

**THE ESSENCE OF INFORMAL WASTE RECOVERY ON  
PICKERS' LIVES AND LIVELIHOODS: THE CASE OF GWERU  
CITY LANDFILL**

**Mushaka Charles\***

**Mangizvo V. Remigios (PhD)\*\***

**ABSTRACT**

The main aim of this research was to undertake an enquiry on the essence of informal waste recovery on pickers' lives and livelihoods. Much focus was on how the urban waste had improved waste pickers' lives and livelihood. The objectives of the study were to determine the socio-economic status of the waste pickers; establish what was being recovered at the dumpsite; and to come up with recommendations on informal waste recovery as a means of a livelihood. The study found out that the informal waste pickers earned an income from waste. In addition, the informal waste recovery is also reducing the waste at the landfill which will then contribute positively to the life span of the landfill. However, waste pickers' livelihoods were enhanced in unsafe ways and environments. The study recommends that the informal sector be recognized as stakeholders within the municipality's waste management. This can be achieved through the formation of associations and co-operatives in the informal waste recovery sector. This study assumes that if informal waste recovery can be integrated into the formal sector, the City of Gweru can also benefit from waste recovery in many ways for example through engaging people recovering waste at the landfill and educating them on the dangers of working without protective clothing

**Key words**

**City of Gweru, informal waste recovery, waste pickers, livelihoods, landfill/dumping site**

---

**\* Development Studies (Zimbabwe Open University)**

**\*\* Geography and Environmental Studies (Zimbabwe Open University)**

### Background to the study

Informal waste picking at disposal sites is a common phenomenon in most cities in the developing world. Several thousands of people in the cities of developing countries depend on recycling materials from waste for their livelihoods (Wilson et al., 2006). High and rising unemployment levels are characteristic features of urban areas in the developing countries (Schenck and Blaauw, 2011). This unemployment results in poverty that forces several people into the informal sector such as waste recovery for survival. According to Muhammad and Manu (2013) The World Bank estimates that up to 2 percent of the population in developing countries survives by recovering materials from waste. Observations made show that substantial numbers of these people are women. In Brazil Langenhoven and Dyssel (2007) contend that about 100 000 people survive on collecting waste. Nzeadibe and Iwuoha (2008) contend that although informal waste recovery has not been given adequate attention in Nigeria a significant number of people in Lagos are engaged in the informal recovery and recycling of waste for a livelihood. Widespread informal picking popularly known as scavenging, at disposal sites is also characteristic feature in cities in Zimbabwe (Jerie, 2011; Sachiti, 2011). The most primary work is done by the poor and socially disadvantaged individuals and groups in an effort to improve their lives and livelihoods. These people include men and women as well as children (Muhammad and Manu, 2013; World Bank, 2010). This explains that in poverty afflicted households every member of the family has a role to play in the survival of the family. Waste pickers salvage materials to sell for recycling, as well as repairable and reusable materials they can sell or use themselves (Muhammad and Manu, 2013). However, the informal waste recovery at these dumping sites is given little attention despite its contribution on lives and livelihoods of pickers.

The National Solid Waste Management Commission (2009) defines the informal waste sector as individuals, families, groups or small enterprises engaged in the recovery of waste materials with revenue generation as the motivation either on a full-time or part-time basis. McBean et al. (2005) assert that through the training and organization of the informal sector in Tucuman (Argentina), it has been possible to recover a significant percentages of materials such as papers and news print and plastics (4,3% and 27,2% respectively) making it possible for the people involved in this activity to earn an income estimated to be 1,75 times more than the minimum

wage in that region. Luis et al. (2012) point out that in Latin America in Mexico, the informal sector is composed of people who work in dumpsites and in areas not covered by the collection services as well as people from the middle class and part time scavengers who consist of students, retired persons and housewives as a means to obtain an additional income.

