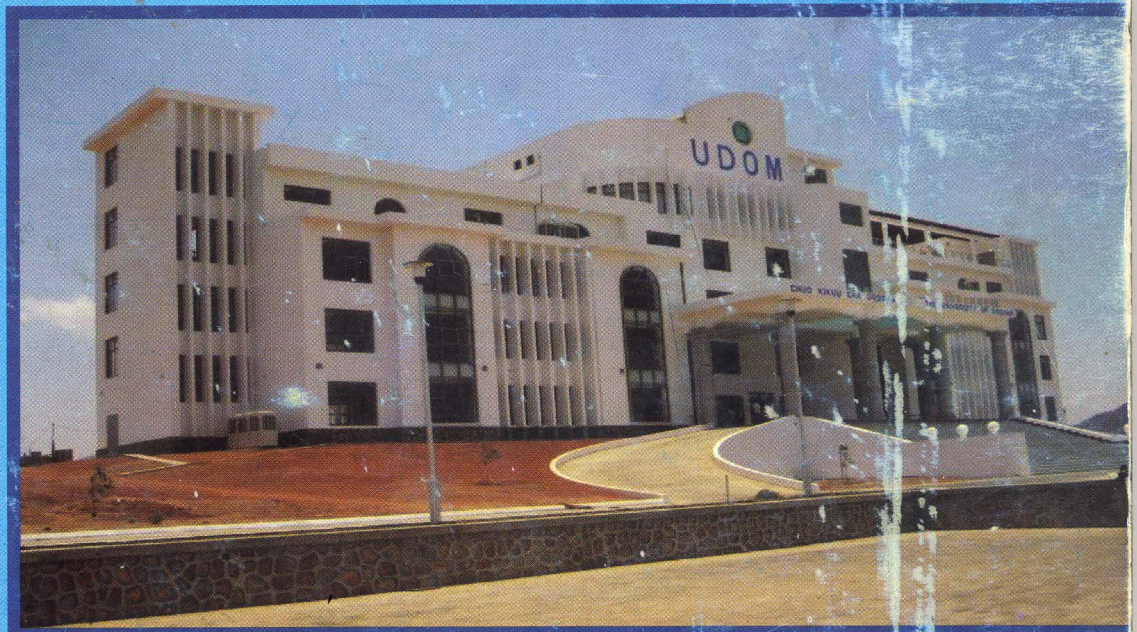


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PROCEEDINGS

THE MOTIVATION OF SMALL SCALE ENTERPRISES TO PARTICIPATE IN SOLID WASTE MANAGEMENT: THE CASE OF MOROGORO

¹ Kalwani, J.D ² Kaena, N.P.A.

The Open University of Tanzania, Dar es Salaam Institute of Technology

Email: jumanne.kalwani@out.ac.tz, njunwakaena@yahoo.co.uk

ABSTRACT

Participation of small and medium enterprises (SMEs) in the area of solid waste not only has made the environment to be clean, but also has created wealth to the community. In this industry SMEs are attracted by the returns from selling recycled products. However, this is not the case in Tanzania because of lack of awareness of benefits emanated from the industry. Therefore, the purpose of this paper is to propose measures to be taken in order to attract SMEs to participate in the industry of solid waste management. Apart from literature review the study analyzed practice of solid waste management in the municipality of Morogoro. The findings revealed that ignorance of returns from recycling solid waste materials was noted as the major obstacle for SMEs to participate in the industry. Awareness of benefits from recycling is recommended as major attraction of SMEs in the industry.

Key words: Environmental aspects and Employment

1.0 INTRODUCTION

1.1 Overview

In the urban area of developing and less developed countries there is rapid increase of population, which has created two major problems namely unemployment and uncontrollable amounts of solid waste (UNEP, 2002). In the process of solving these problems Tanzania decided to adopt the Global Agenda 21 which was drawn after the 1992 Earth Summit on Environment (UNCED, 1992). Among other things, the summit advises poor governments to adopt participatory strategies in order to achieve sustainable solid waste management. However, the study which took place in Morogoro Municipality (Kalwani, 2009) observed and established that, the Summit proposal was not implemented successfully because: cell leaders lacked incentives e.g. training and allowances to motivate them so that they could supervise community based organizations (CBOs); the poorly performance of many CBOs were caused by lack of appropriate empowerment and access to finance; and, the municipal authority inadequately fulfilled its solid waste management responsibilities.

