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Socio-ecologies of solid waste in Ijebu-Ode, Ogun State, Nigeria

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ABSTRACT

The main purpose of this paper is to examine the socio-ecologies of solid waste in Ijebu-Ode, Ogun State, Nigeria. Descriptive survey design was adopted in which questionnaire and personal observation was used to elicit information from the respondents. A total of 115 respondents were selected and examined on the subject matter. Data gathered from the respondents were analysed using descriptive statistics. The finding showed that the characteristics of solid wastes in Ijebu-Ode include plastics, paper/glass, cartoon, sacks and food remnant as well as electronic waste which are generated from households, market places, religious centers and relaxation as well as event centers. The finding also revealed that there is indecent solid waste disposal in terms of waste separation, collection and recycling among the residents of Ijebu-Ode. Based on the finding of this study, it is recommended that government and non-governmental organizations should embark on public sensitization and distribution of garbage containers to residents of Ijebu-Ode in order to encourage sustainable waste disposal and waste management.

1. Introduction

For more than a decade now, many cities in Nigeria have been contending with the challenge of waste management due to increase in industrialization, urbanization and consumption patterns. In the process of finding solution to the problem of waste generation and management in Nigeria and many other developing countries, a lot of investigations/studies have been embarked upon by social scientists and environmentalists in recent times (Solaja et al., 2014; Uwadiegwu and Chukwu, 2013; Chukwuemeka et al., 2012; Fakere et al., 2012; Afangideh et al., 2012; Odufuwa et al., 2012; Douglas, 2004) in attempt to mitigate the challenge caused by it. The growing attention on the problem of waste generation and management among researchers is fundamentally based on the dire need to build healthy environment and improve socio-economic condition for human development. According to Chukwuemeka et al. (2012), achieving human development through effective waste management strategy is a monumental responsibility for social scientists and environmentalists in today's sustainable development era. This is essentially so because sustainable development is about inclusive improvement in the 3Ps (people, profit and planet) and as clearly established in the Agenda 21.

The word 'waste' depicts material or objects that lack direct value or worth to the producer (Science in Africa 2003 cited in Odufuwa, Odufuwa et al., 2012). It can also be described as anything which may not be directly useful or needed by the owner (EIONET, 2009; Edu, 2003 cited in Afangideh, Joseph and Attu, 2012). It can also be described as anything which may not be directly useful or needed by the owner (EIONET, 2009; Edu, 2003 cited in Afangideh, Joseph and Attu, 2012). According to OECD, waste can be defined as materials that are not prime products (i.e. products produced for the market) for which the generator has no further use for own purpose of production, transformation or consumption and which s/he discards or intends or is

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required to discard" (EIONET, 2009 cited in Abiti, 2013). In a similar definition, the UK Environmental Protection Act 1990 described waste as follows:

(a) Waste of all descriptions
(b) Any substance which constitutes a scrap material, an effluent or other unwanted surplus substance arising from the application of any process. Waste is usually classified according to (a) its source (b) its harmful effect on humans and the environment. (c) The control which are appropriate to deal with it.

However, waste can be considered as unwanted or unusable material disposed of by a person or group of people (Udechukwu, 2009 cited in Chukwuemeka et al., 2012) after utilizing the valuable part of it or due to excess of it which may also serve a purpose to another person or users. In most cases, waste appear to be unwanted materials produced as a result of man interaction with nature or his environment over a period of time (Douglas, 2004), unsustainable industrialization (Guti et al., 2012), urbanization (Odufuwa, Odufuwa et al., 2012) and consumption patterns (Nwokocha, 2012). Activities such as industrialization, urbanization, transportation, construction, increase extraction of natural resources and consumption pattern also create various forms of waste. Therefore, waste is an inevitable part of human existence, industrialization and consumption activities that becomes a social problem when the rate of collection and evacuation perpetually lag behind the rate of generation in any given society.

Nevertheless, waste can be classified using the three properties of matter into liquid, gaseous and solid waste. Solid waste can simply be described as unwanted physical or tangible materials like wood, plastics, paper, bottle, metal, polythene etc. that are thrown away or discarded by the owners (Afangideh et al., 2012; Uwadiegwu and Chukwu, 2013). This phenomenon has informed the conclusion of several studies to admit that greater proportion of waste generated from human activities come in form of solid waste (Edu, 2003 cited in Afangideh, Joseph and Attu, 2012; Solaja et al., 2014).

