

Characteristics and management of municipal solid waste in Uyo, Akwa-Ibom State, Nigeria

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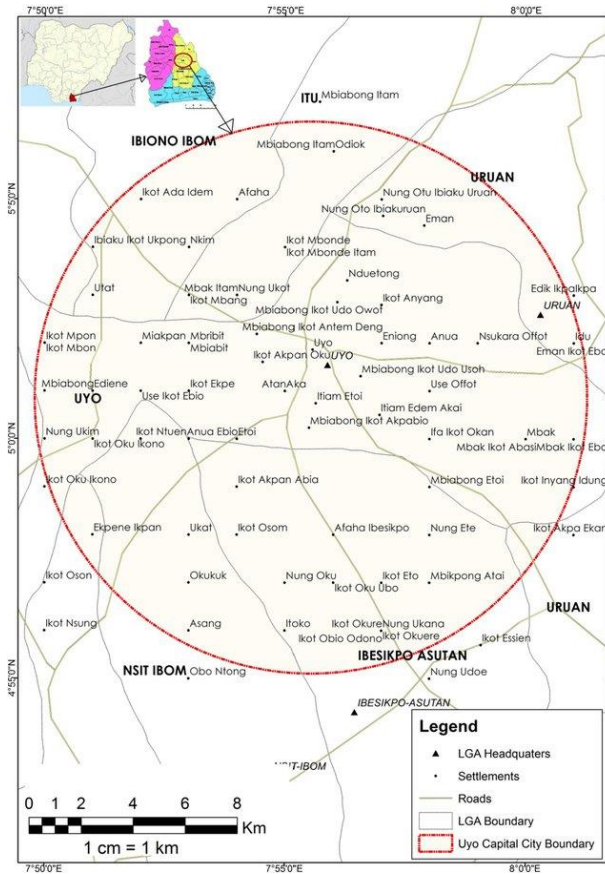
Abstract

Increased urbanization and population leads to increased consumption of manufactured goods. This ultimately results in increased production of waste. To manage the generated waste, identifying its composition is crucial for planning an effective solid waste management strategy. This study assessed the characteristics and composition of the waste generated in Uyo, Akwa-Ibom state of Nigeria to aid in developing a scientifically supported waste management pilot system for the state. In this study, direct waste sorting and characterization was conducted on the municipal solid waste (MSW) arriving the landfill during the study period. Additionally, over 8,000 surveys were collected from residents to establish a problem statement about the existing waste collection and disposal system, and its socio-ecological and economic impact. Results from the characterization showed that over 45% of the generated waste from residential homes are recyclables and composed of plastics, metals and paper while the fraction of fresh-food waste was over 20%. From the survey, over 75 % of the respondents were willing to source-separate their wastes and supported paying a fee for adequate waste collection. This creates a value proposition to establish an integrated waste management system to maximize revenue generation from the generated waste. Supplementary revenue can be generated through composting, recycling, and land reclamation.

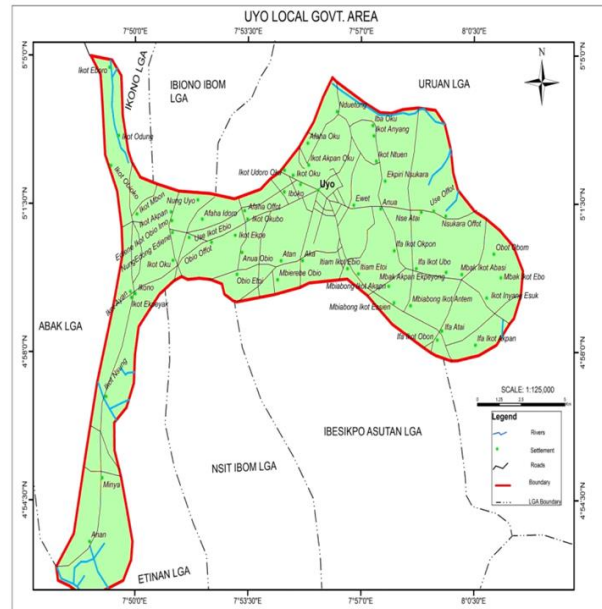
Materials and Methods

STUDY AREA

Uyo is the capital of Akwa-Ibom state in the Niger-delta region of Nigeria. It lies approximately on latitudes 4°58'N and 5°04'N and longitudes 7°51'E and 8°01'E. The capital city shares boundary to the north with Ikono, Itu and Ibiono Ibom Local Government Areas (LGA). To the east and west, it shares boundary with Uruan and Abak LGA respectively. In the south, it is bounded by Ibesikpo-Asutan and Nsit-Ibom LGAs (*see Fig. 1 (b)*). Uyo Capital City Development Area (UCCDA) (*see Fig. 1 (a)*) is made up of Uyo and various parts of the seven LGAs listed above.



(a)



(b)

Fig. 1 (a) Map showing Uyo Capital City Development Area; (b) Map showing Uyo local government area (culled from UCCDA, 2019).

The population of the metropolitan city is about 1.3 million inhabitants (populationstat, 2023) and spread over an area of 362 km², while the population density is about 3,646/km². The average daily temperature is between 21°C and 33°C with a relative humidity of 85% - 92%. There are 2 seasons namely, the dry season between mid-November and March/April and the wet or rainy season between April and early-November.

Landfilling is the main waste disposal technique employed by the management of the UCCDA with minimal resource recovery effort. There is no recorded home-waste collection system in place rather general disposal bins are provided in central locations spread out within the capital city.

Reference

www.populationstat.com (2023)

Uyo Capital City Development Authority (2019)