



Environmental hazards and waste management in Nsukka urban metropolis in Enugu State of Nigeria: how much are people willing to pay?

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ABSTRACT

Solid waste management in Nsukka town in Enugu state of Nigeria has remained a major challenge despite the efforts of the state government through the Enugu State Waste Management Agency (ESWAMA). The current method whereby households dump refuse at designated locations by the road side to be cleared later has not yielded much improved sanitation of the town. In this study we propose an alternative waste management method that is believed to be superior to the status quo if properly managed. This study applies Contingent Valuation Method (CVM) to estimate the households' willingness to pay (WTP) for this new method in order to ascertain its applicability in Nsukka urban. Data were collected from a sample of 500 households stratified according to major streets in the town. The results show that the mean WTP using different specifications of the model varies from N527.50 (about 2.68) to N530.90 (about 2.68) per month. The policy implication is that if the waste management agency adopts the proposed scenario and manages it well the average revenue realizable per month would be about N13,750,516 (about \$69,800). The authorities can compare this with the cost of providing the service and see if it is worth the effort.

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1. Introduction

Solid waste management has over the past three decades been a subject of increasing importance as it became one of the challenges towards achieving a safer environment, especially in developing countries. Consequently, several discussions in the environmental economics literature have been geared towards analysing issues related to solid waste management and how it affects the socio-economic well-being of the rural and urban populace (Alnaa, Aglobite, & Ahiakpos, 2011; Hagos, Mekonnen, & Gebreegziabher, 2012; Khattak & Amin, 2013; Khattak & Amin, 2013; Mbaye, 2008; Sizya, 2015). This development is largely due to the fact that concerns about sustainable development and environmentally sound policies have been growing considerably across the globe in the last three decades. For instance, in 1992, the United Nations Conference on the Environment

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and Development (UNCED) recommended a set of measures for waste management, while three of the eight Millennium Development Goals (MDGs) that occupied the global agenda between 2000 and 2015 have implications for sustainable environment. The Sustainable Development Goals (SDGs) which have now replaced the MDGs also include a number of environmental targets.

Environmental issues have been identified to have a direct impact on the health status of people. Thus, according to World Bank (2014), proper management of solid waste is critical to the health and well-being of rural and urban residents. Studies such as Cointreau (2005) and Afon (2007) have also shown that there is a relationship between waste management and the economic, environmental, and sociopolitical well-being of people. However, the accelerated growth of urban population with unplanned urbanisation, increasing economic activities, and lack of training in modern solid waste management practices in developing countries complicate the efforts to improve solid waste services. Also, changes in consumption patterns with alterations in the waste characteristics have also resulted in a quantum jump in solid waste generation. As far back as 2003, it was observed that inadequately collected and improperly managed solid wastes have continued to generate significant negative externalities that affect, for example, local traffic, aesthetics, flooding, disease, odours, air particulate levels, and waste quality (Ludwig, Hellweg, & Stucki, 2003 and Cointreau, 2005).

2. Overview of waste management in Nsukka town

Although there has been increasing awareness on issues of environmental cleanliness in Nigeria, starting in 1983 when the federal government introduced compulsory monthly environmental sanitation, yet many towns and cities have remained untidy due to poor waste management. Nsukka is the second largest urban area in Enugu State of Nigeria. The methods and effectiveness of refuse disposal in Nsukka metropolis remain a matter of serious concern. For example, Nwanta, Onunkwo, and Ezenduka (2010) reported that a total of 194 kg of solid waste is generated daily in Nsukka metropolitan abattoir, without any hygienic disposal and/or management system. Solid waste in Nsukka is disposed of in several ways, including dumping, burying, burning, and landfilling. The most common method of waste management in Nsukka urban is 'communal storage', while in rural areas, dumping in open places and in open pits is prevalent. This shows that the commonly used methods for waste management are environmentally unfriendly, especially dumping, which is already the most widely practised in Nsukka urban metropolis.

Hence the choice of Nsukka metropolis for this study was informed by inadequate handling of waste management compared to other towns in Enugu State. Residents of Nsukka do not have adequate access to publicly provided safe drinking water, and access to quality publicly provided healthcare services is almost non-existent. Water supply is mostly provided by private water tankers and not all households can afford this service. Several households in Nsukka communities struggle to meet the basic necessities of life. What sustains the economic life of the town is the large number of civil servants working mostly in the University of Nigeria and in many primary and secondary schools, as well as few that work with commercial banks with branches in the town. One major problem in Nsukka is constant erosion resulting from littering the environment, blockage