Though, solid-waste materials can as well serve as resource for manufacturing or recycling process. The rising level of solid waste production and ineffective management technique in Nigerian cities has been a source of concern to an increasing number of people in all strata of the society and government inclusive. Reports from empirical studies revealed that the condition of waste disposal and management in Ijebu-Ode continues to worsen despite efforts at managing or mitigating it. This has led to a situation where large parts of Ijebu-Ode, especially less developed areas, are becoming untidy due to improper domestic solid waste disposal and low participation in domestic waste recycling or management. It is very disturbing that waste phenomenon in Ijebu-Ode has become so aggravating to the extent that mountain heaps of waste now adorn roadsides forming part of city's landscape while in some instances roads are carve up by heaps of refuse (Odufuwa et al., 2012) . To this end, this paper examines the socio-ecologies of solid waste in Ijebu-Ode, Ogun State, Nigeria with particular emphasis on the sources and characteristics of waste produced in the area and also to reveal the perception of residents on waste disposal, collection and recycling. The concern in this study is solid waste which has been the dominant form of waste in Nigerian urban areas (Edu, 2003 cited in Afangideh, Joseph & Attu, 2012). Findings from this study will contribute to existing literature on household waste disposal and management. Also, it will be instrumental for policy makers, planners and other environmentalist in understanding the extent of environmental education approach to waste disposal and management to adopt from time to time.

2. Types of waste generated by household and organization

Waste comes in different forms; it could be solid-metal, gaseous-chemical or liquid. Studies which have been conducted to examine the nuances surrounding waste production in Nigeria. To corroborate this view, Akaninyere and Atser (2001) cited in Fakere, Fadairo and Oriye (2012) examined the typology, characteristics and future trends of solid waste in selected Nigerian urban cities (excluding Ijebu-Ode) and asserted that the major components of waste are degradable materials (food remnants, paper, and rags) and non-biodegradable (plastics, tins, metals, bottles, glass, and bones). Among which garbage was found contributing substantially more than other components (Akaninyere and Atser, 2001; Fakere et al., 2012). The finding was further buttressed by Fakere, Fadairo & Oriye 2012 who submitted that most activities which affect the environment stem from the need for food; its production, processing and preparation. As such, some of the wastes are likely to have socio-economic potentials if effective urban mining mechanisms are designed and applied.

3. Negative effect of waste on environment, plants and human beings

As observed by Vujic and Milovanovic (2012) waste is detrimental to the wellbeing of human beings, plants and animals. The negative impact of waste spread beyond it area of occurrence and it could be socially, physically or economically draining for human development and national growth has also noted by (Prokic et al., 2015; Thomson, 2011; Adesiyan, 2005; Fobil et al., 2005). One outstanding consequence of waste production is it contribution to climate change or global warming which posed serious challenge to both developed and developing countries with accompanied consequences like floods, damage of farm produces, death of aquatic species, displacement etc. which affects the quality of environmental resources (i.e. air, water, land and natural resources) and its capacity to provide supportive mechanism for lives (Odufuwa et al., 2012; Adewole, 2009). More explicitly, Adewole

(2009) classified the effect of waste into two broad categories which include:

(1) Environmental effects: The major environmental effects include climate change and air pollution, which includes odour, smoke, noise, dust, etc. Waste pollution – pollution from disposal site via flooding because of blocked drains and land degradation.
(2) Socio-Health effects: This includes: flies which carry germs on their bodies and legs and also excrete them; mosquitoes breed in stagnant water in blocked drains in favourable location in cans, tyres etc. that collects rain water; Rats: rat's spreads typlius, salmonella, leptospirosis and other diseases they cause injuries by biting and spoil millions of tons of food. The refuse workers also faces some hazards which includes: parasite infection and infected cuts resulting from skin contact with refuse, other includes hazards on disposal sites; are injuries from glass, razor blades, syringes, tissue damage or infection through respiration, ingestion or skin contact.