Furthermore, the situation was exacerbated by missing motivation to SMEs who are the major and effective executors in the collection, transportation and recycling of solid waste materials. *Recycling is the process of turning old and disposed materials into new and usable materials by collecting, sorting and transporting disposing materials and then processing them into new usable product.* If SMEs can be knowledgeable about the returns from investment of recycling process they can participate in solid waste management on their own initiatives which leads to effective and sustainable participation in the industry. Other missing links included households', CBOs' and cell leaders' awareness on technical, legal and commercial aspects of solid waste management. Experience from other countries shows that due to handsome returns from solid waste recycling SMEs are attracted to participate in the collection of waste materials (UNEP, 2002). The SMEs in this industry create a substantial amount of employment and contributes to safeguarding public health by significantly reducing the amount of solid waste.

Actors in the solid waste management (SWM) include itinerant buyers (who collect or buy and re-sell waste materials) and recycling industries. Literature shows that the services rendered by this category are

effective and sustainable (Shafiul and Mansoor 2004). The second category is driven mainly by the needs to achieve their goals, and not to make profits. This category include community based organization (CBOs) and non-governmental organizations (NGOs). While CBOs have constraints of mainly low productivity due to unsatisfactory equipment and improper management, the focus of NGOs is to assist other actors in the sector by providing them technology, credits, education or any support deemed necessary. However, these institutions have been proved not effective like entrepreneurs who look any type of recyclable materials from any Corner provided that there are potential returns from their efforts. But this is not the case for the NGOs, CBOs and government organization, who their main interest is to collect the waste from collection point without separation and transport them to the dumpsites.

1.2 Experience of Community Participation in the Industry of SWM

There are enough evidences which have led many countries to opt for recycling as incentive for SMEs to participate in the cleaning of environment.

In Uganda, Kampala Jellitone Suppliers, a biomass briquette company, which makes fuel briquettes from agricultural waste, won the Ashden International Award for avoided deforestation (Living Earth Foundation, 2009). However, the Living Earth Foundation (2009) highlight challenges facing CBOs in Uganda as unclear tendering and contracting procedures, unfair competition due to corruption in Local Government, and failure to pay for SWM services particularly in the poorer sections of the city. This has led to segmentation of the market focusing on areas where the residents can afford the user fees. This means that areas where the majority of the population lives are also the ones which are not serviced. But, this is not the case for SMEs in the recycling industry, Kampala Jellitone Suppliers included, because what matters for them is availability of raw materials for recycling event if the materials are obtained from remote areas, provided collected materials can realize the return from investment of SMEs.

In Nepal, India and other Asian countries activities leading to recycling are done by door to door waste collectors and scavengers. These people are effective in the collection of waste; they collect or buy disposable bottles, small pieces of irons, tins and papers of any size from any corner and supply them to recycling plants. But this is not the case for the NGOs, CBOs and government organization, who their main interest is to collect the waste from collection point without separation and transport them to the dumpsites. (PCDP, 1996; Gupta et al, 1998).

In Swedish municipalities, Eriksson and others (2004) recommends that land filling of energy-rich waste should be avoided as far as possible, partly because of the negative environmental impacts from land filling, but mainly because of the low recovery of resources when land filling.

In Thailand problems in waste disposal has been addressed through alternative techniques, including recycling. Residents were encouraged to bring recyclable material to exchange for eggs, at monthly exchanges in local communities, with emphasis on poorer communities. The project aimed not only at garbage reduction, but also at community empowerment through self-reliance, establishing new relationships of more equality and less dependence, between poor communities and the municipal administration. (Mongkolnchaiarunya, 2005).