The failure by the formal sector to generate enough job opportunities to meet the growing number of urban job seekers has compelled many who are qualified but unemployed and those with no academic qualifications to turn to the informal sector for survival (Brigden, et al, 2008; Rakoljane, 2014; Sachiti, 2011). Stren and White (1989) contend that through out the developing world, poverty and the need to meet basic needs compel poor urban communities to sustain themselves by engaging in waste recovering not withstanding the stigma and health risks associated with the activity. References made to waste pickers differ from one country to another as this also holds for the ways in which they are perceived by the community (Chvatal, 2010). The waste pickers are referred to as vultures, parasites and scavengers (Chvatal, 2010). That's how informal waste pickers are labeled in the communities; they are treated as outcast in the communities. Informal waste picking is regarded as low technology and low-paid, unrecorded and unregulated work (Muhammad and Manu, 2013). This means this is a trade that is given very little consideration by responsible governments. It is not surprising that informal waste pickers work under conditions that threaten their health and well being. According to Mangizvo and Mupindu (2012) waste pickers use their bare hands to salvage valuable materials from the waste. They do not wear any protective clothing such as gloves and masks.

People in the developing countries have been recovering and using recyclable materials from municipal solid waste for many years (Savage and Diaz 1995). Moreover, recycling activities in the South are expanding rapidly due to the increasing of the advantages of recycling, such as lower energy consumption and therefore they have increased demand for recyclable materials (Bennis et al. 1996). Resource recovery from dumped consumer products is growing in significance, as waste is increasingly seen as a valuable resource, for instance, e-waste and former landfill sites are now investigated for their hidden value (Uz Zaman and Lehmann, 2011). However, Uz Zaman and Lehmann, (2011) argue that waste recovery and recycling of municipality solid waste in Cameroon are unregulated and the interaction of different actors of

the informal waste sector for example waste pickers; itinerant waste buyers; middlemen and small enterprises at landfills, waste dumps, skips, and street dumps gives the onlooker a negative impression about the system. Haan et al. (1998) and Scheinberg (2001) assert that informal waste recovery can bring significant economic benefits to developing countries. From a macroeconomic perspective, they are well adapted to the prevailing conditions, namely abundant supply of working force, but scarce capital. Beukering, Schoon and Mani (1996) perceive informal sector as essential for the environment as well as the local economies in urban centers: firstly, by collecting waste materials, the informal sector takes over a part of the burden of the municipalities; secondly, since the waste collection is labour intensive and involves no special skills or transaction costs, it provides a livelihood to many new immigrants and marginalized people in big cities in developing countries. Recycling activities are the domain of the informal sector, and municipal authorities are barely involved (Rahul and Chari, 2010).

In Africa there are few formal systems for material recovery instituted by public agencies or the private sector. Recovery of materials, including source separation and recycling is carried out mainly by the informal sector (Wilson et al., 2009). Ketlogetswe and Mothudi (2005) point out that in Botswana, most of the local companies dedicated to recycling are only in charge of collection, the recovered materials are exported to different countries such as South Africa and Zimbabwe. The amount of recyclable materials recovered in final disposal sites is taken as an indication of the potential for developing a recycling industry on a large scale at the local level (Ketlogetswe and Mothudi, 2005). In a research project conducted in seven Palestinian districts there was no evidence of reuse and recycling programs, identifying only the informal recovery of metal scrap from waste collection containers and dump sites (Al-Khatib et al., 2007). Esteban et al. (2001) point out that the recycling activity is a well established reality in the region, which reflects in the acknowledgment through names such as “cirujas” in Argentina, “buzos” in Bolivia, “cachureros” in Chile and “pepenadores” in Mexico. They also indicate as an example in Latin America, that in Mexico the informal sector is composed of people who work in dumpsites and in areas not covered by the collection service, as well as people from the middle class and part-time scavengers (students, retired persons and housewives, who obtain additional income).

This study sought to show how the informal waste recovery could be of benefit to the pickers involved in the recovery of the valuable materials. In order to address the issue the study adopted the following objectives: to determine the essence and contribution of informal waste recovery on waste pickers' lives and livelihoods; to establish the socio-economic status of the people involved in waste picking; to establish what was being recovered at the dumping site and its impact on the lives and livelihoods of pickers.

### Methodology

The study was concentrated at the Gweru City Council's dump site at McFadden Farm. . The study was mainly qualitative in nature. The methodological approach used in this study was determined by among other things, the nature of study and the nature of the population in study. Interviews were conducted with officials from the Environmental Management Agency (EMA) and the city council's waste management department as well as waste pickers at the dumping site. The study also made use of observations on activities at the disposal site to obtain first hand information of the type of waste recovered at the site and how the wastes were recovered. Observations enabled the researchers to engage with the waste pickers whilst they were at their places of work.