4. Commonly used methods of waste management in Nigeria

Three methods are in common used for dealing with waste in Nigeria namely:

(1) Recycling: This is a form of waste management strategy that involves reuse or transforming of waste materials into valuable resources for the sake of reducing volume of waste generation and it impact on social and environmental conditions (Chukwuemeka, et al., 2012; De Cuba et al., 2010). Recycling of waste materials can include conversion of waste into usable products or raw materials for further production of new products. According to Chukwuemeka et al., (2012), the process of recycling in some countries usually starts from the household, scavengers or waste collectors (who separate materials that can be recycled from the waste) to business or manufacturing organizations who recycle the waste before reaching the landfill.
(2) Composting: According to Uche, 2010 cited in Chukwuemeka et al., (2012), this method involves biological decomposing of waste material or organic matter such as food scraps and plant matter into a soil in order to serve as a natural fertilizer by supplying nutrients to the soil, increasing supportive solid organisms and defeating certain plant diseases thereby lessening the need for chemical fertilizers and pesticides in land scraping and agricultural activities (Chukwuemeka et al., 2012).
(3) Combustion: This form of waste management method includes burning of waste material in a designated facility to reduce its volume and in some cases, to produce energy (Chukwuemeka et al., 2012). According to Tim (2008), combustion is an I.S.W.M. option for managing waste material that cannot be recycled or composted (Chukwuemeka et al., 2012) and the method is also adopted by societies where landfill space is limited (Tim, 2008 as cited in Chukwuemeka et al., 2012). Although, it has been reported that combustion method of waste management can also produce toxic air emission if control equipment such as acid gas scrubbers and fabric filters are not fixed in combustors (Chukwuemeka et al., 2012).

5. Methodology

5.1. Research design

It is desirable to note that the quality of data generated as used for the study and overall understanding of waste generation and management is very important if any tangible and reliable containment result is to be achieved. This view is also emphasized in the study carried out by Stevanovic-Carapina et al., (2013) of which all possibility to the study of waste in Nigeria has taken good cognizance. This study adopted descriptive survey design in which both primary and secondary data sources were used. The primary data was gathered through a self-developed questionnaire and the secondary data were collected from literature, text, reports and other archival sources.

5.2. Study area: Ijebu-Ode

Ijebu-Ode is located at Longitude 3.180 E and Latitude 6.470 N is one of the 20 Local Government Areas (LGA) that make up Ogun State. Ijebu-Ode region covers an area of about 72 km^2 and the second largest urban centre in Ogun State in terms of population and infrastructural facilities, being next only to Abeokuta the state capital. Since the last two decades, the town has proved to be a rapidly growing and expanding urban centre. Its importance as an administrative headquarters and commercial centre predates the colonial period. Ijebu-Ode is a medium-sized city with a population of over 192,000. Topographically, Ijebu-Ode presents a generally gentle undulating plain which rises from about 20 meters above sea level. The topography is underlain by recent alluvial deposits. The town being of very low latitudes is liable to flood during the rainy season. This often results from over flow from drainage channels and blockages of drainage gutters by domestic garbage coupled with ill-maintenance of the drainages by the people and the government agency concerned. Areas usually affected are: Imepe, Degun, Oyingbo, Apebi, Folagbade Road, Balogun Kuku Road and old Ondo-Benin Road etc. Ijebu-Ode has the tropical wet and dry climate characterized by heavy annual rainfall, high temperature and relative humidity. Above all, the town is characterized by modern economics and administrative headquarters.

5.3. Population of the study

The population of the study comprised of residents of Ijebu-Ode, Ogun State, Nigeria. This consists of individuals who are knowledgeable about the subject matter and are willing to share their knowledge with the researchers. The estimated population of Ijebu-Ode is 185,355 (Adapted from Annual Abstract of Statistics, 2012).

5.4. Sample size and sampling technique

Due to the nature of the study, purposive sampling method was used to select 115 respondents who have been residing in Ijebu-Ode, Ogun State, Nigeria for more than five years and they are knowledgeable enough to provide useful information on the research problem at hand. The respondents were selected across political wards in Ijebu-Ode, Ogun State, Nigeria in order to accommodate the heterogeneous nature of the study area.

5.5. Method of data collection

A questionnaire was designed to elicit information from the respondents. The items contained in the questionnaire were generated from current literature. The items also passed through the evaluation and scrutiny of experts in test and measurement in order to ascertain the psychometric properties and content validity of the questionnaire. The reliability index of the data revealed Cronbach's alpha of 8.79 which indicates that the instrument is reliable for a social science research.

