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TITLE: THE IMPACT OF COMMUNITY-BASED ORGANISATIONS ON WASTE MANAGEMENT SERVICE DELIVERY: THE CASE OF EMFULENI LOCAL MUNICIPALITY

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DECLARATION

I, Ncamile Edward Moss, of the Faculty of Humanities, School of Basic Sciences, North West University Vaal Campus, hereby declare that this interpretation “THE IMPACT OF COMMUNITY-BASED ORGANISATIONS ON WASTE MANAGEMENT SERVICE DELIVERY: THE CASE OF EMFULENI LOCAL MUNICIPALITY” which is in a form of a research project is my own work, the sources quoted have been indicated and acknowledged by means of a complete list of references.

Signature:…….....Date:……

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ABSTRACT

Waste reprocessing is a growing trend in different communities around South Africa which has become influential to the socio-economic liberalism of the people that are recycling at source in their respective areas. The focus of the research study is on the contributions of community-based organisations involved in recycling towards the social and environmental sustainability. The study explores (i) work done by community-based organisations in recycling, (ii) how the organisations turn unwanted products in to something usable and manage to sustain themselves and provide for their families, and (iii) how unpleasant municipality policies on the management of waste are to the organisations invoved in recycling.

As a result a comprehensive and consistent information set comprising significant contributions from the responsible stakeholders that contribute to the national waste stream will be expressed; regarding the development of relevant statutory frameworks to address and clarify issues facing reprocessing at large. South Africa is signatory to a number of international accords, hence a comprehensive international perspective on waste re-utilisation is incorporated.

The notion of partnership is emphasized as it ought to be accompanied by other measures that can unleash a practical validity and influence; hence the public-private partnership strategy towards recycling is recommended as a requisite to try and tackle the challenges facing community-based organisations and the system of managing waste especially in the Emfuleni Local Municipality. The partnerships should be determined as the principle framework between the people, the private sector and the entire administration.

The more serious the community-based organisations towards the system of managing waste around an area, the better it will turn out to be for the communities concerned. Unemployment is also the biggest issue thus far and strategies have long been implemented to tackle the crisis, and yet the public is still faced and halted by means that are expensive in nature. Advanced educational facilities for instance, which are still major challenges to the people around Emfuleni. The logic of responsibility now is

therefore to develop, implement and enforce recently formulated legislation to encourage the masses to be involved in the process of recycling. Indeed, the lack of co-ordination by private sector, the people and local authorities has resulted in the involvement of community-based organisations being regarded as non-existing and not being intensified in South Africa. The contributions made by waste pickers in making sure that the green environment concept is maintained in societies they live in, is in fact the actual concern in undertaking these research study.

The negative stigma associated with the communities involved in recycling is endured as individuals are able to support their families and themselves through recycling ingenuities. The Emfuleni Local Municipality has some of the best strategies and plans to address the involvement of community-based organisations in their disposal, and the full implementation of this category has to prioritised in order to achieve a hospitable and sustainable environment for the area.

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CHAPTER 1

ORIENTATION AND BACKGROUND

Key Words: Community-based Organisations, Emfuleni Local Municipality, waste, waste management system, service delivery, policy, local government.

1.1 INTRODUCTION

This chapter presents an orientation and background to the research study as an introduction to the problem statement that is outlined in section 1.2 as well as the research hypothesis. The researcher studied the impact of community-based organisations on waste in order to address the concept of the management of waste by individuals involved in recycling as a process. The study was conducted in the municipal area of Emfuleni in Gauteng South Africa. The contents of the secondhand goods in a form of waste that are produced by people are currently piling due to the increases in population around the world and in South Africa. The study was initiated during the third quarter of the year 2010 until the beginning of the fourth quarter of 2012 at Emfuleni Local Municipality by the researcher.

