

Faculty of the Social Sciences,
University of Nigeria Nsukka

**2020 Virtual Conference on “Critical Issues and
Challenges to Sustainable Development in Africa”**

BOOK OF PROCEEDINGS

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FACULTY OF THE SOCIAL SCIENCES UNIVERSITY OF NIGERIA, NSUKKA

2020 International Virtual Conference on Critical Issues and Challenges to Sustainable Development in Africa

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SOCIO-CULTURAL FACTORS THAT INFLUENCE SOLID WASTE GENERATION AND MANAGEMENT IN NIGERIAN CITIES: A REVIEW

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Abstract

Urbanisation, modernisation and rural migration to cities create an increase in population that ultimately proliferate the uses of needed materials which results into a tremendous urban problem related to waste generation and management. Increase in waste generation reflects a substantial challenge to large urban centre globally and signifies a precarious issue for fast growing cities with accelerated population growth. Wastes are an unavoidable consequence of production and consumption activities that are mostly tied to the attitude and behaviour of people in any economy. A socio-cultural environment is the combination of social and cultural factors that have a significant impact on waste generation, due to the strong interaction that exists between them, it is somehow difficult to separately assess their influence on waste generation. There are different views from the scholars in motivating the relationship between the issue of solid waste and socio cultural factors. The focus of this paper is to describe the influence of certain socio-cultural factors as they influence solid waste generation and management in order to suggest ways of improving management strategies of limiting its adverse effects in Nigerian cities.

Keywords: solid waste, society, culture, urbanisation, waste generation, waste management

Introduction

The United Nations projected a rapid growth in urban population between 2017 and 2030. United Nations Department of Economics and Social Affairs cited in) projected a 66% increase in the urban population worldwide as against 52% in 2014. One of the consequences of the global urbanisation is increasing volume of solid waste. It was estimated in the year 2016 by the world Bank that the total amount of waste generated in the cities of the world was approximately 2.01 billion tons and it is still expected that by the year 2050 the rate will increase by 70% to 3.40 billion tons as a result of increased in population and urbanisation. This increase is tied to the economic growth that has impacted negatively on the management of solid waste generation particularly in the context of developing countries . Solid waste is one of the major problems that is gaining increased focused by every government in the world.

The increase in solid waste generation according to in most of the developing countries over time has been related to changes in lifestyle of the people. Other studies attributes include society, culture, income and family size.

Solid waste generation today has grown beyond the reach of the city authorities to control for a sustainable urban environment. This paper review literature on the socio-cultural factors that influences generation and management of solid waste in Nigerian cities.

Literature Review

Solid waste is the wastes in its dry form generated either from homes, other areas such as schools, farms, markets, industries or even from street sweeping, they are often referred to as the Municipal Solid waste (MSW). Society and culture have a significant impact on the waste generation, as proper management depends on households' participation, which is directly related to the attitudes and behaviours of the society in a large scale .

Developed nations tend to take a holistic approach in the collection, keeping, treatment and disposal of solid waste to make it harmless on environment, human and animal life. The case is different in developing nations as the issue of municipal waste management is solely channeled to the local authorities, and due to the financial burden and the capital intensive nature for the purchase and maintenance of waste management equipment, they were unable to cope with it. The down side of it is the indiscriminate disposal of solid waste on the environment due to the negative attitude and *inadequate awareness of proper solid waste disposal by the people* .

Studies shows that the largest percentage of municipal solid waste generated in the developing countries are mainly from households , while the composition varies in cities and nations due to differences in life style, economic situation, waste management regulations and industrial structure .

There are diverse views on the link that exist between socio-cultural factors and household solid waste generation and management. *stated that* the lifestyle, particularly the eating habits of residents affect waste generation. Similarly, *observes that* the perception of order, value and usefulness attached to waste based on the general and cultural believes of the people's daily life affect waste generation. , *on the other hand believed that waste generation* is due to the residents' socio-economic status (sex, education attainment, and household income) and geographic risk factors (residential area and residents' distance to municipal permitted dumpsite).

These views shall be integrated in order to examine the influence on waste generation and management in Nigeria particularly in Bida a cultural and a heritage urban area so as to suggest ways of improving management strategies for sustainable urban environment.

Solid Waste

Solid waste is one of the major problems of urbanisation in cities globally. Large scale of waste (solid/liquid) is generated due to the number of people while processing and handling of such amount of wastes becomes a challenge to the city authority. Solid waste was defined by as any discarded solid materials from households, healthcare centre, constructional site, agricultural land, commercial, industrial, or institutional area. It constitutes generally to man's unwanted materials that needed to be collected and properly managed depending on the man's attitudes and behaviour . The essential meanings of society and culture coincide in this study,

culture can be thought of a group's heritage or a set of rules and beliefs that influence human behaviour while society is a group of humans sharing a common culture and social system. Combining the keywords “urbanisation”, “solid waste”, “society” and “culture” reflects that whatever one “sees as” or “chooses to be” or “has to do with” waste depend solely on the idea, customs or behavioral attitude adopted from his social system.