### Results and Discussion

Informal recovery of waste is the most common activity in which waste pickers recover materials from waste for reuse, recycling and resale in an effort to earn a livelihood. In Gweru municipality dump site, the waste pickers are referred to as izibondas, scavengers, and some regard waste pickers as mentally challenged people. Many other words are used to denote this activity, depending on the idiom one uses. Their living and working environments tend to overlap, or go beyond the expectations of human behavior which is socially accepted in a society. Furthermore, their activities can not be separated from waste itself which not only affects their health but also increases the disrespect and neglect from neighbors and enforces their exclusion from others in the social order. They barely find citizens who appreciate and value their work, or partners at the political and legal levels who guard their interests hence

consequently end up being marginalized. This tended to inhibit the waste pickers from translating earnings from the recovered waste into improved standards of living.

A large majority of the waste pickers lived with their families at the nearby high density suburbs such as Ascot, Mtapa and Woodlands. Informal waste recovery activities contributed to household income. It was observed that in waste picking families, some young children aged between five and eleven, majorities of them being girls accompanied their mothers to the dumping site. The study established that child labor is evidenced at McFadden dumping site as the poor households have no choice but to send their children to work rather than sending them to school. Also, some children who work in waste picking have no families. The survey established that it is often boys who survived without families, while most girls accompanied their mothers and thereby supported the family income.

### **Socio-political context aspects associated with waste picking**

Due to the persistence of poverty, lack of safety nets for the urban poor and a continuing growth in unemployment, a number of Gweru residences have resorted to engaging in informal activities such as waste recovery at the dumpsite in an endeavor to make ends meet. The majority of the waste pickers interviewed put the blame on government for failing to provide them with jobs. Some informants blamed their predicament on Murambatsvina (Operation Restore Order). Murambatsvina literally meant getting rid of the muck. In the 1990s and early 2000s there was there was unprecedented increase in informal activities in the urban areas of Zimbabwe. These included illegal backyard housing and informal employment. In mid-2005 the government embarked on a massive campaign within its urban areas dubbed 'Operation Murambatsvina' ('Restore Order') (Potts, 2006). This was designed to eradicate illegal housing and informal jobs but had serious repercussions on hundreds of thousands of poor urban residents. According to Chibisa (2008) Operation Murambatsvina was carried out without warning, and people lost a lot of valuables and some suffered from the trauma of losing their source of livelihood overnight.

### Informal waste recovery 'a livelihood source'

This study established that the waste pickers recover valuable material from wastes and this had become their source of a livelihood. Income influences the socio-economic status of people in the society and also determines the sustainability of livelihoods in the community. The study established that the poor and disadvantaged urban waste pickers were earning some income from waste recovery at the municipal dumping site at McFadden Farm. The livelihood of the poor urban waste pickers and the income derived from waste recovery is partly determined by the type of waste that the waste picker salvages. This is because the type of waste that is collected by the waste pickers has an economic value and a social value; therefore it will determine the profitability of the end product. There were mainly six categories of wastes collected by waste pickers at the disposal site namely metals, electronic waste, sacks, animal remains and plastics. Plastics were the most preferred by the individual pickers partly because they were readily available and secondly because they had immediate use which made them easy to sell. In this category, a number of products were recovered namely plastic papers, plastic containers, plastic dishes, buckets, plates and chairs. These were sold to recycling industries in Harare the capital city of Zimbabwe. The plastic collectors pointed out that there was a truck which came weekly during the night or at weekends from Harare to buy the plastics.

Sacks were collected for resale to villagers who were into potato farming. They were not always available at all times. The most available were cement sacks mostly coming from the construction companies. Some who collected sacks were doing it for their own use. One of the respondents alluded that she used the sacks at her house for growing here potatoes. She pointed out that at times she also bought them from other waste pickers if she could not get to the dumping site in time. Scrap metals was also preferred by some of the respondents because they were also readily available and could be easily sold especially to the industrial area and metal dealers, Kudzanai markets and at Kombayi Market Centre in Gweru. Scrap metals also fetched a higher price compared to the rest based on the quality and quantity of the scrap. The scrap metal collected range from copper, aluminum, bolts and nuts.