5.6. Method of data analysis

Data gathered from the respondents were analysed using descriptive statistics (i.e. frequency counts and percentage tables).

5.7. Data analysis and results

A total of 115 copies of questionnaire were administered out of which 15 were not completed as expected hence; 100 copies of questionnaire were used for analyzing the research objectives of the study.

5.8. Socio-demographic variables of the respondents

Results of the socio-demographic characteristics of the respondents were presented percentages in tables. The distribution of the respondents along gender revealed that 54.0 were females and 46.0 were males. Which implies that majority of the respondents are female. This is further shown in the table 1.

Also, analysis on the age distribution of the respondents shows that 2.0 % of the respondents are below 18 years old, 28.0 % are between the ages of 18 and 30 years old, 23.0 % of the respondents are between 30 and 40 years old while 47.0 % of the respondents are above 40 years old. Thus, majority of the respondents are adults with the age bracket 40 years and above. This result is further shown in table 2.

Furthermore, information collected on the marital status of the respondents revealed that 43.0 % of the respondents are single, 55.0 % of the respondents are married, and 2.0 % of the respondents are widowed, while none of the respondents are divorced. This distribution depicts that majority of the respondents are married with little or no family responsibilities. This information is further presented in table 3.

Moreover, the data collected on household size of the respondents showed that 24.0 % of the respondents has an household size between 1 to 3 persons; 47.0 % of the respondents has an household size between 4 to 6 persons, 20.0 % of the respondents has an household size between 6 to 8 persons, while 9.0 % of the respondents has an household size which is above 8 persons. This outcome illustrates that most of the respondents has a household size of 4-6 persons. This is also shown in table 4.

6. Major findings

The response of respondents in accordance to the stated research objectives are presented below.

6.1. Waste classification

On the classification of waste, respondents were asked to state the most frequent waste material they disposed of in their neighborhood. The result on waste classification shows that 7.0 % of solid waste generated in Ijebu-Ode comprised of electronic waste, 12.0 % include food remnants, garden waste and vegetables, 23.0 % contains paper, cartoon, glass, bottle and sacks, 15.0 % consists of wood, plastic, shoes and construction waste, 17.0 % entails metal, can and aluminum products while 26.0 % consists of garbage, animal waste and bones. Majority of the waste disposed of in the area comprised of garbage, animal waste and bones. This is also shown in table 5.

6.2. Sources of solid waste

The respondents were also asked to mention the source of waste neighborhood. The result shows that 42.0 % of the respondents picked household, 51.0 % picked market, while 5.0 % picked industries and just 2.0 % mentioned other sources such as religious places, recreation centers, and financial institution. This result is shown in table 6.

6.3. Residents' frequency of waste disposal

The respondents were asked to state how frequent they dispose their waste in the neighborhood. The result shows that 17.0 % of the respondents dispose their wastes every day, 22.0 % of the respondents dispose their wastes once-in-a-week and 41.0 % of the respondents dispose their wastes two times in a month,

Table 1
Gender Distribution of Respondents (Field Survey, 2016).

Gender Distribution of Respondents	Frequency (f)	Percentage (%)
Female	54	54.0
Male	46	46.0
Total	**100**	**100.0**

Table 2
Age Distribution of the Respondents (Field Survey, 2016).

Age Distribution of Respondents	Frequency	Percentage
Below 18 Years	2	2.0
18 - 30 Years	28	28.0
30 - 40 Years	23	23.0
Above 40 Years	47	47.0
Total	**100**	**100.0**

Table 3
Marital Status of Respondents (Field Survey, 2016).

Marital Status of Respondents	Frequency	Percentage
Single	43	43.0
Married	55	55.0
Widowed	2	2.0
Total	**100**	**100.0**

Table 4
Household Size of Respondents (Field Survey, 2016).

Household Size of Respondents	Frequency	Percentage
1-3	24	24.0
4-6	47	47.0
6-8	20	20.0
Above 8	9	9.0
Total	**100**	**100.0**

Table 5
Waste Classification (Field Survey, 2016).

Waste Classification	Frequency	Percentage %
Garbage/ animal waste/bones/	26	26.0
Food remnants/ garden waste/vegetables	12	12.0
Paper/ cartoon /glass/bottle/sack	23	23.0
Wood/plastic/shoes/ construction waste	15	15.0
Metal/can/aluminum products	17	17.0
Electronic products	7	7.0
Total	**100**	**100.0**

while 20.0% of the respondents usually dispose their waste on a monthly basis. This result is shown in table 7.