Literatures show that there is a strong relationship between peoples' attitude and solid waste generation and management, this study is therefore review literatures identify socio-cultural factors that influence waste generation in Bida Town.

Global solid waste generation:

The World Bank in global waste index report (2019) predicted the increase in global waste generation by 70% before the year 2050. In another report on global review of solid waste management (2019), it was also predicted that urban residents will be generating 2.2 billion tons of solid waste per year before 2025 as against 1.3 billion tons that is presently being generated due to the increase in urban population.

High income nations of the world generate more waste than the low-income nation. For instance, United States ranked the largest generator of solid waste in the world where each citizen generates an average of 808 kilograms per year. Ellis (2018) stated that rich countries of the world like United State, Canada, and members of the European Union constitute 16% of the world population generate up to 34% of world's waste.

Solid waste management is an issue of universal commitment that concern every person in the world (World Bank report, 2018). The report has it that over 90% of waste in the low-income countries were not properly managed in an environmentally safe manner, which make it vulnerable and contaminate the world's ocean, transmit disease and affect the economic development. It further stated that waste generation is expected to rise with economic development and population growth in the year 2050 mostly especially in Sub-Saharan Africa, South Asia, Middle East and North Africa which are major among the regions of the world.

Findings from these reports shows that the global waste generation and composition depends solely on the level of economic development, population growth, cultural norms and geographical location of a country while waste management is closely related to the income level of a nation where the low-income countries generate and manage less waste than the high-income countries.

Considering the challenge of increase in waste generation and management of solid waste to large urban centers of the world, suggested the use of Internet of Things (IOT) which predicts a world where physical, digital and virtual objects are interconnected in a network supporting higher order applications to modify the performance of solid waste management. In the study, Pardini reviewed the analysis of waste management models that are available in the literature based on IoT requirements to check with the related literature based on IoT infrastructure for well-organised management of waste generated in urban settings with the focus on the interaction that exist among the agents that are responsible for waste collection and the waste generators from the viewpoint of time, costs, and citizenship promotion.

The focus was based on waste bins which receive the dumps to generate information through IoT physical infrastructure provided like types of waste supported by the container, bins positioning, the pneumatic tube that automatically compacts garbage to decrease volume and recycling and processing points for the refuse to be returned as a raw material or to be processed for the correct disposal. Attention was also given to the IoT technologies to be adopted considering the Radio Frequency Identification support like types of sensors to be used, automatic actuators, cameras positioning, Global Positioning System (GPS) and IoT architecture. These were to be supported by the types of software to be used for analysis on how the information obtained shall be used in obtaining a dynamic collection planning.

In overall, findings from these studies revealed focuses on wastes were in Macro terms and little attention given on the primary generators of solid waste

Regional solid waste generation:

The low-income urban center of the developing countries tend to generate lower volume of waste than the higher income urban centres. This was discovered by in the study conducted on the trends of solid waste management in East African countries of Kenya, Tanzania and as they were managed from the source to the final disposal. Okot-Okumu stated that waste management at the past have been a central control system monopolised by the urban authorities before the partnership with public and private service providers in different urban communities. According to the study, total waste generations were tied to the national GDP per capita such that the developing countries like countries in Africa and Asia generates less than 1.0 kg/cap/day while the developed economic were above 1.5 kg/cap/day.

Solid waste generation in developed nations

The study conducted on the effects of socio – economic factors on household solid waste generation and composition in Vietnam by uses income as a basis for investigation on some selected households, but further studies shows that income is insignificant rather the households' size and daily activities. Similarly, in studying the society and household behavior, culture and attitudes of people towards solid waste management as they are related to global solid waste generation in developed nations found out that the intervention of any solid waste management programme like recycling scheme is always influenced by demographic factors (age, education, income and household size) and attitudinal change of the people.

Culture plays an important role even in most of the developed countries that adopted the use of separate waste collection system as a policy to control waste generation. This was investigated by in the study of the *effects of neighbour influence and cultural consumption on separate waste collection system*. Focusing of twin events, Agovino first outlined the theoretical framework on the essential things that motivate the pro – environmental behaviors of people towards separate waste collection and then test the results by implementing a quantile regression on Italian municipal data for 2012.

Solid waste generation in developing Nation

Yiougo (2013) uses Geographical Information System (GIS) to evaluate the waste generation of two cities in Burkina Faso with focus on some selected variables like urban fabric, grey water outlets and household garbage dump sites. Findings shows that the most dominant urban fabric is low standard of living characterised by the existence of open spaces. While the solid waste dump site dominates the density of grey water discharge points.

Rapid urbanisation and economic growth in developing countries increase the amount of solid waste generation, while inadequate financial resources and deficiency of data on the amount and its composition make it difficult for the regulatory bodies in preparing a proper planning management system. In his study collect information on the average waste generation rate of four groups of residential areas in Gujranwala city of Pakistan for record and discover that the generation rate ranges of between 0.33kg per capita per day for low income areas to 0.46 kg for high income areas, while the composition is of 15 categories of waste products with kitchen waste as the largest components of between 43 – 68%.