Though waste recovery by the urban unemployed and the disadvantaged people supports their livelihoods through subsistence, education and property acquirement it is evident from this study that majority of the actors are inclined to exploitation by the few dominant individuals acting in the same field.

In this study, majority of the respondents who earned less than us\$15.00 were below the age of 20 years. Waste pickers whose age was above twenty claimed that they got at least US\$20.00 a day and on a good day they could even exceed that amount. This implies that age was important in income generation as those who were old enough could fight for themselves and could make their own decisions without the influence of their counterparts. The findings of this study further established that there was a lot of exploitation by the few individuals who could afford to buy the materials in large quantities and dictate the market prices and pace. This then affected the livelihoods of the poor and minor waste pickers as compared to their dominant counterparts. These complaints were echoed by most of the waste pickers especially the plastic and scrap metal pickers. Waste pickers accused the buyers of being selfish and inconsiderate.

The study established that there was a relationship between income and type of waste collected. Scrap metal and plastic dealers were earning more income ranging from US25.00 to US50.00 because these kinds of waste were easily available, tend to have a ready market and are easily reused and recycled. This study further established that there was a lot of exploitation by the few individuals who could afford to buy the materials in large quantities and dictate the market prices. This then affects the income flows within the waste recovery sector hence disadvantaging the waste pickers. These complaints were echoed by most of the waste pickers especially the plastic and scrape metal pickers. Waste pickers accused the buyers of their products for being selfish and inconsiderate.

### **Informal waste recovery in uplifting lives**

Waste recovery, reuse and recycling in Gweru municipality can be intimately linked to as patterns of self-help activities. Waste recovery has been of great significance in the lives of the poor people. Some informants in the illegal waste recovery system pointed out that they used the income generated from waste picking to pay their children's school fees and provide food for their families. Resource recovery was a source of employment for many poor and disadvantaged



people. Not all material recovered will be sold but some of the materials such as cloths and shoes were used within their households. This then enabled them to be able to provide the basic commodities to their families at home and some were taken to the rural areas for their parents and other relatives. Waste recovery has become the only source of income for the poor and disadvantaged as this did not require much in terms of educational and job training but one's commitment on the work. The waste was being recovered and sold to the recycling industries and individuals who saw value on the recovered waste.

### **Informal waste recovery and the legal framework**

The waste pickers are poor people and do not have the power to influence the policy making process and legal framework.

### **Statutory instrument 6 of 2007 CAP 20:27 Environmental Management (Effluent and solid waste disposal)**

This law states clearly that, every person, other than a local authority, who operates or proposes to construct, operate, relocate or alter any premises for the purpose of a waste management enterprise should apply for a waste management enterprise license. The existence of these statutory instruments then makes it difficult for the waste management to then incorporate informal waste recovery. The Environmental Management Agency prohibits informal waste recovery at the disposal sites and therefore, the handling of municipal waste is only left in the hands of local authorities.

The majority of waste pickers are illiterate and semi-literate and as a result they cannot afford to apply for the licenses according to the statutory instrument 6 of 2007 CAP 20:27 Environmental Management (Effluent and Solid Waste disposal). This can be necessitated with a number of factors which include poverty and lack of education.

### **Gweru City Bye Laws**

The Gweru City (Public Health) by-laws of 1982 governed the removal and disposal of wastes in the city. The Gweru City Public Health Bye-laws of 1982 clearly state that 'no person shall, except with written permission of the council given under the hand of a duly authorized official, take away or interfere with any refuse which has been removed from any premises by the

council'. This then justifies why the informal waste collectors are being prohibited from earning a living out of the waste recoveries at the dumping site. It is clear that considering informal waste pickers' background, they cannot advocate for change of this regulation because of their low literacy levels. It is also clear that the waste pickers do not meet Gweru City Bye Laws as they almost all of them work without protective clothing as required. Furthermore, the Gweru City Bye Laws lacks a clear clause which explains the disposal of e-waste at McFadden Farm disposal site considering the prevalence of e-waste in the city.