In America, in the 70's and early 80's landfills were being filled at an alarming rate with little attention paid to the environmental consequences. As many of the landfills were closed, in 1987 the county was forced to immediately rethink its solid waste policies. Initially the idea of building incinerators was viewed as the best possible solution to the mounting problem of excessive sold waste, but this idea was rejected by the citizen. From this reason the government turned to waste reduction and recycling programmes. Financial assistance was granted by the state to the county to aid in preparation for implementation of these programmes. The programmes were more viable when the state introduced curb

side recycling. The use of economic incentives has proven to be effective in the reduction of solid waste (Reschovsky and Stone, 1994).

1.3 Community Participation, the case of Tanzania

Following Tanzania's adoption of UN-Sustainable Cities Programme in 1992 under the auspice of Global Agenda 21, participatory approach in municipal solid waste management was adopted countrywide including Morogoro municipality in 1998 (SUMO, 2001). The Municipality concluded a joint programme agreement with DANIDA on planning and management of environmental issues including solid waste management called Morogoro Sustainable Programme (SUMO). The Morogoro municipal authorities named the organization of solid waste management involving the local community as "Mpango wa Udhibiti wa Taka Ngumu Morogoro" (MUTAMO) in Kiswahili meaning "Plan to Control Municipal Solid Waste in Morogoro". The document was prepared by SUMO (URT, 2005). In fact, it is a municipal solid waste management framework. This study used it as entry point to investigate the theoretical and practical aspects of solid waste management in the study area. MUTAMO (2005) carried a catchphrase saying: "Every household is required by law to contribute to municipal solid waste collection service charges." It underlined the employment of a privatization strategy for municipal solid waste management aimed at "keeping wards aesthetically clean for prevention of environmental associated diseases, income generation, and to keep the Sub-wards solid waste free" (MUTAMO, 2005).

The Municipality under SUMO based on community participatory strategy contracted CBOs to collect solid wastes from households to transfer stations for temporary storage. In return for this service, households had to pay CBOs a solid waste collection charge fixed by the Municipal Council (MC). The MC, apart from its overall supervisory role in municipal solid waste management, it was assigned by MUTAMO (2005) to transport solid waste from transfer stations to its municipal dump (5 km from municipal centre). Results, often households for one reason or the other did not pay CBOs the set solid waste collection fees. When, they managed to do the solid waste collection, they had nowhere to empty the waste; for often the MC failed to remove it to the dumpsite for final disposal because it claimed to have had resource constraints. This study, observed glut of solid wastes uncollected by the MC in many parts of the Municipality as shown in Figure 1. Generally, emphasis lied on "collection, storage, transportation and final disposal of solid waste at dumpsite". Solid waste recycling was neither given dual priority nor was small scale industries for waste recycling contracted.

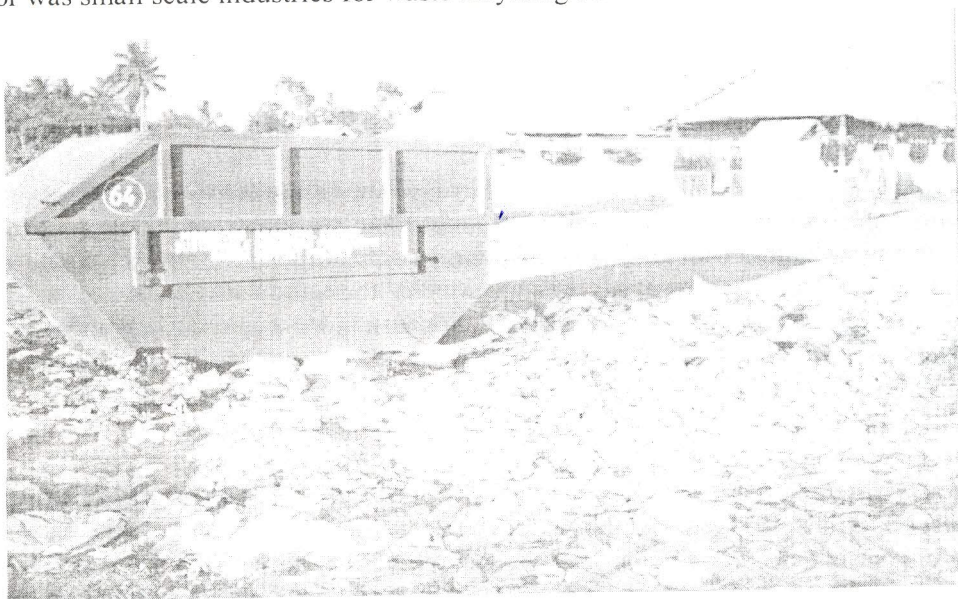


Fig. 1: An Overfilled Skip Bucket Lies in The Middle Background at Sume Mwembesongo, Ward.

