the low class. Ifako-Gbagada, in Kosofe Local Government Area; this is an unplanned

low density settlement, populated largely by the middle income class. The settlement developed rapidly within '70s and '80s. Mushin, in Mushin Local Government Area; this is one of the unplanned densely populated areas of Lagos. It is predominately inhabited by the low income class mixed with the middle class.

50 waste samples were taken randomly from each Local Government Area according to the number of residents indicated in the questionnaires administered to each household. 10 market samples were taken from each settlement. The generation pattern was determined from the number of people in each household of the different Local Government Areas. The number 50 was arrived at in order to have equal basis for comparison.

METHOD

Household Waste

Each sample was weighed (wet weight) *in-situ*, with a TN – 1741874 model balance (20 kilograms); this was then poured inside a plastic bag and reweighed to eliminate the weight of the container. The total wet weight of each waste category was determined and expressed in terms

of grams of waste generated per household per day. From the data, an estimate for average daily generation rate per person was determined. The whole process of weighing was carried out four times a week in every two months between March 2004 and February 2006, excluding public holidays.

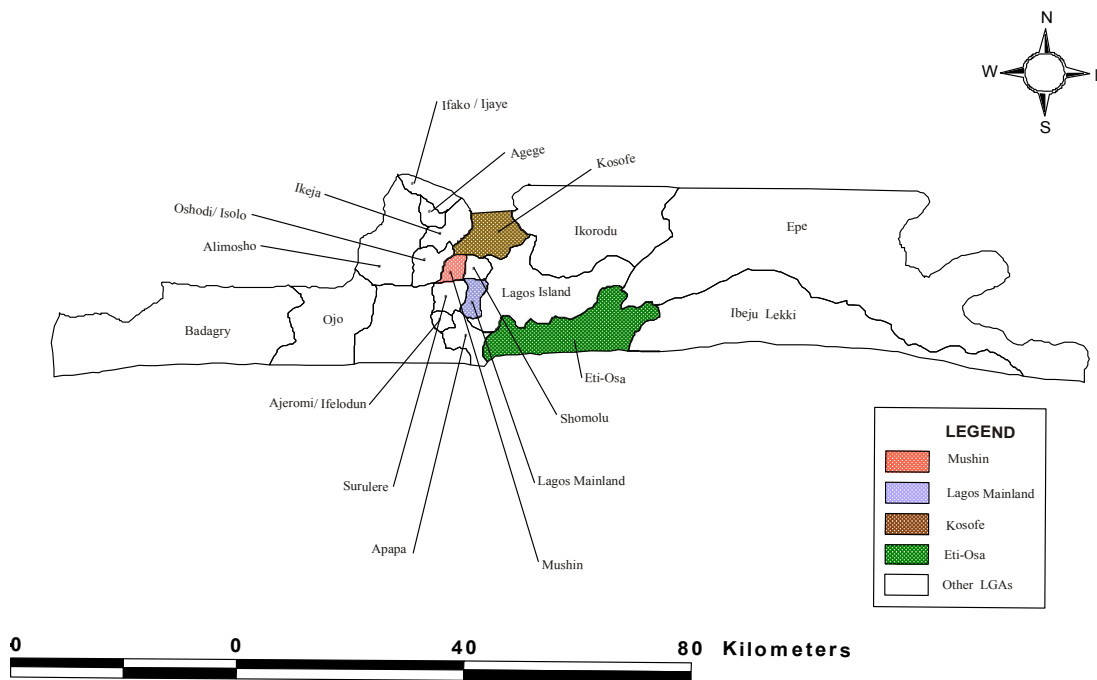


Figure 1: Local governments in Lagos State

Market Waste

Ten market samples collected are as follows:

- 4 samples from wholesale/retail store (supermarkets and stores)
- 4 samples from catering services (Restaurants and Cafeteria) and
- 2 samples from business Centres

Apart from restaurants and cafeterias that use plastic bins, other business setups use cartons to store their waste. Weighing was also done as that of household waste with the TN – 1741874 model balance (20 kilograms).