### **Public Health Act**

Section 83 of the Public Health Act of Zimbabwe of 1996 states that it shall be the duty of every local authority to take all lawful, necessary, and reasonably practical measures for maintaining its district, at all times, in a clean and sanitary condition by preventing the accumulation of waste, which may be injurious or dangerous to health (Government of Zimbabwe, 1996). Waste producers and municipalities are also expected to take responsibility for collection, transportation, storage, and treatment of waste. This then gives powers to the municipality authorities to be the custodians of waste and consequently prohibit the poor and the disadvantaged people to make a livelihood out of the waste. The informal waste pickers are left in a difficult situation as they do not exist in the management of waste. Waste pickers end up being chased away by municipality police through the department of health from the dumping sites. The health department works hand in hand with the municipal police in an effort to restore order and sanity at the dumping site. However, during the study it was revealed that the Gweru council's department of health is failing to chase the waste pickers away due to manpower shortage as the municipality police are under staffed.

### **Relationship between city of Gweru, formal and informal waste recovery**

The relationship between waste pickers, Gweru Council is one of tolerance, because the City of Gweru authorities have in the past tried to prevent trespassing to no avail. Waste pickers are found at any time of the day scavenging through the rubbish. The study established that out of the 45 respondents 21 which consists the majority of the waste pickers were not sure whether the Gweru City Council approved of their existence or not, whilst 11 respondents thought that their relationship with Gweru City Council was good. Seven respondents indicated that it was bad

with 6 respondents suggesting that the relationship was very good. Of all the interviewed respondents all of them agreed that the relationship was not very bad as shown in the Table 1 below.

**Table 1: Relationship between the City of Gweru and people who are involved in waste recovery**

Relationship type	Responses
Very Good	6
Good	11
Very Bad	Nil
Bad	7
Not so sure	21

**Source: Field work**

A council employee working at the landfill indicated that there was controlled scavenging and the department of waste management acknowledges the positive role played by the waste pickers in the recovery of usable items. The relationship was not official because the scavengers did not have legal status and pay no taxes to government treasury or the municipal council. Based on this, there exists no partnership or an alliance between the waste picker's, and the waste management department and the City of Gweru. The Waste Management official at the City of Gweru highlighted the role that is played by the informal waste recovery, although it creates some problems for municipal services. He postulated that it reduced the volume of solid waste that must be disposed of by the authorities consequently leading to long lasting dumping sites as less waste would be discarded.

It is beyond the capacity of City of Gweru authorities to eliminate informal waste recovery practices, should they wish to because they lack manpower and resources to do so. The department of Waste Management tolerated the waste recovery activities despite them not allowed to do so by the governing by-laws of the City.

**Health Hazards and Associated Risks**

From the study, it was discovered that the majority of the individual actors involved in waste picking in Gweru Municipality's dumping site were doing so in an attempt to eke out a

livelihood despite conditions that were highly risky and detrimental to their health. This study concurred with Zamberia (2006) who asserts that most of waste pickers do not take any health precaution while undertaking their duties which constitute real safety hazards, the urban poor could not afford adequate protective clothing or equipment and often, for purposes of speed, did not want to use them.

During the study, it was found out that the deposits at the landfill regularly comprise a mix of municipal as well as hazardous wastes which include hospital and electronic waste and industrial waste which pose the greatest risks to the waste pickers. The study also established that most of the hospital wastes were dumped in the municipal dumping site in their raw form that is they have not been incinerated as is required by the Law; this therefore increases the chances of the waste pickers contracting diseases and therefore jeopardizing their health in many different ways. The findings of this study were that the health hazards of waste pickers arise from several aspects among them are poverty, environment they work in and their lack of knowledge and information on the waste recovered about its health implications on their lives. Since they belong to the poorest and most deprived section of the urban population, Sarkar, (2003) is of the view that under nutrition, growth retardation, anemia, tuberculosis and other bacterial and parasitic diseases are very common amongst waste pickers. This study found out that waste pickers worked in unsafe conditions as they worked with bare hands during their activities of recovering the waste as they could not afford to buy protective clothing such as overalls, safety boots and hand gloves. They risked being cut or pricked by broken metals, glasses, needles and many more other hazardous materials. This exposed them to various diseases such as tetanus.

