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Title:

An integrated Approach to Urban Waste Management in a Developing Country. A Case Study of the Accra Metropolitan Area, Ghana

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Abstract

This research explored the concept of an integrated approach to urban waste management in the Accra Metropolitan Area in Ghana. Like many cities in developing countries, the Accra Metropolis has a high urban population that contributes to the generation of massive volumes of waste on a regular basis. Yet, available evidence in the literature suggests that waste management in the metropolis is highly problematic and characterized by gross inefficiencies. Data was collected mainly through interviews, observation techniques as well as a comprehensive review of the literature pertaining to urban waste management in developing countries. The research uncovered that urban waste management in Accra is predicated in the conventional approach to waste management service delivery. In line with this 'collect and dispose' technique, there are no effective strategies geared toward waste minimization and in addition, the planning and decision-making process is heavily centralized, technocratic and makes no provisions for stakeholder participation. An Integrated Waste Management (IWM) approach is recommended as a suitable intervention strategy for improving the situation.

1. Introduction

Rapid urbanization in developing countries contributes to the generation of massive volumes of waste on a regular basis (Alam, Chowdery, Hasan, Karanjit, & Shrestha, 2008; Dambghani, Savarypour & Deihimfard, 2008). Conversely, waste management can be characterized in a discourse of chaos and crisis, culminating in the magnification of risks to the environment and public health (Korfmacher, 1997; Onibokun & Kumuyi, 1999). A major reason for such failures can be attributed to the reliance on the 'conventional' approach to waste management. This approach mainly involves the collection and disposal of wastes with very little emphasis on minimization techniques such as; recovery, recycling and composting (Cointreau, 1982). Within this approach, waste management responsibilities are overseen by local governments while funding is provided by the central government and supplemented by user charges, municipal taxes and external donor agencies (Ali, Coad & Cotton, 1999). Planning and decision-making within the conventional approach tends to be technocratic, centralized and top-down without consultation with stakeholders (Sinha, 1993). For many critics, the concentration of power in the hands of bureaucrats and politicians makes the process susceptible to corruption, mismanagement, influence peddling and political interference (Musandu-Nyamayaro, 1991). Further, the conventional approach has proven to be an expensive concept that absorbs 30-50% of municipal budgets in developing countries and has done little to improve waste management conditions (Arlosoroff & Bartone, 1987; Sicular, 1992). The Integrated Waste Management (IWM) concept thus evolved in response to the excesses of the 'conventional' approach.

The IWM model takes a holistic approach to waste management by considering socio-economic, political and environmental impacts with a view of selecting suitable options for maximum benefits (Kreith & Tchobanoglous, 2003). Effectively therefore, the IWM approach

considers techniques aimed at the diversion of wastes from landfills and incinerators with environmental sustainability as the ultimate goal. This is often facilitated in consultation and collaboration with stakeholders.

This present study explored an integrated approach to urban waste management in the Accra Metropolitan Area in Ghana. Like many cities in developing countries, the Accra Metropolis has a high urban population that contributes to the generation of massive volumes of waste on a regular basis. Covering a total land area of approximately 200 square kilometers, the population of the Accra Metropolitan Area has been estimated to be in excess of 4 million inhabitants including daily commuters, visitors and permanent dwellers (Grant & Yankson, 2003). The metropolis currently has an annual population growth rate of 3.4% cities and accounts for 25% of Ghana's total urban population (Ibib. 2003). Yet, available evidence in the literature gives an indication of a precarious waste management situation in the metropolis, resulting in the escalation of risks to the environment and public health (Asomani-Boateng, 1999; Boadi & Kuitunen, 2003). The present study sheds further light on the situation a view of exploring the applicability of an integrated approach to improving the situation.

2. Methodology

The current research is grounded in exploratory qualitative methodology. Data was collected mainly through interviews, observation techniques as well as a comprehensive review of the literature. Overall, some 48 people were interviewed in a semi-structured format over a period of three months. The interviewees were selected through purposive sampling and individuals who demonstrate a fair knowledge of the subject matter were invited to participate in the research. Triangulation was used as a means of verifying the accuracy of information provided by

interviewees. This involved cross checking the validity of information from multiple sources during the data collection process. The observation techniques applied in the study involved site visits to a number of waste disposal dumps as well as agencies and institutions involved in waste management. In all, a total of ten site visits were made to both designated and undesignated waste disposal sites in different parts of the metropolis. As well, a total of five visits were made to local government offices as well as the offices of the WMD. The site visits were facilitated at different times during the data collection process. Further, a comprehensive review of public documents was undertaken as a part of the data collection process.