RESULTS AND DISCUSSION

Household Generation Rate

Household waste generated from the four Local Government Areas comprising Eti-Osa (Ikoyi), Mainland (Ebute-Metta), Kosofe (Ifako-Gbagada) and Mushin (Mushin) for each of the 48 sampling days within a span of March 2004 to February 2006 are presented in Table 1. The mean waste generated per household per day is 3770.41g, 2711.90g, 2000.47g and 1945.61g for Ikoyi, Ebute-Metta, Gbagada and Mushin, respectively. The average weight of waste generated per household per day for the planned settlements (Ikoyi and Ebute-Metta) ranges from 1379.50g to 6200.80g. For the unplanned settlements (Gbagada and Mushin),

the average weight of waste generated ranges from 787.20g to 3364.30g. The analysis of variance confirmed that there is no significant difference ($p > 0.05$) in the average waste generation for all the Local Government Areas. The rate of household waste generation in the four Local Government Areas of Lagos Metropolis namely: Eti-osa (Ikoyi), Mainland (Ebute - Metta), Kosofe (Ifako, Gbagada) and Mushin (Mushin) depends on the income and the population of the people in a particular settlement. The planned settlements (Ikoyi and Ebute-Metta) have a comparatively higher rate of waste generation than the unplanned settlements (Gbagada and Mushin).

Under the planned settlement category, Ikoyi has the highest generation rate which is attributable to the fact that the settlement is mainly inhabited by high income group compared to Ebute-Metta which has more of middle income group. For the unplanned category, Gbagada has the highest rate of generation because it is averagely inhabited by the middle income group, unlike the low income group of Mushin. This confirms the findings of OECD (2004) that waste-generation rates can be correlated to various indicators of affluence, including gross domestic product (GDP)/cap, energy consumption/cap, and private final consumption/cap.

The mean household solid waste generation per capita per day from Ikoyi, Ebute-Metta, Gbagada and Mushin in Lagos Metropolis are presented in Table 2. The average weights per capita per day generation are 385.24g, 374.18g, 368.65g and 362.46g for Ikoyi, Ebute-Metta, Gbagada and Mushin, respectively. The average waste generation per capita per day for the planned settlements (Ikoyi and Ebute-Metta) ranges from 337.50g to 450.11g. In the case of the unplanned settlements the average waste generation per capita per day ranges from 320.41g to 398.25g. The analysis of variance confirmed that there is no significant difference ($p > 0.05$) in the average waste generation per capital per day.

The waste generated per person per day confirms a positive relationship between income and waste generation rate. The estimated average generation per capita per day (372.63g) of domestic waste in Lagos Metropolis in this study is slightly higher than the corresponding value (360g) reported by Adetoun (2001). This is also comparable to the household generation rate in some urban centres of Nigeria as reported by Adewunmi *et al.*, (2005), Akure (540g), Ile-Ife (460g). The per capita solid waste generation in Ilorin (430g), (Yusuf and Oyewumi, 2008), while that of Abuja ranges from (550g to 580g), (Imam

et al., 2007). According to Ogwueleka (2009) the waste generation in Nigeria rates ranged from 0.44 to 0.66 kg/capita/day

In general, there is a direct correlation between the economic status of a country and its household solid waste generation rate in the urban area. The highest for Ikoyi (450g) falls at the lower end of the range reported for medium cities of middle income countries (450 to 750g) while the highest values for Gbagada, Ebute-Metta and Mushin fall at the lower end of the range reported for medium city of low income countries (350 to 650g).

Market Waste Generation Rate

Market waste generated from Ikoyi, Ebute-Metta, Gbagada and Mushin for each of the 48 sampling period between March 2004 and February 2006 are presented in Table 3. The average weights of commercial waste generated per day are 3350.84g, 3959.32g, 3971.92g and 4848.68g for Ikoyi, Ebute-Metta, Gbagada and Mushin, respectively which was significantly different ($p < 0.05$). The Duncan Multiple Range Test categorized the average waste generated into one homogeneous group; this shows that the level of significance in the average waste generated between the LGAs is very low. The average weight per day from the planned areas (Ikoyi and Ebute-Metta) ranges from 2825.71g to 4585.00g. The average weight per day from the unplanned areas (Gbagada and Mushin) ranges from 2976.43g to 6430.83g. The average weight of market waste generation is highest in Mushin, decreasing through Gbagada, Ebute-Metta and Ikoyi respectively. The reason for this sequence includes the fact that Mushin is densely populated and there are lots of stores, eateries (canteens) and business centers. Gbagada has standard supermarkets and it is more populated than Ikoyi. Ikoyi, on the other hand has standard hotels. The unplanned areas are more populated and have high turnover of retail/wholesale consumer good items.