The Emfuleni Local Municipality (ELM) was established under Section 12 of the Municipal Structures Act No 117 of 1998. It is one of three local municipalities (Midvaal, Leseding and Emfuleni Local Municipality) which are parts of a single District Municipality which is called Sedibeng. ELM is in the southern part of the Gauteng province. It is located on the western portion of Sedibeng district and extends laterally one hundred and twenty km from east to west. It shares boundaries with other District Municipalities in the Free State province, Gauteng and North West province which are, Fezile Dabi, Johannesburg Metropolitan area to the North as well as with the Tlokwe Local Municipality to the West in the North West province (ELM 09).

The Municipality has two running initiatives aimed at providing services to existing community recycling centers. These initiatives enjoy cooperation amongst the local authority, the people and the private sector. The first community recycling center was established in Evaton and has been in operation since 1998. During 2008 in April another undertaking by the ELM was initiated, in collaboration with a company called Dream Africa Trust and the people from Bophelong Township (Samson 2008:32). The company Dream Africa Trust was involved in the the establishment of a shopping center in Bophelong. According to Samson (2008:32) such initiatives are organised through the ward councilors, and are expected to open channels between the municipality and residents.

According to ELM (2007:19) the municipality has worked together with other internal stakeholders in the project which was implemented by the central government to promote waste initiatives such as Buyisa-e-bag in lessening the amount of waste. Private companies supported the initiative and provided funding for the purchasing of bailing machines and scales for the improvement of the Evaton recycling center to becoming a buyback center.

According to the Constitution of the Republic of South Africa (Act No.108 of 1996,) service delivery through waste management is actually the responsibility of the local authority. As a result municipalities are said to be doing well in performing this function, according to the current waste management status in the country (Nhamo et al. 2009:46).

ELM has incorporated the management of waste in its organisational plans so as to boost its waste management systems. This is the case with the Sedibeng District Municipality which also has a fully functioning waste management plan. According to waste statistics on the operational community-based organisations in the Emfuleni Local Municipality, the Boitshepi Landfill has three hundred and fifty (350) people that are operating on the site informally. Palm Springs Landfill has two hundred (200) people

who pick up waste after the Emfuleni Local Municipality's five tonne truck which was purchased through the Botle-ke-Botho initiative has unloaded waste.

The other areas which are involved in reprocessing of waste product within the Emfuleni Local Municipality are Zone 7 and 16, Zone 14 shopping complex, Polokong in Sebokeng, Wayside Park, Evaton West, Vereeniging CBD, Tshepiso, Three Rivers, and Bophelong. The other truck launched on 11 September 2008 is utilized for Southern zones of Emfuleni Local Municipality (ELM 2009:98).

According to Samson (2008:1) in the course of 2001 a summit on waste was held which addressed issues ranging from the commitment by the central administration of South Africa, the private sector and the people to reduce 50% of the spread of waste loose cut by 2012, in acceleration towards 2022 accomplishment of the zero waste operation. In uplifting the status of living of the people, the aforementioned declaration affirms that the promotion of employment and the enabling of opportunities for economic liberation are outlined in Clause 15 of the Constitution of South Africa, particularly in commercial initiatives, by enhanced product refuse and measurable reprocessing as people can make a living by either selling or buying goods that have been used before and thrown into bins as waste (Samson 2008:1).

The role of people that are picking up waste currently is not recognised even when the recycling phenomenon is endorsed by the central administration code of practice such as the National Environmental Management Act No 107 of 1998. The strategic document mentions the picking up of waste and the different methods in which the regulations can be made on the other hand it placed no lawful requisite on people who are accountable for the management of waste, including those in different government constituent parts in this regard (Benjamin 2007:37).

Community-based organisations (CBOs) is defined by Ahmed and Ali (2003:470) as the recognised and occasionally involuntary bodies within different societies, which administer the need to address needs ranging from facilities like parks, recreational

facilities and the establishing of different forms of public centered places. They reckon at times the same bodies do react to dreadful conservational situations locally through different solid waste management processes, generally by products assorting and cleaning of the streets. Initially CBOs are facilitated by young revolutionists who sometimes get to be sustained by their communities. The provision of a decent collective social service is profound and compromises are made financially as required and the focus is not necessarily on fortune. In attracting sponsorship thereof, the continuation relies on the activities of the initiative as a result.