1.4 Problem Statement

Literature has revealed that participation of SMEs in solid waste management not only results in collection and treatment of waste materials but also creation of small scale enterprises. However, due to absence of education to the community on the benefits emanated from participation of SMEs in the management of solid waste materials, specifically of recycling of solid waste materials, the practice of waste management in Tanzania does not attract small scale industries to participate fully in the management of waste.

1.5 Objective

The main objective of the study was to see how employment in the form of small scale enterprises could be created in the industry of solid waste management. Specifically, the study had to: acquired experience from other countries which have successfully motivated SMEs in the waste management; interview community including households and cell readers in Morogoro region on their understanding and suggestion on how SMEs can participate in solid waste management; identify materials to be recycled; and determine benefits to SMEs and community at large resulting from the recycling of waste materials.

2.0 METHODOLOGY

Literature was reviewed in order to explore attraction which enabled communities in different countries to participate in the industry of solid waste management, specifically recycling process. Furthermore, documentary data were employed to establish the Municipal government's method of involving communities through CBOs in the industry. A sample of 266 households drawn on the basis of 10% representative sample of informal settlements which constituted over 50% of the residents of Morogoro Municipality was interviewed in order to identify their awareness on different types of materials for recycling and returns from this activities. The randomly selected wards were Mazimbu, Mji Mpya, Mji Mkuu, Mkuyuni, Mwembesongo and Boma. A representative sample of 37 cell leaders as coordinators of solid waste management were randomly selected from the six studies sampled wards. They were interviewed on various aspects related to solid waste management. They included their roles and incentives; awareness on modern technology for solid waste recycling. They also commented on whether CBOs contracted by the local government to collect solid waste from households to transfer stations could lead to achieving sustainable solid waste management. By the time this study was conducted, two active CBOs contracted by the Local Government to collect solid waste in the sampled wards were interviewed on their knowledge and participation on solid waste recycling.

3.0 FINDINGS

3.1 Findings obtained by interviewing respondents

Household questionnaire and interviews to 266 household heads and the author's physical observations, confirmed the existence of uncollected solid waste problem in the sampled wards. It prompted investigation on community participation in municipal solid waste management. Respondents stated whether or not they knew different sustainable ways of municipal solid waste management. It investigated knowledge and practices of 4Rs (municipal solid waste re-use, recycle, recovery, reduction). Respondents were asked to state how they acquired such knowledge. The results were as shown in Table 1.

Table1:Heads of Households' Education Level by Awareness on Different Methods of Managing Municipal Solid Waste

S/N	Highest level of education	Male				Female				Total	
		Knew more than one method of controlling municipal solid waste		Knew only "disposal of municipal solid waste to dumpsites"		Knew more than one method of controlling municipal solid waste		Knew only "disposal of municipal solid waste to dumpsites"			
		cases	%	Cases	%	cases	%	cases	%	cases	%
1.	No schooling	2	0.8	17	6.4	5	1.9	21	7.9	45	16.9
2.	Adult education	4	1.5	24	9.0	5	1.9	22	8.3	55	20.7
3.	Primary education	15	5.6	42	15.8	8	3.0	25	9.4	90	33.9
4.	Secondary and above education	38	14.3	12	4.5	22	8.2	4	1.5	76	28.6
5.	Total	59	22.2	95	35.7	40	15.0	72	27.1	266	100.0

Table 1 shows that, regardless of gender differences 99 (37.2%) out of 266 of all responses said that they knew different alternative ways of controlling municipal solid waste. They ranged from 7 (2.7%) no schooling to 60 (22.5%) secondary and above education cases. Those who only knew "disposal of municipal solid waste to dumpsites" formed 38 (14.3%) no schooling responses or twice as more than 16 (6%) cases of secondary and above education. The results show that, there was direct relationship between education achievement of heads of households and knowledge of different methods of managing municipal solid waste. However, this knowledge was limited to 99 (37.2%) compared to 167 (62.8%) who did not have it. It suggests that, majority of Morogoro municipal informal settlement residents do not know alternative ways of controlling solid wastes. They rely on the dominant method of disposing municipal solid waste to dumpsites. When collection facilities were inadequate, gluts of uncollected wastes were most likely to occur.

