ARPN Journal of Science and Technology

http://www.ejournalofscience.org

INVOLVEMENT OF COMMUNITY BASED ORGANIZATION IN HOUSEHOLD WASTE MANAGEMENT IN DAR ES SALAAM

Aisa. S. Oberlin

Department of Civil Engineering, Dar es Salaam Institute of Technology, Dar es Salaam, Tanzania

Abstract

From 1994 Dar es Salaam City Council decided to consider involving community in solid waste management (SWM) by supporting and promoting the establishment of Community Based Organizations (CBOs) that were interested in participating in solid waste collection activities. Although CBOs have been engaged in solid waste service provisioning, little systematic knowledge exists on the kind of activities they take up, assistance they get from local authorities and constraints, challenges they face in executing their work. This paper reviews the role of CBOs in solid waste management in Kinondoni municipality, in Dar es Salaam in Tanzania. A triangulation method whereby information from the same sample area was collected using different techniques including household questionnaire survey, key informant interviews and direct observations were employed. The study has shown that CBOs were found to be involved in the provisioning of solid waste management services. Their services are, however, seriously hampered by infrastructure, policy, attitudinal and political challenges in implementing successful solid waste management services.

Key words: Dar es Salaam, Kinondoni, household waste management, solid waste collection, Community based Organizations

1.0 INTRODUCTION

Historically, solid waste management (SWM) was the responsibility of cleansing unit of health department dealing with solid waste under Dar es Salaam City Council (DCC). The DCC had therefore to carry out the primary collection, store the waste temporarily, transport it to disposal sites, sweep streets, manage the disposal sites, and sometimes recycle the waste(Yhdego, 1995). The Dar es Salaam City Council failed to provide efficient and reliable SWM services to the growing city population under the centralized system. The DCC failed to provide efficient and reliable SWM services to the growing city population (Majani & Halla, 1999). The most affected population was poor population living in unplanned and informal settlements. They were affected by problems of environmental pollution, ground water and soil contamination, flooding, and frequent outbreaks of communicable diseases like dysentery, cholera, diarrhoea, and typhoid. The worsening situation of SWM in Dar es Salaam is exacerbated by the high rate of urbanization coupled with the growth of spontaneous settlements, which are both unserviced and highly inaccessible. According to various studies more than 70% of city population lives in informal settlements with marginal access to piped water, solid waste management systems, drained roads, or basic social services(DCC, 2004; Kironde & Yhdego, 1997; A. Kyessi & Mwakalinga, 2009; A. G. Kyessi, 2005; Sawio, 2008). The informal settlements in Dar es Salaam are characterized by an unplanned nature, a lack of basic infrastructure and ever-increasing poverty(World Bank, 2002). The failure of the local authority became a driving

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

force for the government to decentralize solid waste management by granting the local government autonomy over SWM services. In 1993, Dar es Salaam City Council (DCC) passed a by-law(Collection and Disposal of Refuse) to enable the privatization of waste collection and disposal and introduce refuse collection charges(RCC). The by-Law of 1993 was made under sections 56 and 13 of The Local Government (Urban Authorities) Act No. 8 of 1982.

From 1994, the Dar es Salaam City Council, decided to privatize some of its principal services in waste management, specifically waste collection. The privatization entails involvement of private operators(private companies and CBOs)(S. Kassim & M. Ali, 2006). The role of CBOs (Community-Based Organisations) in working with local residential communities has been discussed widely in the literature(Tukahirwa, Mol, & Oosterveer, 2010). CBOs generally consist of residents organizing to improve waste collection, and emphasising 'green' aspects of sustainable development(Anand, 2000). They usually do not go much beyond the neighbourhood level in their activities(Hordijk, 2000; Lee, 1997). As CBOs originate from within a community and are usually led by community leaders, they have a more in-depth understanding of their local community, engage actively and frequently with community members and hence are in a better position to prioritize problems within their contexts(Tukahirwa, 2011).