Table 1a: Average Weight (g) of Household Waste Generation in Ikoyi, Ebute-Metta, Gbagada and Mushin

Sampling Period	Ikoyi	Ebute-Metta	Gbagada	Mushin	Mean*	Std Error
1	1696.30	1523.90	840.68	1113.00	1293.50	198.63
2	1888.80	1671.70	930.00	1150.20	1410.20	211.09
3	3254.20	2316.70	1893.60	1842.80	2326.80	326.87
4	3501.50	2641.70	1973.70	1878.20	2498.80	374.91
5	3305.00	2230.20	1704.90	1823.10	2265.80	364.21
6	3500.90	2746.30	2040.30	1823.00	2527.60	379.59
7	4718.90	2983.30	2472.90	2255.20	3107.60	558.36
8	6137.90	3722.10	3146.00	2604.30	3902.60	779.28
9	3105.30	2360.20	1622.70	1820.80	2227.30	331.58
10	3532.60	2682.90	1931.80	1821.10	2492.10	396.15
11	4516.40	3083.20	2327.90	2266.90	3048.60	523.30
12	5845.80	3815.30	2929.10	2652.00	3810.60	722.35
13	2729.00	2258.20	1544.70	1732.90	2066.20	267.58
14	3568.80	2612.50	1968.50	1768.10	2479.50	405.33
15	4087.30	2975.30	2253.80	2206.00	2880.60	439.04
16	5464.40	3766.50	2916.00	2546.40	3673.30	649.37
17	1379.50	1528.60	787.20	1084.70	1195.00	164.26
18	3176.70	2568.60	1779.00	1824.30	2337.20	333.29
19	3418.20	2605.60	1804.20	1892.00	2430.00	375.10
20	3594.00	2719.10	1883.00	1941.60	2534.40	401.31
21	1960.40	1769.80	928.20	1128.60	1446.80	248.04
22	3332.40	2424.70	1667.40	1844.90	2317.40	374.5
23	4689.40	3145.70	2338.00	2283.90	3114.30	560.81
24	5997.40	3564.00	3009.00	2657.80	3807.10	753.57
25	1684.70	1647.80	838.44	1139.90	1327.70	205.05
26	1834.30	1708.10	955.10	1141.70	1409.80	213.66
27	3239.50	2371.90	1771.00	1856.30	2309.70	337.17
28	4678.20	3133.40	2560.60	2286.30	3164.60	534.49
29	1940.20	1546.90	898.80	1165.60	1387.90	227.11
30	3350.80	2310.20	1731.90	1839.00	2308.00	369.60
31	4780.90	3120.70	2517.10	2264.50	3170.80	565.95

Table 1b: Average Weight (g) of Household Waste Generation in Ikoyi, Ebute-Metta, Gbagada and Mushin

Sampling Period	Ikoyi	Ebute-Metta	Gbagada	Mushin	Mean*	Std Error
32	6200.80	3895.70	3214.20	2611.00	3980.40	785.26
33	3102.90	2429.80	1651.20	1861.50	2261.40	325.16
34	4525.00	3171.40	2370.80	2310.50	3094.40	717.98
35	5804.80	3891.80	2991.70	2664.20	3838.10	705.05
36	5918.00	3935.10	3249.90	2693.70	3949.20	703.66
37	2740.00	2340.40	1577.10	1761.90	2104.90	266.93
38	4100.10	3086.90	2284.40	2243.00	2928.60	436.13
39	5481.60	3617.70	2916.60	2584.50	3650.10	647.36
40	6038.80	3900.30	3128.80	2666.30	3933.60	746.48
41	1386.50	1591.60	787.90	1101.50	1216.90	174.77
42	1995.40	1748.90	914.00	1128.10	1446.60	254.57
43	3372.40	2411.80	1707.10	1852.90	2336.10	377.36
44	4726.00	3183.20	2413.20	2280.80	3150.80	561.49
45	1847.30	1686.80	999.10	1159.90	1423.30	203.82
46	3256.30	2452.90	1828.50	1868.10	2351.50	333.69
47	4700.40	3239.80	2658.20	2285.70	3221.00	530.76
48	5873.60	4032.00	3364.30	2660.60	3982.60	689.70
Mean	3770.40	2711.90	2000.50	1945.60	2607.10	461.85

Table 2a: Average Household Solid Waste Generated / person / day (g) in Ikoyi, Ebute-Metta, Gbagada and Mushin