3. Findings and Discussion

3.1 Waste Management Service Delivery - *The Conventional Approach*

Waste Management service delivery in the Accra Metropolitan Area was found to be typical of the conventional approach involving mainly collection and disposal. Within this 'collect and dispose' approach, there are no formal and effective strategies such as; minimization, recovery, recycling and composting geared toward the diversion of wastes from waste dumps. Planning and decision making is a heavily centralized process and does not integrate the views of major stakeholders. Funding is provided by the central government and supplemented by user charges and donor funding.

3.2 Disposal

Urban wastes are therefore collected and disposed of in designated open dumps since there is not a single sanitary landfill serving the metropolis. The officially designated dumpsite has no effective leachate collection, gas extraction and drainage systems due to poor planning.

A leachate pond was found to have been formed in close proximity to the dump. Wastes deposited in the dump are neither placed in cells nor covered with top-soil although the presence of a few service vehicles were seen to be routinely compressing wastes to ensure the maximum use of space. The presence of a large and organized group of scavengers including women and children were also observed at the waste dumpsite. In addition to the official dumpsite, there are a number of unauthorized dumpsites in almost every part of the city. The majority of such dumps are located in very close proximity to human settlements, aquatic ecosystems and commercial establishments. In one particular instance, a mechanic's shop and a food vending kiosk was observed a few yards from an unauthorized waste dump. Scavenging by both human and livestock was also found to be prevalent in unauthorized waste dumps in the Accra metropolis.

3.3 Storage and Collection

The primary method of storing wastes in the Accra Metropolitan Area (AMA) is by means of central storage bins provided by the Waste Management Department (WMD) and private waste management service providers. The communal storage bins were found to be located predominantly in middle and low income areas, market places, squatter settlements and slums. A close observation of the storage bins reveal several issues including the lack of top-covers which allows waste to fly-off, causing littering. The central storage containers were also found to have no proper lining resulting in the indiscriminate discharge of leachate into the environment. In addition, the towering heights of the storage containers provide no effective means of waste deposit, resulting in a situation where users have no choice but to deposit the waste beside the

container. This has created a displeasing aesthetic in many neighbourhoods. In many instances, livestock were observed feeding in and around many communal storage containers.

3.4 Collection

The collection of wastes was found to be based on curb-side and centralized container collection (CCC) methods. The curb-side method typically involves house-to-house collection of refuse at a predetermined time, usually every two weeks or once a month, depending on the type of agreement between the service provider and the residential unit. This type of service is mostly provided by private waste management companies contracted by the Accra Metropolitan Assembly through the WMD. Service delivery tends to be concentrated in affluent and some middle income neighbourhoods in the metropolis. The CCC system is mostly provided in most middle and low income areas, marketplaces, slums and squatter settlements in the city. Under the CCC system, large metal containers are placed at designated spots where residents dispose of their waste for onward collection to disposal sites. Collection services are provided by private waste management companies who are paid according to the total tonnage collected by the Accra Metropolitan Assembly. Within the collect and dispose approach, several issues were observed including infrequent collection which results in accumulation of wastes in many parts of the metropolis. These include residential areas, market places and lorry parks and streets. The high organic content of the waste composition contributes to the discharge of unpleasant odours into the atmosphere. Several of the vehicles used for transporting wastes were also found to have no top covers, resulting in fly-off of debris.

3.5 Urban Governance Structure

The urban governance process in the Accra Metropolitan Area is overseen by the Accra Metropolitan Assembly which derive executive, legislative and judicial powers from Legislative Instrument 1500 (L. I. 1500) of the Local Government Act of 1993. The Assembly is constituted of 104 Assembly members and headed by a Metropolitan Chief Executive (MCE) appointed by the Executive branch of the central government. Of the 104 Assembly members, 70% are elected local officials from the various sub-metros constituting the AMA while the remaining 30% are appointees of the Executive branch. Although the MCE is appointed, s/he has to be approved by a majority of the Assembly members through a ballot. As a local government institution, the Accra Metropolitan Assembly works directly under the Ministry of Local Government and Rural Development who acts on behalf of the Government of Ghana. The Greater Accra Regional Coordinating Council (GARCC) also monitors the activities of the Accra Metropolitan Assembly by ensuring that central government policies are implemented. Within the local government itself, the Accra Metropolitan Authority is required to act in close consultation with Area and Town Councils, Unit Committees and Communities in the AMA. These different bodies are required to provide oversight on the activities of the local government authority.