The community based organization system is the most frequently suggested method in managing households' solid waste problems in municipalities of Dar es Salaam owing to the gradual decline in the municipal services provided by the public authorities both in terms of quality and quantity. In Dar es Salaam, some CBOs specialize in primary collection, while private companies and some CBOs do both primary and secondary collection, taking care as well for transport of the wastes to the dumpsite. Ishengoma (2000). A number of studies on SWM has already been conducted in Dar es Salaam (Ekere, Mugisha, & Drake, 2009; Karanja, 2005; Kaseva & Mbuligwe, 2005; S. M. Kassim & M. Ali, 2006; Mugagga, 2006; Okot-Okumu, 2006). However, these studies hardly dealt with the involvement, problems and successes of CBOs in solid waste management at a household level. Against this background, this paper aims to identify and assess the contribution of CBOs in improving household/domestic solid waste management in informal settlements Kinondoni municipality. The paper starts with introduction and description of Dar es Salaam city, followed by the sampling procedure and main methods used in the empirical investigation; then it reports the results from the empirical investigation in selected areas. Finally, it provides the conclusions.

2.0 DESCRIPTION OF DAR ES SALAAM CITY

Dar es Salaam city is located on the east coast of Tanzania, along the Indian ocean with an area of 1,800km^2 and population of approximately 3.5 million residents, with diverse incomes and lifestyles. The growth rate of the city is 5.4%. It is the largest city and commercial centre in the country. Administratively, the city is divided into four authorities – the Dar es Salaam City Council and the three municipal councils of Kinondoni, Ilala and Temeke. Of the three, Kinondoni has the largest

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

population. The three municipalities are divided into 73 wards[1], whereby 27 of them belong to Kinondoni.

3.0 METHODOLOGY

3.1 Selection of the Study Area: Sampling Procedure and Sample Size

Kinondoni municipality was selected to be the research area, purposively sampled. This is because Kinondoni is the largest municipality in Dar es Salaam, and 43.6% of the Dar es Salaam City population lives in Kinondoni Municipality. The whole of Kinondoni municipality effectively encompasses an area of 531 km^2, and a population of 1,083,913 according to national census of 2002[2] and estimates for 2007 is around 1,3337,8753. The population density is estimated at 2,825 persons per square kilometre. The municipality is administratively divided into twenty seven (27) wards, which in turn are sub-divided into villages for rural areas and sub-wards commonly known as Mtaa [4](singular) or Mitaa (plural) in the urban areas. Further, it is the fastest growing municipality and it covers a wide range of unplanned settlements having all categories of income level and thus was expected that chances of getting a representation of study population was greater compared to other municipalities. The survey samples were obtained from 3 sub-wards purposively sampled to cover the households of low income socio-economic status living in informal settlements. The selected wards include: Hananasifu, Kinondoni Shamba and Kilimahewa. These 3 neighbourhoods were purposively chosen as being together representative for the major poor neighbourhoods with the most serious problems of solid waste management in Kinondoni municipality. In Hananasifu 70 households were selected, Kinondoni Shamba 75 households and in Kilimahewa 67 households were selected using a random sampling strategy following a list of households provided by the sub-ward leaders. Kinondoni Shamba has the largest number of households followed by Hananasifu and Kilimahewa has the least, and hence the disproportionality in the sample sizes. If the targeted respondent was not available or not interested to take part, the next household on the list was chosen, in order to attain the desired sample size. A total sample size of 215 households was drawn following the above mentioned sampling frame.

3.2 DATA COLLECTION

The main tools used in data collection were household questionnaire survey, interviews, personal observation and secondary information.