1.2 PROBLEM STATEMENT

It is established roughly that in the Emfuleni Local Municipality area in all formal housing areas the collection service is provided to households on a sustainable weekly basis, and the service is provided to 143 214 households. In providing a sustainable household collection service the municipality is faced with extra demand for services due to emerging informal housing areas. These backlogs of informal households are estimated to be 30 777 and nothing has been done in the past financial years due to financial constraints and lack of good infrastructural facilities that enable provision of needed services to the informal settlement people on a continuous basis (Samson 2008:31).

Community-based organisations include people that are recycling in the landfills around the Emfuleni Local Municipality area, and they are represented by small groups that are formed by individual citizens who organized themselves to form some organisations that help to minimize the amount of waste.

Samson (2008:2) reports that if one drives or walks in the suburbs, in towns' central business districts (CBDs) and locations (townships) in South Africa in the mornings one can see a large number of people picking up unwanted items from street bags choosing waste food in order to eat or items to sell for some little money. Most of the communities tend to take these people for granted when they indulge in this type of work. These

people, together with their organisations organise themselves and recycle the ever growing tons of recyclable waste at municipal landfill sites, because they have found that by turning recyclable waste back into some form of supplies they would create a new way of supporting themselves and their families (Samson 2008:2).

Government is indeed correct in identifying that as much as there are some improvements at landfill sites there are also problematic health and safety implications. Oelofse and Godfrey (2008:50) however, are certain that, supporting elimination of community based organizations with no proper procedures to ensure that they have alternatives sources of income undermines the ability of disadvantaged people to develop, maintain and sustain their families. Credit is not given to the existing community-based organisations even that of the sustainability influence they had on the management of waste.

Godfrey (2008:33) establishes that the support for elimination of CBO's is along the lines of excluding them from the management of waste lawmaking platforms of South Africa. Surprisingly, there is little knowledge regarding community-based organisations that are involved in recycling within the urban areas in the country and the locations (townships), though there is insignificant consideration because the local authorities are trying to enforce strict by-laws in implementing their sustainable systems towards the management of waste (Samson 2008:1).

The purpose of this research was therefore to investigate the contributions that the Community-based organisations can make in the sustainability of waste management initiatives of the ELM. It studied the work that the community-based organisations do; how they manage to turn the unwanted products into useful supplies and sources of income to maintain themselves and provide for their families. It also examines how they view the policies of ELM on the management of waste.

1.3 THEORETICAL STATEMENT

In supporting the purpose of the research which is stated in the problem statement above the theory of the study submits that:

In effect the execution of the system of managing waste regarding the delivering of service relies on the dynamic contribution by and partnership with the community-based organisations. A community-based organisation plays an important role in structuring development corridors and for service delivery by municipalities.

1.4 RESEARCH QUESTIONS

The study answered the following questions:

- What is meant by the following concepts: waste, the system of managing waste and community-based organisations for service delivery?

- What is the impact of community-based organisations on the system of managing waste at Emfuleni Local Municipality?

- How can the role of the community-based organisations be optimised in the implementation of a waste management system?

- What recommendations can be presented to add value on community-based organisations to improve the system of managing waste for enhanced service delivery at Emfuleni Local Municipality?

1.5 RESEARCH OBJECTIVES

The objectives of the research study involved the following:

- To explain the concepts waste, waste management system and community-based organisations for service delivery.

- To investigate the impact of the community-based organisations and the system of managing waste at Emfuleni Local Municipality.

- To provide an impression in optimizing the community-based organisation for the implementation of the system of managing waste in Emfuleni Local Municipality.

- To provide a set of recommendations on community-based organisations for successful implementation of the system of managing waste at Emfuleni Local Municipality

1.6 RESEARCH METHODOLOGY

The method of research involved literature study, empirical research in a form of interviews. In this research study the qualitative method was used, more details regarding the research methods will be explained in Chapter 4.