3.6 Funding

Operational funding for the local government is derived from three main sources: Internally Generated Revenue; the District Assembly Common Fund (DACF) and; Foreign Aid/Donor Assistance. Internally Generated Revenue (IGR) accounts for approximately 60% of funding and is derived from services provided by the Accra Metropolitan Assembly. These include: building permits; business operating permits; marriage license; outdoor advertisement; waste management;

taxi license and; Metro Public Health Department (MPHD) permits. Approximately 60-70% of IGR is allocated toward urban waste management service delivery. The Assembly also receives 30% of its total funding from the central government through the District Assembly Common Fund (DACF). Revenue from the DACF is used to pay the salaries of over half the staff at the Accra Metropolitan Assembly while the salaries of senior level management personnel and a few junior management officials are paid directly by the Government of Ghana. Foreign aid and donor assistance constitutes 10% of the Assembly's total revenue and this is supposedly invested directly in project-specific ventures such as sewage and liquid waste management. The Waste Management Department of the Accra Metropolitan Assembly was set up by aid from the German government.

3.7 Principal Actors

Waste management service delivery in the Accra Metropolis is undertaken by the public, private-formal and private-informal actors. The public sector role is assumed by the Waste Management Department (WMD) of the Accra Metropolitan Assembly which is primarily responsible for overseeing all aspects of service delivery in Accra. On paper, the Accra Metropolitan Assembly vests the WMD with the fundamental responsibilities of:

a) Enhancing the awareness of citizens and business enterprises as to the nature of their responsibilities;

b) Facilitating and enabling the participation of the private sector, and communities in waste management activities;

c) Promoting minimization through re-use and recycling of waste;

d) Setting standards, and issuing regulations and by-laws;

e) Enforcing environmental regulations and by-laws;

F) Preparing plans and guidelines on the organization of waste management activities and;

g) Coordinating sanitation programs in the metropolis.

The WMD is further responsible for contracting out services to the private sector as well as the selection and maintenance of waste disposal sites in the metropolis. In the discharge of its duties, the WMD is assisted by the Environmental Health and Management Department (EHMD) of the Accra Metropolitan Assembly which provides enforcement, monitoring and public education.

In the past few decades, private sector participation (PSP) in waste management service delivery has become a major feature in many developing countries and the Accra Metropolitan Area is no exception. Within the private sector approach, the Accra Metropolitan Assembly contract out some aspects of waste management service delivery to service providers who are mainly involved in the street sweeping, collection and disposal of wastes. There are currently a number of private sector waste management service providers operating in each of the sub-districts that constitutes the Accra Metropolitan Area.

On their part, the private-informal sector provides waste management services in areas not fully covered by the formal public and private modes of service delivery due to logistical or infrastructural deficiencies. In slums and squatter settlements with poor road networks as well as densely populated marketplaces, informal waste carriers known in the local parlance as, *kaya-boorla* meaning waste labourers, operate by means of wheelbarrows, four-wheel trolleys, head pans and donkey carts to collect wastes. The informal sector also participates in sweeping of market places in the AMA. This group of service providers is not formally organized and operates as private sector actors.

4. Recommendations and Conclusion

Evidently the conventional approach to waste management service delivery currently employed in the Accra Metropolitan Area is laden with a myriad of problems contributing to a high degree of ineffectiveness. In line with the integrated approach to urban waste management, a number of recommendations are proposed:

First, there is a need for strategies aimed at minimizing the volumes of wastes generated with diversion as the underlying objective. Subsequently, the Accra Metropolitan Assembly must act to implement measures aimed at minimization through recycling, composting and waste recovery. Secondly, planning and decision making regarding waste management must be cognizant of the need for consultation and collaboration with stakeholders. This can ensure the harnessing of detailed and specific knowledge possessed by local stakeholders that can contribute meaningfully to the design of effective management strategies. Third, to ensure the safe disposal of wastes, there is a need for the construction of a sanitary municipal landfill complete with leachate collection systems, gas extractors as well as plans for future remediation. Fourth, to ensure success in the implementation of an integrated approach, public education is a necessary criterion. The following key recommendations are proposed as a step toward improving the waste management situation in the Accra Metropolitan Area:

a. Promotion of source separation of wastes
b. Implementation of effective waste minimization, recycling and composting as viable strategies

c. Provision of clean, accessible and portable storage containers in public spaces including roadsides, schools, market places and lorry parks to curb the problem of indiscriminate littering
d. Ensure frequent collection of wastes in regards to both the curbside and centralized collection systems
e. Include stakeholders in the planning and decision making process
f. The management process must be adaptive and capable of change when circumstances change
g. Improve the collection, transportation and storage practices
h. Strengthen the local government's ability to perform effectively
i. Provide environmental education and awareness

In conclusion, despite generating massive volumes of urban wastes on a regular basis due rapid urbanization, management procedures in the Accra Metropolitan Area are seriously flawed, a fact aptly demonstrated in this study. This is due mainly in part to the reliance on the conventional approach to waste management service delivery. An integrated waste management approach with its promise of integrating socio-economic, political and environmental considerations in the management process is viewed as key to improving the situation. This will go a long way in contributing to the mitigation of risks to the environment and human health.

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