[1] A ward is a smaller administrative units of the municipality. The wards are constituted by a number of sub-wards areas. In Swahili a sub-ward is referred to as 'mtaa'.
[2] Next census will take place in August 25th 2012
[3] Population projection from 2002 census by using a growth rate of 5.4% per year.
[4] Mtaa is the lowest level of the local government system in the urban setting

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

Face to face interviews were carried out with key informants. Key informants were: Dar es Salaam City Health Officer, Kinondoni Municipal Health Officer, ward/sub-ward leaders [5] and CBOs providing service in the selected sub-wards. In total 10 face to face interviews were conducted. Interviews with solid waste management service providers (CBOs) in areas selected for the study aimed to generate information on their roles regarding SWM, the support they get from the municipal authority when providing services to households, and how do they interact with households in service provisioning. In addition, their views on how to improve service provisioning were obtained. CBOs selected for the study included: Kisutu Women Development Trust(KIWODET), Tua Taka Makurumla (TTM) and Kinondoni Environmentalists(KENS). The names of respective sub-wards they serve are presented in table 1 and 2. The main objective of interviews with other key informants was to acquire information on their primary roles regarding household waste management, and to explore their views and suggestions in household waste management. Interview from Kinondoni Municipal Health Officer provided information on the current situation of solid waste management, the municipal assistance to household waste management, as well as views on how to improve households' waste management.

Structured household survey questionnaires were used in the study to gather information about households' solid waste management. The pretested questionnaire was divided into five parts with a total of 27 questions related to the household waste management in selected areas, but only the data that were useful for the solid waste provisioning and households' views on the services provided to them will be reported here.

Personal observation was an indispensible and important tool to gather information on the actual handling of waste in everyday life practices

Secondary information form various policy documents were used as secondary source of data. Additional information on secondary material was obtained through intensive reviews of literature and various publications related to solid waste management such as different reports from municipal solid waste department.

3.3 DATA ANALYSIS

The collected data through the questionnaire survey were analyzed, mainly with simple descriptive statistics; while for the qualitative data personal judgments, comments from experts, and results from interviews were used as a basis for the analysis and interpretation of the information.

4.0 RESULTS AND DISCUSSIONS

4.1 Enabling Environment for Waste Management in Kinondoni

[5] Sub-ward or Mtaa leaders are the government leaders in their local area. Sub-ward (Mtaa) leaders elected by the household members

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

Solid Waste Management Legislation

The local government Act of 1982 reveals that, to date, there is no policy for SWM at the national level; rather there are scattered pieces of legislation on SWM in different policies and city or municipal bylaws which are, for that matter, not supported by a principal law or policy on SWM. Owing to the state of affairs, the city and municipal authorities in the country handles solid waste management issues according to bylaws they set for themselves. In regard to institutional arrangements, a major piece of legislation which guided Solid Waste Management in Dar es Salaam was The Dar es Salaam (Collection and Disposal of Refuse) bylaws of 1993 was made under sections 56 and 13 of The Local Government (Urban Authorities) Act No. 8 of 1982(Nkya, 2004). This bylaw was passed to enable the privatization of waste disposal and to introduce Refuse Collection Charges RCC[6]. As previously mentioned until 1994, solid waste management in Dar es Salaam was a free public service provided by the Dar es Salaam City Council (DCC). Since 1992, the city's solid waste management system was reformed and contracted out to private sector operators. After reforms in the city council, the four authorities; the city council, the Ilala, Temeke and Kinondoni Municipalities, formed their departments on waste management. Decentralization is observed in waste management activities whereby Kinondoni municipality formulated its own waste management bylaw. This is: Kinondoni Municipal Council Waste management and Refuse Collection fees) bylaws 2000(Kinondoni Municipal Commission, 2000). In this bylaw the obligations of residents (beneficiaries of SWM services) and service providers are prescribed as: occupiers of premises should maintain receptacles to keep waste, people are prohibited from causing a nuisance and throwing or depositing waste on streets or in open spaces not designated as collection points, beneficiaries are required to provide and maintain to the satisfaction of the DCC a receptacle for domestic refuse, of a sufficient size and fitted with good and effective lid, pronounces penalties (fines and/or imprisonment) for defaulters (Kinondoni Municipal Commission, 2000, 2001), and define where and how collection charges should be paid by the residents, with the respect of amounts for different generators. According to Nkya (2004) these regulations were not, however enforced fully uniformly.