These results correspond with UWEP (1996) and Mayo (2004) observations on such solid waste management problems facing many rapidly urbanizing developing countries. These include, frequent exhaustion of dumpsites due to large volumes of waste disposals. Also, scarcity of land in the proximity involves buying land afar for the construction of new distant located dumpsites. All these increase municipal solid waste management costs including social and economic costs (Turner, 1997). The social costs entail various health risks due to diseases arising from uncollected solid wastes. The economic costs involve hauling solid wastes over long distances between sources and disposal dumpsites; and dumpsites management. These costs are implied in Morogoro Municipality. Recently, the municipal government constructed a new costly municipal dumpsite at Mafisa area, 6 km from the CBD. This has been the impact of rapid urbanization.

The study also interviewed 37 local leaders. It aimed at obtaining their views on problems and possible solutions for effective community participation in solid waste management. The justification of seeking

their views was their accumulated local knowledge and experience in day to day supervision of municipal solid waste management in local communities. Their views are presented in Table 2.

Table 2: Local leaders' Views on How CBOs Effectively Sustain Municipal Solid Waste Service Delivery

S/N	Ward	Local leaders' views on factors hindering CBOs from attaining sustainable municipal solid waste management in informal settlements.						Total	
		Cell leaders lacked incentives e.g. training and allowances to motivate them supervise CBOs effectively		Many CBO's poor performance were caused by lack of appropriate empowerment and access to finance		The municipal authority inadequately fulfilled its solid waste management responsibilities		Cases	%
		Cases	%	cases	%	cases	%		
1.	Mji Mkuu	4	10.8	2	5.4	1	2.7	7	18.9
2.	Boma	1	2.7	1	2.7	1	2.7	3	8.1
3.	Mwembesongo	0	0.0	3	8.1	1	2.7	4	10.8
4.	Mji Mpya	1	2.7	4	10.8	2	5.4	7	18.9
5.	Mazimbu	0	0.0	3	8.1	9	24.3	12	32.4
6.	Mbuyuni	0	0.0	1	2.7	3	8.1	4	10.8
	Total	6	16.2	14	37.8	17	45.9	37	100.0

The table shows that 6 (16.2%) out of the 37 local leaders said that they were not motivated to supervise effectively CBOs in municipal solid waste service to households. This was due to the fact that many cell leaders lacked incentives such as training and allowances to motivate them to fulfil this obligation. Lack of such incentives caused some of them to devote much time in research for subsistence needs or indulged in corruptive tendencies for survival. It ended in weak supervision of CBOs which offered their solid waste service to the community irresponsibly.

The data in Table 2 further shows that, 14 (37.8%) out of 37 of the local leaders indicated that most of the CBOs performed poorly due to lack of skills, technology and accessibility to sources of finance. They needed basic technology such as recycling solid wastes into value-added outputs that fetch more income in the market. They also lacked knowledge on diversified income generating activities for generating more income. Many of them lacked securities necessary for bank loan facilities. This would have been needed for re-investing in their municipal solid waste service-oriented projects. With more reliable income sources apart from solid waste service user charge alone, CBOs could be self-reliant as opposed to donor dependence.

Households are the principal generators and sweepers of municipal solid waste at primary level. They have to pay a solid waste collection service user charge to community based organizations for collecting the solid wastes to secondary/transfer stations. Community based organizations (CBOs) are supposed to originate from the community which they provide that service. CBOs are contracted by the municipal authority essentially to discharge the service. The assumption is that if the three parties excel their responsibilities efficiently, sustainable solid waste management can be realized.