1.6.1 Literature review

The central part of this research, namely, the theory and background will be covered by means of literature study. The ensuing sources were used: books, journals, relevant internet web-sides, articles, proper statutory documents, periodicals and surfed through databases of theses and other informative sources from other educational institutions around and also local unrestricted libraries to gather data surrounding the execution of the policy of management of waste by the municipality. In making sure that enough literature is available for the purpose of the substance study of this research, databases

such as: National Research Foundation (NRF): Nexus databases, Elton B. Stephens Company (EBSCO): Academic search elite will also be consulted. Further substantiation has been sourced from the Local authority statutory documents such as the Millennium 2000 Municipal System Act No 32; and the 1998 Municipal Structures Act No 117; and also the ELM website.

1.6.2 Empirical research and design

In the empirical research and design of this study, the qualitative method was used.

1.6.3 Interviews

Semi-structured interviews were conducted with respondents involved in some community-based organisations randomly selected from different disposal points around Emfuleni Local Municipality. This was to test their awareness and to hear their opinions on delivery of waste management service by the local authority. Six (6) responsible officials were also interviewed to hear different views on the impact of the system of managing waste for the delivery of services at the ELM area. The proposed interview schedule consisted of about 35 (thirty-five) questions divided into items and subsections, which were asked to 100 (hundred) specific individuals.

1.6.4. Ethics

Creswell *et al.* (2010:40) defined ethics as the apprehensions that needs to be engaged with a high level of discretion in terms of the outcome of the findings of the study and their fortification thereof towards the participants' identities. Getting letters of consent and the permission from the authorities to conduct interviews in Waste Department and also the ways in which to dismiss audiotapes, and so on.

This brings in ethical questions of permission and consent. Firstly, permission to conduct research at ELM will be obtained from the manager of Waste Management Department as the letter was granted. Secondly, schedules to respondents blind to avoid bias. Respondents were assured of anonymity.

1.7 CHAPTER OUTLINE

Chapter 1: Orientation and Background.

Chapter 2: Theoretical perceptions on the management of waste and the community-based organisations.

Chapter 3: An outline of the practice of the system of managing waste at Emfuleni Local Municipality.

Chapter 4: Empirical Study: The link between the community-based organisations and the system of managing waste on the delivery of services at Emfuleni Local Municipality.

Chapter 5: Findings, Conclusion and Recommendations.

CHAPTER 2: THEORETICAL PERCEPTIONS ON THE MANAGEMENT OF WASTE AND THE COMMUNITY-BASED ORGANISATIONS

2.1 INTRODUCTION

Waste management officials should exercise their powers and functions in an accommodating manner so as to influence the socio-economic development in which the view of community-based organisations is incorporated particularly in aspects such as recuperating and reprocessing of waste products. The management of waste manipulates the huge adaptive process on top of the personal and developmental procedures towards economic progress of the community-based organisations formed around the area in which responsibilities are being taken for in this regard.

In chapter one the research focused on the brief image of the Emfuleni Local Municipality, the initiatives that are concerned with waste recycling along with the legislative outline behind the concept of the management of waste, with a thorough look on the operational community-based organisations within the area. This chapter will focus on the definition of concepts, the international, continental (Africa) and national perspectives on waste management and the point of view from case studies of different countries.

2.2 DEFINITION OF TERMS

2.2.1 Waste

In general language waste defined as the unnecessary objects that are rejected from existing materials. Moreover, it is defines as those substances that are no longer manageable in some places where the social and technological developments are comparably attached. In regard to some useless materials as other people may seem to take for granted, it is worth noting that some people could find the same materials useful. In terms of realisation of waste materials as a valuable resource, the debate is still on-going to try and come up with a solution (Oelofse & Godfrey 2008:15). The notion of four R's which are Reduce, Reuse, Recycle and Recover seem to fit well as a definition of waste in terms of it being any substance that can be regarded as waste

material (Mandeni Municipality IWMP 2009:2). The Minister of Water and Environmental Affairs can somehow give it the credit in the Gazette by means of a notice, while the so-called waste substance is being reused, recycled and recovered in order for it to become a solid and useful material again (Waste Act 2008).