Apart from solid waste generation, the behavioural attitude of household on solid waste management is another serious factor that influence solid waste in developing countries, examines these factors in Bahir Dar City. Stratifying the city into core, outer and the middle zones, it was discovered that households do not enjoy sufficient solid waste management services. Though, the per capita waste generation was 0.22kg/person/day in all zones with the highest generation in the core zone due to the household waste sorting that is more intensive in outer zone than the other zones.

The failing services on urban waste management in developing countries was traced to the lack of resources, infrastructures, awareness and institutional strength by . Though, these were addressed as the signs, indications, and facts that can be observed, measured or calculated form the review of the past literatures on the factors that restrain CDCs (Centers for Disease Control) from offering all of their citizens, companies and institutions access to good solid waste management services.

The volume and composition of waste varies in most of the developing nations, this was stated by when comparing waste generation within the traditional core zone, transitional zone that developed under colonial rule and suburban zones. It was found out that the variations were due to the differences in employment and livelihood patterns of the residents in the zones. Similar research carried out by indicate income, education and social status of the residents as the major contributing factors. While hold on to socio-economic differences of the residents. These studies were reaffirmed by the findings of other scholars (Babalola, 2008; Egbere et al 2000; Igbinomwanhia and Ohwovoriole, 2012; Kayode and Omole, 2011; Nkwocha et al 2011; Ogwueleka, 2003;) on intra city studies in Jos, Akure, Owerri, Nsuka, Minna, Benin and Ibadan.

Methods

This article reviewed literatures on socio-cultural factors that influence the generation and management of solid waste. The review was arranged thematically at the global, developed,

and developing countries. Factors identified were integrate with relevant evidences that were used to evaluate a framework that summarise the relationship that exist between them.

The keywords used in reviewing the literature were the ones that refer to the issues concerning solid waste generation and management in Nigeria, that is combining the keywords “solid waste” and “Nigeria” with urbanisation, society, culture, waste generation and waste management. The review starts with the definition and identifying the relationship that exist between urbanisation, society, culture and solid waste generation and management.

Socio-Cultural Factors that Influence Solid Waste in Nigerian Cities

There are diverse literatures on solid waste generation and management, some of these literatures were adopted for review so as to identify, synthesis and integrate the relationship that exist between socio cultural factors and solid waste generation.

Researches on solid waste generation , , , ' revealed that the largest percentage of solid wastes generated in urban centrer comes from the household sector which indicated that there is a strong relationship between the population and the volume of waste generation. Socio-cultural habit of the people and particularly the lifestyle mostly influences the rate of waste generation in urban centres . .

; identify the cities level of industrialisation, socio-economic status of the residents and kinds of commercial activities that dominate the town as the factors that influence the volume of waste generation. In the opinion of , factors such as educational status, occupation, income and types of building also contributed positively, observed that the most influencing factors include average income level, generation source, population, social behaviour, climate and industrial production. These key factors influence solid waste generation and management in Nigerian urban centers

Lifestyle

Cambridge Dictionary defines lifestyle as someone's way of living, it is the interest, opinions, behaviours and behavioural orientation of an individual, group or culture. Lifestyle typically reflects on individual's attitude, way of life, values or world view. It is, therefore, a means of forging a sense of self and to create a cultural symbol that resonate with personal identity. (Kahle & Close, 2011). According , there is no attributes that influence the rate of waste generation like lifestyle and family size of the residents. The study established that family size does determine the rate of waste generation.

Culture

Culture has different meanings; in a simple term it is a word used for the way a group of people do things or the way they live their life. define culture as a balance maintenance between humans, society and his physical environment, and a background for all human activities. Study have shown that culture provides a stage setting for which all human activities takes place and as such, cultural believes and practices must be adopted into a system for the survival of any intervention on waste management.

Population

Population plays an important role on the issue of waste generation, past studies',,, and, have shown that the largest part of solid waste generated in urban centres originated from household which depends on the population. reveals that population plays role in the quantity and rate of solid waste generation, environmental education and citizens awareness and the effectiveness of solid waste management policies and enforcement of sanitation laws in various Nigerian cities. Similarly, in his study revealed a strong relationship between population and the volume of solid waste generated which indicates that the volume of waste increases with the increase in city's population.

Economic Status

Economic status is usually measured as a combination of education, income and occupation of an individual as they relate and influence on another. It discloses the household's access, privilege, power and control of resources. Studies , , and have shown that there is a positive relationship between the household size and waste generation, it was also noted that families with higher income generates lesser amount of organic waste than the families with low income. while differences in income determine the waste composition,

Conclusion

Solid waste is a global phenomenon that originated mostly as a result of the concentration of people. Society and culture have an impact on the rate and composition of solid waste in any environment. The attitude and behaviour of people towards waste handling is real though it may be different according to the culture in different societies. Solid waste management is a very good indicator in the performance of a municipality, though it could have been the best service any city authority could prefer to give to her citizens but flops either due to the attitude of the people or financial burden on waste management as in the case of most developing countries. Social and cultural habit of the people influenced greatly on the success and failure of waste generation and management in any city and so city authorities should always consider the socio-cultural factors of the citizens before intervening on waste management policies for effective and successful outcome.

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