6.4. Solid waste collection

Furthermore, respondents were asked to mention the agent of solid waste collection in the neighborhood. Result shows that 71.0 % of the respondents affirmed that government agency in Ogun State is responsible for waste collection in Ijebu-ode, others 34.0 % of the respondents claimed that it is public vendors that help to collect waste in their neighborhood while 5.0 % of the respondents mentioned private institutions (i.e. schools and hospitals) that assist in waste collection in their area in Ijebu-Ode. This result is shown in table 8.

6.5. Availability of authorize dumpsite

To investigate the matter further, respondents were examined to know whether there is availability of authorize dump site in Ijebu-Ode, Ogun State, Nigeria. The result shows that 77.0 % of the respondents claimed that there is no authorized dumpsite in Ijebu-Ode while 23.0 % claimed that there is authorized dumpsite in Ijebu-Ode, Ogun State, Nigeria. This result revealed that majority of the respondents affirmed that there is no authorized dumpsite in Ijebu-Ode, Ogun Sate, Nigeria. The result is presented in table 9.

6.6. Respondents' perception on solid waste disposal, collection and recycling

The respondents' perception on solid waste disposal, collection and recycling in Ijebu-Ode were examined. This is to ascertain frequency of their participation in environmental sanitation, preference of waste separation before disposal and for recycling process. Level of Participation in Environmental Sanitation The level of participation in environmental sanitation among the respondents was examined. Result revealed that 11.0 % of the residents have never participated in environmental sanitation, 15.0 % of the residents rarely participate in the exercise while 74.0 % of the respondents often participate in the exercise. This shows that majority of the respondents use to observe environmental sanitation that is always done on the last Saturday of every month. This also implies that there will be increase waste generation on every last Saturday of the month in the neighborhood due to environmental sanitation. The result is shown in table 10.

6.7. Residents' preferred methods of waste disposal

Sequel to the result above, respondents were asked to express their preferred methods of waste disposal in their neighborhood. The result shows that 33.0 % of the respondents preferred to dispose their wastes by burning and burying, 48.0 % of the residents prefers composting and dum ping of wastes on open places, road side and drains for pick up by the agent of waste collection, while 19.0 % were of the view that indicates they don't have any preferred method of waste disposal. This result is also shown in table 11.

6.8. Waste sorting/separation

Respondents were examined to know whether they sort the waste before disposing it. The result shows that 9.0 % of the respondent always sort or separate their

Table 6
Sources of Wastes (Field Survey, 2016).

Sources of Wastes	Frequency	Percentage
Household	42	42.0
Market	51	51.0
Industries	5	5.0
Others	2	2.0
Total	**100**	**100.0**

Table 7
Residents' Frequency of Waste Disposal (Field Survey, 2016).

Frequency of Waste Disposal	Frequency	Percentage
Daily	17	17.0
Once-a-week	22	22.0
Twice in a Month	41	41.0
Monthly	20	20.0
Total	**100**	**100.0**

Table 8
Solid Waste Collection (Field Survey, 2016).

Solid Waste Collection	Frequency	Percentage
Government Agency	71	71.0
Private institution	5	5.0
Public vendors	34	34.0
Total	**100**	**100.0**

Table 9
Availability of Authorized Dumpsite (Field Survey, 2016).

Availability of Authorized Dump Site	Frequency	Percentage
Yes	23	23.0
No	77	77.0
Total	**100**	**100.0**

Table 10
Frequency of the Participation of Residents in Environmental Sanitation (Field Survey, 2016).

Residents Participation in Environmental Sanitation	Frequency	Percentage
Never	11	11.0
Rarely	15	15.0
Often	47	47.0
Very Often	27	27.0
Total	**100**	**100.0**

Table 11
Residents' Preferred Methods of Waste Disposal (Field Survey, 2016).