Household Samples	Ikoyi	Ebute-Metta	Gbagada	Mushin	*Mean	Std Dev
1	410.23	380.45	365.30	375.12	382.78	38.71
2	385.25	370.35	367.30	368.27	372.79	30.44
3	375.23	370.50	381.35	356.67	370.94	24.22
4	362.54	380.21	372.15	394.53	377.36	39.20
5	425.21	368.21	361.28	389.35	386.01	34.02
6	430.20	374.50	368.11	352.50	381.33	34.03
7	450.11	362.50	364.30	356.57	383.37	43.30
8	400.30	368.35	360.21	368.23	372.28	183.49
9	364.71	337.50	371.25	383.41	364.22	29.66
10	361.47	380.21	383.22	378.37	375.82	31.10
11	375.25	367.22	378.13	360.25	372.21	20.66
12	368.20	378.50	367.42	368.22	370.59	32.89
13	364.47	375.22	363.20	369.58	368.12	22.50
14	365.24	350.50	380.35	364.23	365.08	39.57
15	388.35	390.14	366.21	365.47	377.54	16.96
16	365.25	375.43	369.14	371.18	370.25	20.20
17	371.22	369.51	375.32	340.35	364.10	27.64
18	390.45	350.48	361.53	390.12	373.15	37.26
19	362.14	380.28	365.70	350.62	364.69	39.44
20	363.15	366.37	378.75	352.08	365.09	11.25
21	379.24	374.22	366.59	335.23	363.82	26.03
22	364.52	368.28	365.28	367.50	366.40	23.33
23	365.21	375.23	372.40	396.67	377.38	23.33
24	364.60	383.30	362.23	379.38	372.38	30.77
25	371.20	368.28	370.19	337.50	361.79	33.25
26	377.50	380.25	369.22	366.82	373.45	21.42
27	401.21	375.80	363.50	375.85	379.09	15.15
28	365.28	375.68	365.24	387.28	373.37	38.00
29	357.05	369.28	366.50	375.00	366.96	37.81
30	364.23	383.38	390.15	350.25	372.00	18.18

Table 2b: Average Household Solid Waste Generated / person / day (g) in Ikoyi, Ebute-Metta, Gbagada and Mushin

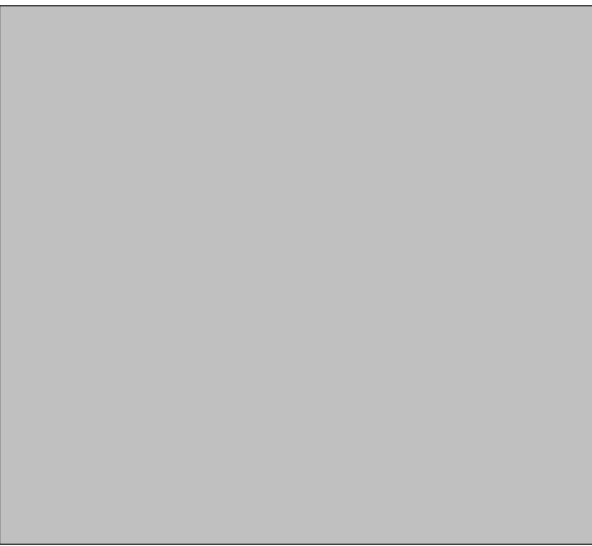
Household Samples	Ikoyi	Ebute- Metta	Gbagada	Mushin	*Mean	Std Dev
31	425.31	368.27	362.50	368.23	381.08	47.82
32	375.54	387.50	371.65	375.21	377.48	38.57
33	382.17	370.35	368.21	366.05	371.70	17.03
34	376.35	380.34	369.17	330.25	364.03	40.79
35	385.24	395.28	365.85	320.41	366.70	33.04
36	417.25	377.50	368.53	325.13	372.10	37.74
37	403.45	370.52	365.11	345.28	371.09	37.46
38	374.25	387.25	365.33	352.32	369.79	16.41
39	418.25	389.70	366.10	365.45	384.88	50.93
40	407.50	390.12	361.50	398.25	389.34	17.48
41	416.25	381.45	367.24	368.27	383.30	42.18
42	372.69	384.42	360.45	366.22	370.95	30.12
43	376.24	372.54	366.24	365.12	370.04	31.29
44	370.42	367.25	370.24	366.30	368.55	21.19
45	413.28	378.35	362.12	358.33	378.02	54.41
46	368.45	365.22	390.25	337.50	365.36	22.19
47	386.24	373.14	365.22	325.25	362.46	59.79
48	402.23	374.50	368.51	365.28	377.63	23.60
49	398.50	376.27	360.22	360.00	373.75	36.04
50	403.43	368.87	366.67	337.58	369.14	36.28
Mean	385.24	374.18	368.65	362.46	372.63	0.95

