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Solid Waste Management Practices at a Private institution of Higher Learning in Nigeria

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Abstract

Waste generation is an intrinsic part of human existence. Waste materials are usually characterized by their nature, components and quality. Variations in quality, quantity and composition of solid waste can be linked to various factors such as cultural, economic, social and financial status of inhabitants of the particular space being studied. These distinct factors will also determine the best waste management practice to adopt. This paper captures the current institutional solid waste management in a Nigerian Private institution of higher learning. Using key-informant interview and personal field observations, the waste generation rate, pattern and characterization was made. Results showed that between 0.3 and 0.4 kg/capita/day was generated daily by the students in their respective halls of residence, with population ranging from 762 – 848 students in each of the halls. All the solid wastes generated were collected using appropriate waste collection bags and mobile bin positioned at strategic corners of the university premises. The waste materials after collection were segregated into plastics, bottles, nylon and organic materials by scavengers. After these non-bidegradables were sold in the secondary market, an estimated total sum of 639,900 naira (2908.6USD) was realized daily. At this rate a total sum of 230 million Naira (1,045,454.5 USD) is realizable yearly as wealth from waste. It was concluded that if all the organic waste streams from kitchens, cafeteria and animal houses are utilized for bioenergy and organic fertilizer, the wealth to be generated would be phenomenal.

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1. Introduction

1.1 Background

Waste management basically, involves the collection, transportation, processing, disposal, management and monitoring of waste materials. The management of waste treats all materials as a single class, be it solid, liquid, gaseous or radioactive substances. It also strives at reducing the harmful environmental impacts of each using the most appropriate methods. Waste management measure to adopt will depend on the sources, since waste characteristics and composition differ according to source, (Tchobanoglous et al, 1993). The problem associated with solid waste management in developing nations cannot be over-emphasised. Solid waste management is an essential public health service, but in many developing countries it is not provided to the full satisfaction of residents (Addo-yobo and Ali, 2003). This is due to the fact that waste management systems has not fully considered the users of the management systems. Waste generation being an intrinsic part of living requires a proper examination of various sources from which waste is generated. Sources of solid waste include; industries, markets, schools, churches, hospitals and other communities where human beings reside or gather for a period of time. Solid waste generated from each of these sources differ in terms of composition and volume, based on the prevailing activities and the demography of individuals in each location. In order to propose a workable waste management strategy, an extensive study of the generating source would help in understanding the characteristics of the waste and its potential for recycling at a secondary local market. Among the many sources of waste previously mentioned, schools (including universities) contribute a very significant amount of solid wastes to the municipal waste stream.

1.2 Solid waste management and the role of Universities

Universities educate most of the people who develop and manage society's institutions (Armijo de vega et al, 2003). Universities bear a vicarious responsibility in ensuring that sustainable plans and policies are imbibed in the society. Through their expertise, they have the capacity to increase awareness, knowledge, technology and tools necessary to promote and sustain best practices within and around the community in which they are located.
Developed countries have made great progress in terms of waste management both at the university and community levels. Developing nations with their peculiar challenges are still trailing behind in this regard.Nigeria is a typical developing country facing similar challenges of waste management just like other developing nations. Various researchers have identified major challenges facing solid waste management in developing countries. The most problematic functional element of solid waste management in most developing countries has to do with disposal. (Kasseva and mbuligwe, 1999). Guerrero et al, (2012) also identified some other challenges associated with SWM, they are: increasing generation of waste, burden posed on municipal budget as a result of high costs of waste management, lack of understanding over a diversity of factors that affect the different stages of waste management and linkages necessary to enable the entire handing system functioning. Rapid economic development and population growth, inadequate infrastructure, and expertise have contributed to the problem of solid waste management in most developing nations. Studies carried out in Malaysia (Manaf et al,2009), (Saeed et al, 2009), Palestine (Al-khatib et al, 2010) and other similar countries has shown this.

In Nigeria, for instance, the poor state of waste management is attributable to an inadequately formulated and poorly implemented environmental policy (Agunwamba, 1998), neglect of the economic, social, psychological, political and cultural life of Nigerians in the formulation and implementation of waste management programs. Ogwueleka, (2008) also identified inefficient collection methods, insufficient coverage of collection system and improper disposal as factors contributing to poor waste management in Nigeria.

In the light of these challenges there is the need to involve universities in SWM cannot be overemphasised. Institutions of higher learning (universities), being autonomous by nature (Armijo de vega et al, 2008) should be given utmost attention as regards waste management. Since they by their very nature have the capacity to accommodate innovative SWM practices which would trickle to other communities after being properly institutionalized. These institutions are usually held in high esteem and are often seen by the communities as model in terms of adopting best practices.