4.2 Community-Based Organization Waste Management Model

Kinondoni municipality has a franchise agreement. The franchise agreement oblige CBOs to provide collection services even to households from poorer areas, and the ownership of the waste lie with the CBO, and it remains the responsibility of the municipality to supervise, coordinate and control. Refuse collection charges (RCC) or waste fees are collected by CBOs directly from households receiving waste collection services. Those who do not comply with the by-laws are subjected to a fine.

[6] Payment for solid waste collection and disposal services which solid waste contractors are supposed to collect from waste generators including households as defined by the Municipal SWM bylaws

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

The franchise agreement starts with tendering, selection of CBOs, contracting including allocation of area of operation, followed by primary collection, temporary storing, secondary collection and ending with final disposal. Collection of Refuse Collection Charges (RCC) from the community concludes the process. The obligations of the waste contractors and households are specified in the municipal solid waste management bylaws.

4.3 Activities of CBOs

CBOs were involved in a number of solid waste management activities as shown in Table .1.

Table 1. Solid waste management activities of CBOs

CBO	Sub-ward Served	Activities
KIWODET	Hananasifu	Clean neighbourhoods Collection, transport and disposal of waste Public education Sensitize public for self-employment through waste e.g. recycling Recycling activities Composting
TTM	Kilimahewa	Clean neighbourhood Collection, transportation and disposal of waste
KENS	Kinondoni Shamba	Clean neighbourhood Collection, transportation and disposal of waste Environmental cleanliness Recycling Tree planting

Source: Fieldwork, 2008

Solid waste collection and disposal is the most prominent activity of these organisations as well as community sensitisation. The main forms of solid waste collection were the door-to-door and bring system. Door to door system involved collecting the wastes at the door step of the households using wheel barrows and push carts and to deliver the wastes to the collection point (or transfer station) in the form of standby trailers. CBO employ waste collectors to collect and transfer waste to transfer

ARPN Journal of Science and Technology

http://www.ejournalofscience.org

station. The use of handcart is very suitable for conditions prevailing in the low-income areas, such as narrow streets, low generation rates and low wages. With bring systems households were responsible for bringing their waste to areas where waste trucks or stand-by trailers were located. So as to ensure that potential locations are suitable where all households can reach easily to dump their waste the point to locate transfer station is decided upon by households, waste contractors and the local leader of the respective sub-wards. The information obtained from the interviews with the CBOs as far as the furthest distance travelled by households to reach the transfer station ranged between 200 to 500metres. According to CBOs solid waste collection is done between 7.00 am and 3.00 pm and in terms of solid waste collection frequency, the collection from households waste is collected between 2 to 3 days per week. Table 2 shows waste collection details.

Table 2 Waste collection details

Sub-ward	**CBOs Name[7]**	**Method of waste collection**	**Equipment owned**	**Rate of collection**	**Time of collection**
Kinondoni Shamba	KENS	Bring system	1 tractor, 2 trailers, 1 truck	2 times per week	7.00 a.m. – 12.00 noon
Hananasifu	KIWODET	Door to door, bring system	5 pushcarts, 1 trailer, hire a truck, 5 wheelbarrows 1 tractor	2 times per week	8.30 a.m. – 12.00 noon
Kilimahewa	TTM	Bring system	4 pushcarts, hire trucks, 1 truck, 2 trailers	2 times per week	8.00 a.m. – 3.00 p.m.

Source: Fieldwork, 2008

The CBO has managed to get some opportunities for training for improving the task of solid waste collection as assisted by ILO. Important areas of training included Integrated Solid Waste Management with an entrepreneurship perspective and methods of composting. In addition, these CBOs aimed at changing the behaviour of the people towards proper solid waste management. KIWODET for example in 2005/06 and 2006/07 was granted 10 million TZS by the Foundation for Civil Society NGO based in Dar es Salaam. The grant was used to train 120 sub-ward and ten cell leaders on good solid waste management with entrepreneurship perspective. About 250 Local leaders (including Mtaa leaders) have been sensitized and are collaborating well in promoting and supporting the privatized solid waste collection. In total beneficiaries were 2560 including 150 normal people. CBOs are believed to operate more effectively compared to private companies, especially in poor neighbourhoods with poor accessibility. The large trucks used by these companies

[7] KENS – Kinondoni Environmentalists, KIWODET – Kisutu Women Development Trust, TTM- Tua Taka Makurumla

ARPN Journal of Science and Technology

cannot access these settlements, because the paths between houses are so narrow and the payment is very low.