### **Conclusions and recommendations**

The assumption that the poor and the disadvantaged were eking a livelihood out of the waste they recovered from the City of Gweru's dumping site has been confirmed. The waste pickers earned an average amount ranging from \$15-00 to \$20-00 a day. Basing on the results obtained from the study, the major types of waste being recovered are plastics containers, electronic waste (such as televisions, computers, monitors, stoves, and cell phones), sacks, food stuffs and metals (such as copper, aluminum) and any other metals that can be deemed of significant. The research established that it is illegal to carry out these activities of recovering valuable materials from the

waste at the dump site. The major hazardous condition in which the informal waste recovers work under was also noted as unhealthy.

It is recommended that the local authorities need to engage with the waste pickers in the informal waste recovery and work out a way forward which enhance their activities of waste recovery such as helping them form cooperatives and community based organizations. These will empower them with knowledge on how they can transact their business with less risk on a win-win situation. This study established that despite the fact that the waste pickers are often marginalized by local authorities, this study has identified the positive role played by waste pickers in the recovery and recycle of waste. Besides being a livelihood for waste pickers, the recovery of waste at the dump site had reduced the amount at the dumpsite which will then increase the life of the dumping site. Furthermore, waste recovery at dump site reduces the environmental pollution their by contributing in the attainment of the Millennium Development Goals. This then call for the waste pickers' recognition as partners of development hence the need for support from stakeholders such as local authorities, non-governmental organizations and the academia just to mention a few.

The Gweru City Bye Laws should be crafted in a way that will allow the involvement of informal sector into waste management. The study established that there is need to integrate the informal waste pickers into the formal sector. The City of Gweru has to work in partnership with the waste pickers and promote the recovery of waste from the dump site on a win-win situation. The city of Gweru should partner with other stake holders in putting policies that support waste recovery, reuse and recycle.

There is need for more research by students and academics in universities and colleges in the City of Gweru on how best the waste recovery can be of benefit both as a livelihood and as an economic activity. There is also need to make some comparisons on whether the waste recovery in Gweru City is the same with other cities in Zimbabwe. The data obtained from this could be utilized to craft sound policies in waste recovery. In the end waste recovery could be used to improve livelihoods.

**REFERENCES**

- Al-Khatib. I.A., Arafat, H.A., Basheer, T., Shawahneh H., Salaha, A., Eid, J., Ali, W, 2007, Trends and problems of solid waste management in developing countries: A case study in seven Palestinian districts, *Waste Management*, 27, 1910-1919.
- Bennis. M., Beukering, P.J.H. van and Hoozeveld H, 1996, International Trade of Waste Paper: a Global Assessment with a Special Focus on India. CREED Final Report, Institute for Environmental Studies, Amsterdam
- Brigden. K., Labunska, I., Santillo, D., Johnston P., 2008, Chemical contamination at e-waste recycling and disposal sites in Accra and Korforidua, Ghana. Greenpeace Research Laboratories Technical Note, Greenpeace International, Amsterdam, The Netherlands. <<http://www.greenpeace.org/international/press/reports/chemical-contamination-at-e-wa>>.
- Chibisa. P., and Sigauke C, 2008, Impact of Operation Murambatsvina (Restore Order) On Flea Markets in Mutare: Implications for Achieving MDG 1 and Sustainable Urban Livelihoods, *Journal of Sustainable Development in Africa*, 10(1), 31-65.
- Chvatal. J., 2010, "A study of waste management policy implications for landfill waste salvagers in the Western Cape", University of Cape Town (UCT).
- Haan. H. C., Coad, A., Lardinois, I. 1998, Municipal waste management: Involving micro-and-small enterprises. Guidelines for municipal managers. Turin, Italy, International Training Centre of the ILO, SKAT, WASTE. <http://www.skat-foundation.org/publications/waste.htm>
- Jerie. S., 2011, Gender and Solid Waste Management in the Informal Sector of Bulawayo, Zimbabwe, *The Dyke*, 5(1), 46-64.
- Ketlogetswe. C., Mothudi T.H., 2005. Botswana's environmental policy on recycling. *Resources Conservation & Recycling*, 44, 333 - 342.
- Langenhoven. B., and Dyssel M, 2007, The Recycling Industry and Subsistence Waste Collectors: A Case Study of Mitchell's Plain, *Urban Forum*, 18(1)114-132.
- Luis. F., Marunolejo., Luis. F.D., Torres P., and Garcia M, 2012, Perceptions for sustainable resource recovery from Municipal waste in developing countries: Applications and alternatives, INTECH.
- Mangizvo. R.V., and Mupindu,W., 2012, The Management, Practice and Environmental Health Implications of the Municipal Solid Waste Dump Site in Alice, South Africa, *Online Journal of Social Sciences Research*, 1(5), 125-131.
- Muhammad. M. N., and Manu H.I., 2013, Gender Roles in Informal Solid Waste Management in Cities of Northern Nigeria: A Case Study of Kaduna Metropolis, *Academic Research International*, 4(5), 142-153.

