

**SUSTAINABILITY APPRAISAL OF WASTE MANAGEMENT IN
NIGERIA: DEVELOPMENT AND EVALUATION OF AN INDEX
BASED TOOL**

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DEDICATION

This work is dedicated to my parents, **A'isha Garba Batagarawa** and **Lawal Tukur Batagarawa**.

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DECLARATION

I declare that the work presented in this *thesis* is, to the best of my knowledge and belief, original except as acknowledged in the text. The work was carried out in accordance with the regulations of the University of Portsmouth and the material has not been submitted, in part or in whole, for any other degree at this or any other university.

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ABSTRACT

Decision makers are continuously in search of a comprehensive yet simple means of assessing solid waste management to make effective and informed decisions. This is particular so for situations like Nigeria where streets are full of waste, many households have no waste collection services and a high rate of vehicle and equipment breakdown is recorded. Assessment is also crucial at a time when many waste management authorities are trying to embark on new revolutionary contracts with the private sector. Solid Waste Management assessment is a complex multi-dimensional process, involving multiple criteria and multiple actors and the many components that make up the system. Although various options such as incineration, gasification and composting are available as a solution for waste management, these options also add to the complexity of the situation in determining most preferred alternatives and decisions. In this study, an in-depth investigation of solid waste management in Nigeria is conducted by quantifying sustainable development to develop an assessment tool. Sustainable development with respect to solid waste management was broken down into its aspects and factors that influence those aspects in a hierarchy of three levels according to the procedure of analytic hierarchy process. Solid waste management practitioners across five locations representing Nigeria's multiple ethnic groups and diverse cultures and the climatic zones as well as four work sectors were surveyed. Data was obtained from a paired comparison based questionnaire survey using Analytic Hierarchy Process. A function was derived that illustrates the potential of SD as a tool for solid waste management assessment. General agreement across sectors was recorded but significant differences exist between regions. The regional difference highlighted indicates context as highly influential. Quick response and cooperation of participants suggests sympathy towards female researcher while slow contact establishment was recorded in Lagos despite an alliance with an indigene of the region. The function derived was adopted to evaluate the solid waste management strategy in Kaduna metropolis of Nigeria using a case study methodology. The accomplished assessment has shown that waste management strategies can be evaluated with the tool developed in this study. An index of **0.457** was established from the evaluation that employed the use of indicators, scoring and normalisation. High scores assigned to indicators will result in a high index, which suggests an effective strategy.

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