The unwanted substances, carbon gas or a small amount of pieces of particles that are being abandoned can be processed. The substances that are coming from residential, commercial as well as industrial areas are more dangerous and harmful as they may be gaseous, liquefied or solid, and they originate from human inhabited places. The environmental affairs and tourism constituent of the central administration establishes that, the definition of waste encompasses all categories of waste ranging from waste water imposed by industries, sewerage, harmful elements to mining, metallurgical and power generation waste. In addition, this study will explain in details different categories of waste. Based on the risks that are posed through waste, they are divided into waste in general and dangerous waste (DEAT 2000).

(a) As its definition is concerned waste in general refers to the type of waste which is favourable to the human health in terms of its volume of exposition in the environment. These are:
(i) Household waste;
(ii) Construction and demolition waste;
(iii) Industrial waste;
(iv) Uninteresting waste (DEAT 2000).

As such the waste may typically consist of:

- Paper;
- Metals (non-hazardous);
- Glass;
- Plastic;
- Organics, and
- Builders' rubble (DEAT 2000).

For the purpose of this research the first category of waste will be our major focus.

(b) Hazardous Waste

Hazardous waste, as defined by the Waste Management Act No. 59 of 2008 due to the continuous physical, chemical characteristics of the type of waste, is any type that has organic and artificial elements that may constitute a harmful consequence towards human health and the entire environment. The Waste Management and the law-making White Paper on Integrated Pollution Prevention defined the potentially dangerous waste as waste that is authentically viewed to be dangerous given the technique applied including radioactive waste. In other instances, this waste is said to cause danger to human health based on the chemical continuously used explosives, corrosives and other characteristics that may lead to its advancement (DEAT 2000).

The South African National Standard (SANS) Code 10228 is the code that has the categorization and the description of the packaging and the labelling of the various types of containers in terms of hazardous substances for transport purposes. This is also called the International Maritime Dangerous Goods (IMDG) which is somehow the primary classifier requirement regarding the handling and disposal of dangerous waste. Section 14 of the Waste Management Act No. 59 of 2008 declared priority waste as undeniably primacy waste (Mandeni Municipality IWMP 2009:3).

The programme arranges dangerous affluences, in these instance harmful undesirable substances, classifiably into 9 sets according to the risks associated with. These are listed below as follows:

- Set 1 – Intermittent Affluences
- Set 2 – Compacted Blasts
- Set 3 – Combustible Fluids
- Set 4 – Combustible Artefacts
- Set 5 – Corroding Affluences and Carbon-based Fades
- Set 6 – Contaminated (poisonous) and Communicable Wastes

6.1 – Contaminated Wastes

6.2 – Communicable Wastes

- Set 7 – Emitting Wastes
- Set 8 – Acidic Wastes and
- Set 9 – Mixed Treacherous Wastes

(c) Priority Waste

Priority Waste refers to waste that has been declared by section 14 of the Waste Management Act No. 59 of 2008 as undeniably primacy waste (Mandeni Municipality IWMP 2009:4).

2.2.2 Waste management

Waste management is about the possibility to carry out the idea of recovering outstanding resources. It also revolves around the involvement of solid, liquid, gaseous or radioactive substances and the gathering, transportation, dispensation, reprocessing and the inspection of unwanted items, which encompasses altered approaches and specialisation for each item (Godfrey 2008:26).

2.2.3 Community-based Organisation

A community-based organisation (CBO) acts as the pillar of strength in addressing the interests of a given community. Such organisations are generally seen as socio-economic backbones of the communities in which they operate. As a municipal service provider in the community, it carries municipal and community mandate in relation to the community (Malau 2002:7). The community-based organisations are organised individuals with a common purpose of encouraging and motivating each other in making a living by helping the authorities structurally; protecting their environment by indulging in activities such as recycling (Godfrey 2008:26).

In the section that follows, the international perspective will be discussed.