Recycling activities are also prominent activities done by these CBOs ranging from compositing (mostly by KIWODET), to plastic, paper, glass and scrap recycling. These CBOs have acquired training for specific recycling and composting activities. As previously mentioned, International Labour Organization (ILO) has been actively supporting the CBOs to start and improve their waste collection business, and promotes recycling too. The focus of ILO lies primarily with the labour side of the waste management. Issues such as job creation, employment conditions and gender are important from the ILO point of view.

5.0 KINONDONI MUNICIPAL ASSISTANCE TO CBOS IN DOMESTIC SOLID WASTE MANAGEMENT.

The assistance which the municipality gives to solid waste management practices at household levels includes human, technological and financial resources.

5.1 Technological Support

In terms of technological support, the Kinondoni municipal council supports CBOs by providing equipment such as moveable stand-by trailers. For instance, KIWODET confirmed to have received 2 standby trailers from the municipal authority in 2007, TTM confirmed to have acquired 3 standby trailers in the same year, and KENS as well confirmed to have received 2 standby trailers. The municipal authority delivered these standby trailers to CBOs through ward executive officers in their respective wards. It was revealed by the Kinondoni health officer that, one of the plans contained in the 2007-2012 municipal strategic plan was to supply tricycles known as Bajaj to CBOs. These tricycles could help them to increase the efficiency in waste collection in informal settlements, since a Bajaj can easily penetrate into informal settlements due to its small size.

5.2 Human Resource Support

In terms of human resources, the municipal staff from the waste department is employed to support waste management services at the household level. The municipality assigns health officers to work on waste management issues at the ward/sub-ward levels, where the operational tasks are performed. In the course of our discussions, the Kinondoni health officer indicated that by 2008, 12 Health officers had been appointed as waste management officers in 12 Kinondoni wards. All the studied CBOs affirmed that health officers in their areas of operation mobilize households to pay solid waste collection and disposal fees, and also promotes the use of proper solid waste storage containers.

5.3 Financial Support

In terms of financial resources, as the Municipal health officer stated, the Municipal council pays for its waste management workers out of its general financial resources, which it derives directly from

central-government grants or subsidies or from its own sources of revenues. Another most important support to households and other formal service providers from the side of the municipality is the guiding policy framework in terms of existing municipal by laws, which spells out the duties and responsibilities of each stakeholder, including that of households.

6.0 CHALLENGES FOR CBOS

In providing solid waste management services to households, CBOs experienced a number of challenges, of which the four most important and widely mentioned are outlined below.

6.1 Policy Challenges

One of the major constraints identified by all CBOs is related to the current solid waste policies. In Tanzania there is no single comprehensive document of solid waste management policy. Solid waste management policy framework is embodied in a number of sector policies which provides guidelines in the sanitation and environmental management. The existing legislation and by-laws governing solid waste management have been very slow to dynamics of domestic waste management. These policies do not consider the local circumstances and the concerns of householders in different respects (time of collection, way of paying fees, provision of containers, prevention of nuisance and bad smells, etc.) and for that reason are assessed in a rather negative way by the householders interviewed in this research. For example the existing bylaws (citing Kinondoni Municipality) do not spell out conditions for domestic waste management. The Act focus on collection and disposal without specifying the facilities for collection and disposal.