Methods of Waste Disposal	Frequency	Percentage
Burning and Burying	33	33.0
Open dumping and Composting	48	48.0
No preferred method	19	19.0
Total	**100**	**100.0**

Figure 1. Showing waste disposed on open space

waste before disposing them, and 23.0 % of the respondents sometimes do the sorting while 68.0 % of the respondents do not sort their waste before disposing them. The result is shown in table 12**.**

6.9. Reasons for not sorting their waste

The respondents further revealed the reasons for not sorting their waste. The result shows that majority (53.0 %) of the respondents are not aware of waste sorting, 6.0 % affirmed that they don't have garbage container to sort their waste, 38.0 % of the respondent said that they don't have time for sorting waste while 3.0 % of the respondents were of the believe that since waste is to be disposed of sorting of waste makes no difference. This result shows that majority of the respondents have never engage in waste sorting for recycling process. The result is shown in table 13.

Table 12
Waste Sorting /Separation (Field Survey, 2016).

Methods of Waste Disposal	Frequency	Percentage
Always	09	9.0
Sometimes	23	23.0
Not at all	68	68.0
Total	**100**	**100.0**

Table 13
Reasons for not sorting their waste (Field Survey, 2016).

Reasons	Frequency	Percentage
I am not aware of waste sorting	53	53.0
I don't have garbage container	06	6.0
I don't have time for sorting waste	38	38.0
I don't think it makes a difference to sort	03	3.0
Total	**100**	**100.0**

7. Summary and Recommendations

From the discussion so far, it is quite obvious that Ijebu-Ode is one of the urban areas in Nigeria where huge amount of solid waste is generated than what the current waste management facilities can efficiently cope with. As a result, this study examined the socio-ecologies of solid waste in Ijebu-Ode, Ogun State, Nigeria with particular emphasis on the characteristics of waste generated as well as disposal, collection and recycling processes. The finding of the study revealed that majority of the waste generated in the area comprised of biogradable and non-biogradable waste such as animal waste, bones, plastics, paper, glass, cartoon, sacks and food remnant as well as electronic waste. The source of solid waste in the study area includes household, markets, industries, religious places, recreation centers and corporate institutions.

The finding also showed that there is no authorized dumpsite in Ijebu-Ode, Ogun Sate, Nigeria and that waste collection in the area is done by government agency, public vendors and private institutions. Similarly, the finding of the study revealed that majority of the respondents participates in the monthly environmental sanitation. Furthermore, the finding showed that majority of the respondents disposed most of their waste on open places, road side and in public drains. Finding also shows that majority of the respondents were not aware of the importance of waste sorting before disposing it. Reasons for this state of affairs include not having time to sort their waste, insufficient distribution of garbage containers, as well as the believe that since waste is to be disposed of sorting it makes no difference.

Based on the findings of the study, it is therefore recommended that government (both at state and local levels) need to increase their efforts and involvements in waste collection and evacuation in urban areas and Ijebu-Ode metropolis. Also, there is need for adequate provision of waste containers as well as the distribution of these containers must cut across every segment of Ijebu-Ode, Ogun State, Nigeria. In the same way, there is utmost need for public sensitization and education on waste sorting and proper disposal of waste in Ijebu-Ode, Ogun State, Nigeria. This can be done by both government and non-governmental agencies through increase dissemination of information and sensitization on the waste management and benefits of waste sorting before disposal. More so, there should be at least two authorized dumpsites and waste collection centers where the residents can dispose their wastes after sorting them. This will assist in urban waste mining for recycling and manufacturing activities. Finally, there is need for environmental agencies to strengthen their capacity to prosecute any person, organization or group of people who discharge waste haphazardly in Ijebu-Ode metropolis, Nigeria.

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I Z V O D

Cilj ovog rada je sagledavanje upravljanja čvrstog otpada sa aspekta socijalne ekologije u Ijebu-Ode, Oguan, Nigerija. Za istraživanja korišćena je deskriptivna metoda, gde su upitnici i lična opservacija poslužili za dobijanje informacija od 115 ispitanika. Rezultati sprovedenog istraživanja pokazali su da se morfološki sastav u Ijebu-Ode sastoji od više vrsta otpada (plastika, papir, staklo, karton, organski otpad, elektronski otpad), a da su izvori generisanja otpada domaćinstva, marketi, verski i kulturni centri. Takođe, na osnovu istraživanja indetifikovano je i postojanje malih divljih deponija. Na osnovu sve obuhvatne analize, vladinim i nevladinim organizacijama, data je preporuka da pokrenu kampanju u cilju uspostavljanja održivog sistema upravljanja otpadom.