National Solid Waste Management Commission, 2009, National Framework Plan for Solid Waste Management, On line: Accessed on 28-05- 2014, <http://emb.gov.ph/nswmc/resources/jica%20recycling%20study/summary%20of%20final%20report%20complete.pdf>

Ministry of Environment and Tourism., undated, Environmental Management Act (CAP 20:27) (EMA) and Urban Authorities, The Department of Natural Resources, Harare.

McBean. E.N., del Rosso. E., and Rovers F.A., 2005, Improvements on financing for sustainability in solid waste management, Resources conservation and recycling, vol 43,pp 391-401

Nzeadibe. T.C.,and Iwuoha H.C., 2008,Informal waste recycling in Lagos, Nigeria, Communications in Waste & Resource Management (CWRM), 9(1), 24-30.

Potts. D., 2006, 'Restoring Order'? Operation Murambatsvina and the Urban Crisis in Zimbabwe, Journal of Southern African Studies, 32(2), 273-291

Rahul. S., and Chari K.R., 2010, Socio-economic issues in waste management by informal sector in India, Birla Institute of Management Technology, India

Rakolojane. M., 2014, Waste reclaiming in Ekurhuleni: a case study of Holomisa and Villa Lisa informal settlements in South Africa. 13th International Academic Conference, Antibes. 15 September 2014,

Sachiti. R., 2011, Picking refuse to earn a living The Herald (Zimbabwe), 23 August 2011 <http://www.herald.co.zw/picking-refuse-to-earn-a-living/>

Savage. G.M., and Diaz L.F., 1995, “Future Trends in Solid Waste Management.” In: International Directory of Solid Waste Management 1995/96:22-28 The ISWA Yearbook, London.

Schenck. R., and Blaaw P.F., 2011, The Work and Lives of Street Waste Pickers in Pretoria—A Case Study of Recycling in South Africa’s Urban Informal Economy, Urban Forum; 22(4):411-430

Scheinberg. A., 2001, Micro- and small enterprises in integrated sustainable waste management, The Netherlands: WASTE, <http://www.waste.nl/page/524>

Stren. R., and White R. R., 1989, African Cities in Crisis: Managing Rapid Urban Growth, Boulder, Westview Press.

The World Bank., 2012, Philippines: 6000 Informal Garbage Workers to Benefit from Japanese Grant, <http://www.worldbank.org/en/news/press-release/2012/06/18/philippines-6000-informal-garbage-workers-to-benefit-from-japanese-grant>.

Uz Zaman. A., and Lehmann S., 2011, What is the ‘Zero Waste City’ Concept’, University of

South Australia (UniSA), Australia.

Van Beukering. P., Schoon. E., and Mani A., 1996, 'The Informal Sector and Waste Paper Recovery in Bombay', CREED Working Paper Series No 5, International Institute for Environment and Development (IIED), London, June 1996.

Wilson. D. C., Velis. C., and Cheeseman C., 2006, Role of informal sector recycling in waste management in developing countries, Habitat International, 30(4), 797-808.

Zamberia. C. I., 2006, Opportunities and Challenges in Privatising Urban Environmental Infrastructure: Lessons from the Dandora Dumpsite Nairobi, University of Johannesburg