6.2 Infrastructure Challenges

The available SWM infrastructure are highly inadequate especially in studied areas (litter bins, carts, transfer stations, wheelbarrows, inadequate vehicles, poor road conditions etc.). As mentioned in the introduction, majority of Dar es Salaam residents (70%) live in unplanned areas, they have very limited access to available solid waste management infrastructure and services. The prevailing physical and social conditions do not allow household to use the municipally prescribed waste containers. As indicated in the survey, inadequate space, theft of containers and lack of financial resources are among the most important factors to explain the existing situation. The existing municipal by-law stipulates that each household should have two storage containers one for organic and the other for non-organic waste of not less than 40 l fitted with a lid. Lack of space for placing containers is due to informal nature of the settlements. Insufficient collection is due to poor accessibility making removal of waste very difficult in areas under study. Due to unreliable collection services householders dump waste haphazardly.

6.3 Attitudinal Challenges

Solid waste management services are given low priority despite the obvious health hazards which households face from improperly managed solid waste. Local households are not always aware of

ARPN Journal of Science and Technology

the various operations and therefore cannot be involved in them or follow and comply with the directives and instructions. Also, there is societal syndrome that all public service including SWM provision is delivered free by the government, thus they do not see the essence of paying waste collection fees. Moreover, there was no government intervention of transition from public to private sharing; rather it was abrupt change which confused people

6.4 Political Challenges

All CBOs in this study stressed that when the political climate is favourable for waste management many things can be achieved. At the local level (sub-ward level) political dynamics contribute to the success of waste management. Local leaders are very influential group: where these leaders are cooperative, it becomes easier for CBOs to undertake their activities. For example CBOs in this study reported that they use local leaders to convince households to come into agreement on certain SWM issues such payments, modes of use and location of transfer stations etc. Local leaders are important to households because they are closest to the people and people trust them because they are elected by people. Earlier, Ishengoma (2000) reported that in areas where the local leaders have cooperated, the acceptance by the general public of the waste management scheme and the payment of refuse collection charges has been easier than in areas where the local leaders were opposing the scheme. mentioned that about 500 local leaders including Mtaa leaders underwent sensitization seminars supported by ILO. Most of them cooperated well with CBOs in implementing solid waste management activities in their areas. Where the contrary exists, it becomes very difficult for CBOs to undertake SWM activities to meet standards set in the contract especially close to and during elections.

7.0 CONCLUSION

The outcome of this study has generated some fundamental information essential for future planning and policies of domestic waste management in Dar es Salaam. It also indicates some significant challenges ahead. The paper analysed the involvement of CBOs in household waste management in Kinondoni, Dar es Salaam. The findings show that CBOs in this study have franchise agreement that allows them to collect solid waste collection and disposal fees. This has been propelled by the formalisation and government recognition of these organisations resulting in clear allocations of solid waste services between the different institutions in different geographical areas. Meanwhile, the study has revealed that these CBOs offer services to low-income areas and poor neighbourhoods which the authorities have failed to serve. The study also found that Community Based organizations in waste management are supported by the municipality in different ways. Kinondoni municipality provide technological and human resources to CBOs and provide the legal framework for waste services and responsibilities. Despite the municipal assistance, the involvement of CBOs in providing waste management services has been hampered, in particular, by lack of comprehensive solid waste management policy, political challenges, poor infrastructure and attitudes of householders towards solid waste management. Therefore the government should

formulate new policies which will take into consideration the role of CBOs in solid waste management provisioning to poor households.

8.0 REFERENCES

Anand, P. B. (2000). Co-operation and the urban environment: An exploration. *Journal of Development Studies, 36*(5), 30-58.

DCC. (2004). Dar es Salaam City Profile. Council, City Director: 93.Dar es Salaam: Dar es Salaam City Council.

Ekere, W., Mugisha, J., & Drake, L. (2009). Factors Influencing Waste Separation and Utilization Among Households in the Lake Victoria Crescent, Uganda. *Waste Management 29*, 3047-3051.

Hordijk, M. (2000). Of Dreams and Deeds, the Role of Local Initiatives in Community-based Urban Environmental Management. A Case Study from Lima, Peru: Amsterdam, Thela Thesis.