4.0 DISCUSSIONS

This study revealed interesting findings regarding excessive local government intervention in the solid waste service provision market contrary to principles operative in a market-oriented economy. In order market-oriented economic situation to hold, Kyessi (2002), North (1990) and Turner (1997) argue that: social service provision should be determined by demand and supply principles; and social infrastructure service should be financed through cost recovery. They argue further, such a situation has an in-built mechanism of good quality assurance of the service supplied at a rational price. On the contrary, the Morogoro municipal authority fixed solid waste collection service user charges to be paid by households (MUTAMO, 2005). It was a violations of regulations in a market-oriented economy where the government instead of leaving solid waste collection charges be determined by the demand and supply forces, it fixed the rate. Such a situation neither guarantees the quality of the service supplied to consumers nor the production cost of the suppliers. On the other side of the coin, the contract between the Municipal government and CBOs on "collection and disposal of solid waste to dumpsite" kicked other players like small scale industries to penetrate into the market with substitute service of "recycling solid wastes". The mainstream argument here is that, excessive government intervention in the market, prevent other suppliers of services such as small scale industries which can contribute also towards achieving sustainable solid waste management through cost recovery from solid wastes. It can be argued that, contraction CBOs to supply solid waste collection services, overlooked identification of other players in solid waste management who could render serves which are sustainable solid waste management-oriented. Small scale industries could do much better by using alternative cost effective technology of to recycle solid waste. The issue is not to rebuke "collection and disposal of solid waste to dumpsite methods", for not all wastes can be recycled anyway. However, if both methods are employed, they could re-enforce each other in the drive towards sustainable solid waste management.

The finding indicates that, like any other towns and cities in Tanzania, there are many old and disposable materials which can be recycled to form new products. These materials include: Old and disposed metal products which can be melted and then processed to form new metallic products; Old and disposed materials made from papers which can be ground up and then proceed into new paper products; Old and disposed glass products which can be crushed, melted and be formed into new glass products; Id and disposed plastic products which can be ground up and processed to form new plastic products; and Woodchips and other non-poisonous combustibile materials which can be processed to form fuel briquettes.

Together with abundant of recyclable solid waste materials, not only knowledge of recycling processes required to the SMEs but also provisions of finance for business start up. Although not all recycling processes can be done by small scale industries but in some complex processes such as melting of scrap metals the small scale industries can participate in, the process of collection, sorting and transporting.

The analysis shows a series of benefits emanated from participation of SMEs in the industry of solid waste. These include job creation the process of collection, sorting, transporting, and treatment of solid waste to new products and selling and distributing of recycled products. There are other job creation apart from main recycling process such as equipment manufacturers and suppliers, and food suppliers (mama nitilie).

5.0 CONCLUSION AND RECOMMENDATIONS

The study has revealed that, community participation has been accepted as best option for management of solid waste in the low-income countries. However, due to lack of incentives, enforcement of laws, commitment and political will the participation of the community in the industry of solid waste management has been not effective and efficient in Tanzania. Although Tanzania has shown their interest in waste recovery which is

primarily based on the possibilities of reduces the volume of waste and thus reduces the costs involved in waste management. However the idea lacks information in regard to benefits derived from the process of recycling. In some countries where knowledge of recycling of solid waste materials is known small scale industries have been key actors in this industry. They are attracted to the industry through different incentives such as awards to best solid waste collectors and recyclers and provision of financial assistance to SMEs in the industry. Other measures are enforcement of law to prevent land filling of energy-rich waste materials and attraction of SMEs to recycle them. This philosophy is suggested to be adopted by Tanzanians through: public media, such as open days and conferences where techniques of collection and sorting of solid waste materials; means of transporting and technology of recycling; and benefits emanated from solid waste collection can be disseminated. The results will encourage small scale industries to participate in the management of solid waste. The findings indicate that in towns and cities of Tanzania there are many solid waste materials which can be used for recycling. These materials include: disposed metal products, disposed materials made from papers, disposed glass products; woodchips and non-poisonous combustible materials. Finally, the study recommends that cooperation of government and CBOs with integration of recycling SMEs can effectively manage the solid waste. It is also recommended that not only the technical and financial aspects of the system are to be analysed, but also environmental, social, health, legal, political, institutional and economic aspects for effective attraction of SMEs to participate in the solid waste management.

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