*Mean of 192 Samples

Seasonal Generation

The average seasonal household waste generated from Ikoyi, Ebute-Metta, Gbagada and Mushin is presented in Figure 1. The average seasonal waste generation is higher during the rainy season for all the four settlements, which ranges from 2142.56g for Mushin to 4278.92g for Ikoyi. Whereas the dry season average value ranges from 1671.10g for Gbagada to 3169.44g for Ikoyi.

For the seasonal generation, more waste is generated during the rainy season than in the dry season. This is due to the fact that more fruits, vegetables and garden waste are produced during the rainy season. People tend to consume more because of the abundance and low price of agricultural products. Also, garden waste trimming exercises are more during the rainy season.



Dry Season n = 24 Samples
 Rainy Season n = 24 Samples
 n = Number of Samples Analyzed

Figure 1: Seasonal Generation of Household Waste (g) in Ikoyi, Ebute-Metta, Gbagada and Mushin

CONCLUSION

Planned settlements have a comparatively higher rate of household waste generation than the unplanned settlements. Conversely, the rate of market waste generation in unplanned settlements is higher than the planned settlements. The average seasonal waste generation is higher during the rainy season than in the dry season.

The all-year-round waste generation rates in Lagos State will rise with economic growth and rising standards of living that will exceed the capacity of the existing and planned waste facilities in the state.

Table 3a: Average Weight (g) of Commercial Waste Generated in Ikoyi, Ebute-Metta, Gbagada and Mushin

Sampling Periods	Ikoyi	Ebute-Metta	Gbagada	Mushin	*Mean	Std Error	F
1	3064.29 ^a	3966.43 ^a	3637.86 ^a	4187.71 ^a	3714.07	665.27	0.12*
2	3817.14 ^a	4585.00 ^a	5703.57 ^a	5452.14 ^a	4889.46	865.08	0.23*
3	3326.43 ^a	3850.00 ^a	3260.00 ^a	5435.71 ^a	3994.26	855.50	0.33*
4	3118.57 ^a	3625.00 ^a	3167.86 ^a	4050.71 ^a	3490.54	615.00	0.11*
5	3392.29 ^a	4047.14 ^a	3458.57 ^a	4025.71 ^a	3730.93	648.57	0.07*
6	3341.43 ^a	3973.57 ^a	4895.00 ^a	4148.57 ^a	4089.64	759.93	0.16*
7	3175.71 ^a	4300.71 ^a	3260.71 ^a	4700.00 ^a	3859.29	682.99	0.28*
8	3433.57 ^a	4269.29 ^a	3027.14 ^a	4086.43 ^a	3704.11	618.49	0.20*
9	3643.57 ^a	3788.57 ^a	4000.71 ^a	4148.57 ^a	3895.36	669.24	0.02*
10	3240.71 ^a	3524.29 ^a	3982.86 ^a	4315.71 ^a	3765.89	725.05	0.10*
11	3630.00 ^a	3910.00 ^a	3437.14 ^a	4938.57 ^a	3978.93	763.37	0.17*
12	3628.57 ^a	3735.00 ^a	3302.14 ^a	5199.29 ^a	3966.25	808.52	0.25*
13	3587.86 ^a	3697.14 ^a	2976.43 ^a	5377.86 ^a	3909.82	831.50	0.36*
14	3700.71 ^a	3728.57 ^a	4761.43 ^a	5341.43 ^a	4383.04	875.79	0.19*
15	3145.00 ^a	3628.57 ^a	2980.00 ^a	4086.43 ^a	3460.00	621.42	0.15*
16	2919.29 ^a	3648.57 ^a	3332.86 ^a	4740.00 ^a	3660.18	610.26	0.38*
17	2968.57 ^a	3477.86 ^a	3471.43 ^a	4562.86 ^a	3620.18	667.37	0.23*
18	3031.43 ^a	3536.43 ^a	4842.14 ^a	4508.00 ^a	3979.50	765.40	0.28*
19	2956.43 ^a	3989.29 ^a	3439.29 ^a	4410.71 ^a	3698.93	640.91	0.22*
20	3255.71 ^a	4559.29 ^a	5442.86 ^a	6430.83 ^a	4866.30	931.10	0.48*
21	2825.71 ^a	3766.43 ^a	4075.71 ^a	5765.00 ^a	4108.21	839.13	0.50*
22	2934.29 ^a	3958.57 ^a	3230.71 ^a	4295.71 ^a	3604.82	643.10	0.22*
23	3205.00 ^a	4206.43 ^a	4862.86 ^a	4289.29 ^a	4140.89	715.52	0.21*
24	3173.57 ^a	4257.14 ^a	3865.00 ^a	4213.57 ^a	3877.32	651.78	0.13*
25	3622.14 ^a	3977.86 ^a	4365.00 ^a	4862.14 ^a	4206.79	727.96	0.12*
26	3572.14 ^a	4087.86 ^a	4361.43 ^a	5367.14 ^a	4347.14	793.42	0.21*
27	3215.71 ^a	4105.00 ^a	3997.14 ^a	4760.71 ^a	4019.64	698.59	0.19*
28	3117.14 ^a	4085.71 ^a	4072.86 ^a	4558.57 ^a	3958.57	670.72	0.18*
29	3326.43 ^a	4022.14 ^a	4635.00 ^a	4865.71 ^a	4212.32	782.47	0.18*
30	3260.71 ^a	3847.14 ^a	4270.00 ^a	5151.43 ^a	4132.32	761.95	0.25*