Ishengoma, A. (2000a). *Solid Waste Management in Promoting Environmentally Sustainable Urban Development in Dar es Salaam City. Work from Solid Waste. Women Paid as Managers* Paper presented at the International Conference on Environmental and Social Perspectives for Sustainable Development in Africa, Arusha, Tanzania.

Karanja, A. (2005). Solid Waste Management in Nairobi. Actors, Institutional Arrangements and Contributions to Sustainable Development. Institute of Social Studies, The Netherlands, PhD Thesis.

Kaseva, M. E., & Mbuligwe, S. E. (2005). Appraisal of Solid Waste Collection Following Private Sector Involvement in Dar es Salaam City, Tanzania. *Habitat International, 29*(2), 353-366.

Kassim, S., & Ali, M. (2006). Solid waste collection by Private Sector: Households' Perspective - Findings from a study in Dar es Salaam city, Tanzania. *Habitat International, 30*, 769-780.

Kassim, S. M., & Ali, M. (2006). Solid waste collection by the private sector: Households' perspective - Findings from a study in Dar es Salaam city, Tanzania. *Habitat International, 30*(4), 769-780.

Kinondoni Municipal Commission. (2000). *(Waste Management and Refuse Collection Fees) Bylaws 2000*. Dar es Salaam.

Kinondoni Municipal Commission. (2001). *Waste Management and Collection of Refuse Fee. By-laws GN. 354 of 2001 Kinondoni Municipal Council, Dar es Salaam.*

Kironde, J. M., & Yhdego, M. (1997). The Governance of Waste Management in Urban Tanzania: Towards a Community Based Approach. *Resources, Conservation and Recycling, 21*(4), 213-226.

Kyessi, A., & Mwakalinga, V. (2009). GIS Application in Coordinating Solid Waste Collection: The Case of Sinza Neighbourhood in Kinondoni Municipality, Dar es Salaam City, Tanzania. Dar es Salaam. .

Kyessi, A. G. (2005). Community-Based Urban Water Management in Fringe Neighbourhoods: The case of Dar es Salaam, Tanzania. *Habitat International, 29*, 1-25.

Lee, Y. F. (1997). The Privatisation of Solid Waste Infrastructure and Services in Asia. *ThirdWorld Planning Review, 19*(2), 139-162.

Majani, B., & Halla, F. (1999). Innovative ways for solid waste management in Dar es Salaam: towards stakeholder partnerships'. *Habitat International, 23*(3), 351-361.

Mugagga, F. (2006). *The Public –Private Sector Approach to Municipal Solid Waste Management. How does it Work in Makindye Division, Kampala District, Uganda?* . Master of Philosophy in Development Studies Specializing in Geography, Norwegian University of Science and Technology (NTNU), Trondheim, Norway.

Nkya, E. (2004). Public-Private Partnership and Institutional Arrangements: Constrained Improvement of Solid Waste Management in Dar Es Salaam. *Uongozi Journal of Management Development. , 16*(1), 1-21.

Okot-Okumu, J. (2006). Solid Waste Management in Uganda: Issues Challenges and Opportunities. Paper Presented at PROVIDE Programme: Workshop at Wageningen, The Netherlands.

Sawio, C. J. (2008). Perception and Conceptualisation of Urban Environmental Change: Dar es Salaam City. *Geographical Journal, 174*(2), 149-175.

Tukahirwa, T. (2011). *Civil Society in Urban Sanitation and Solid Waste Management: The Role of NGOs and CBOs in Metropolises of East Africa.* PhD, Wageningen University, Wageningen.

Tukahirwa, T., Mol, A. P. J., & Oosterveer, P. (2010). Civil Society Participation in Urban Sanitation and Solid Waste Management in Uganda. *Local Environment, 15*(1), 1-14.

World Bank. (2002). Upgrading Low-income Urban Settlements, Country Assessment Report, Tanzania. (pp. 29). Dar es Salaam.

Yhdego, M. (1995). Urban Solid Waste Management in Tanzania. Issues, Concepts and Challenges. *Resource, Conservation and Research, 14*, 1-10.