Table 3b: Average Weight (g) of Commercial Waste Generated in Ikoyi, Ebute-Metta, Gbagada and Mushin

Sampling Periods	Ikoyi	Ebute-Metta	Gbagada	Mushin	*Mean	Std Error	F
31	3214.29 ^a	4260.00 ^a	3962.14 ^a	4900.00 ^a	4084.11	743.18	0.20*
32	3424.43 ^a	4034.29 ^a	3892.86 ^a	4961.43 ^a	4078.25	771.12	0.16*
33	3386.43 ^a	3880.00 ^a	4427.14 ^a	4891.43 ^a	4146.25	762.44	0.17*
34	3190.71 ^a	4205.71 ^a	3859.29 ^a	4637.86 ^a	3973.39	697.95	0.17*
35	3789.29 ^a	3970.71 ^a	4570.71 ^a	5050.71 ^a	4345.36	819.01	0.11*
36	3662.14 ^a	4424.29 ^a	4071.43 ^a	4645.71 ^a	4200.89	731.84	0.08*
37	3227.86 ^a	4150.00 ^a	4472.86 ^a	4793.57 ^a	4161.07	752.41	0.18*
38	3264.29 ^a	3792.14 ^a	3842.14 ^a	5180.71 ^a	4019.82	744.66	0.28*
39	3631.43 ^a	3930.00 ^a	4263.43 ^a	4961.29 ^a	4196.54	756.86	0.13*
40	3740.00 ^a	3942.86 ^a	3925.71 ^a	5111.43 ^a	4180.00	747.11	0.16*
41	3260.71 ^a	3934.29 ^a	4275.00 ^a	6417.86 ^a	4471.96	929.38	0.51*
42	3548.57 ^a	3810.71 ^a	4235.00 ^a	4772.86 ^a	4091.79	730.61	0.12*
43	3480.71 ^a	4061.43 ^a	3415.00 ^a	4847.86 ^a	3971.11	744.39	0.18*
44	3620.71 ^a	4097.14 ^a	3599.17 ^a	4831.43 ^a	4053.33	742.98	0.14*
45	3579.29 ^a	3995.71 ^a	4539.29 ^a	5242.86 ^a	4339.28	782.49	0.19*
46	3441.43 ^a	3880.71 ^a	3296.67 ^a	5052.86 ^a	3940.93	770.84	0.24*
47	3347.86 ^a	3677.85 ^a	3684.29 ^a	5378.57 ^a	4022.14	839.56	0.27*
48	3400.00 ^a	3844.29 ^a	4204.29 ^a	4781.43 ^a	4057.50	743.60	0.14*
Mean	3350.84	3959.32	3971.92	4848.68	4033.30	723.51	

*Mean 40 samples: * = Significant at 95%

RECOMMENDATION

The tremendous volume of waste generated in Lagos State can be turned into wealth through adequate sorting and recycling.

There is a need to practice integrated solid waste management approach such as: Incorporation

of more environmental and economic friendly concepts of source separation; recovery of waste; legitimization of the informal systems; partial privatization and public participation.

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