2.3 THE INTERNATIONAL PERSPECTIVE ON COMMUNITY-BASED ORGANISATIONS ON WASTE MANAGEMENT SERVICE DELIVERY

The concepts of waste management and that of community-based organisation on waste management service delivery are internationally recognised due to the fact that

they are familiar concepts in many parts of the world. The role of community-based organisations in the dumping of waste is also a growing concept in many parts of the world today. In the following section the first case study in this regard will be discussed.

2.3.1 The case of Philippines

2.3.1.1 Community and community participation

According to Mosqueda (2008:9) a community can be described as various groups of people of colour that have different views and opinions. These people usually come from different backgrounds hence they may also differ with regard to social class, economic status and also in their political and religious affiliations. That kind of a flock by members of the public is particularly interesting and helpful in societies that have limited freedom of expression, where people have vastly different needs and interests and where no free human interaction and movement is encouraged. It is worth noting that in such situations it is quite difficult for the masses to instinctively consolidate towards a unified resolution. This will only be very beneficial to the people as a whole. Mosqueda (2008:9) maintains that such a coming together reveals a sentimental people connection in a sense that people participate because they would have felt that they naturally belong in their place of residence.

Furthermore, Mosqueda (2008:10) stresses that community is a foundation of group consistency and has that forceful approach of rally behind integrated action. The outlined unity above bears the people's consistent resolution which comes from the union that is guaranteed firmness and action which is achieved by maintaining the motivation by mutual ability that adores shared commitment to act in performance through continuous efforts to create and reinvent confidence. In conjunction with the above mentioned concepts, it is acknowledged by Mosqueda (2008:10) that, when pronouncing the idea of the people in full capacity, it is important to take into consideration the concept of development in full context which has to be advocated by necessitating the means and the balance of expertise to promote involvement of the active population in platforms that are locally sited.

The foundation of unanimity and involvement of the active population in some other public programmes might primarily depend on the techniques that are favourably used by the local leaders. In terms of the Constitution as a mother-law of the country, the involvement of individuals as a human right thereof, forms a basic element which is essential towards their development in getting to different institutions and their systems (Mosqueda 2008:12). In addition, towards a standard model of approach, many individuals are organised to come up with suggestions, and decide on cooperation with the central administration and certain responsible bodies which can result in resolutions being attained towards difficulties associated with socio-economic ills within the society.

Constantly in this perspective, the involvement of the active population in the management of solid waste necessitates that people become involved in the movement with their own creative means; that they are informed about the activity and understand its advantage when they perform it daily. They must have certain knowledge if they are to participate in those activities (Mosqueda 2008:13).

It is argued by Mosqueda (2008:65) that a comprehensive approach towards an integrated people oriented goal for progression is an ultimate application that can be used to introduce relevant mechanisms for different activities. This offers a platform for the people to participate in the process of planning and to make decisions on the right point and time for different public program. The principal role of collective sense of duty and joint efforts between the residents and their leadership are applicably critical aspects within the society. In any development undertaking the important basics towards a complete inclusive approach are, however unity and commitment. It can only be achieved when there is a collective deliberation concerning the problem that affects the community, and if the parties involved have agreed to act collectively. With their teamwork, sensitivity, determination and progressiveness, acknowledgeable society can be real.

According to the aforementioned statement the case study presented various substantiated practices that are believed to be working in municipalities that are mainly

collaborating with their communities and other bodies for solid waste management programmes that is being captivated (Mosqueda 2008:66).

2.3.2 A Spanish case study

According to Bovea (2009:2) Castellón de la Plana (a City in Spain) has a population of 172 110 inhabitants and generated 1.15 Kilograms per person per day in household waste in 2007 at the east coast area of Spain. During the same year it was also proven that the local authority collected 27, 47% of all waste and the composition included:

- 1.43% of glass, which was later, transported to firms that manufacture glass.
- 5.02% of paper/cardboard, which was also moved towards reprocessing; and
- 1.02% of packages were also moved to a assortment sorting site, that is the place where high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyethylene terephthalate (PET), liquescent packaging board (LPB), ferrous together with non-ferrous items remain in order to be divided. The rest of waste composed from the street bins is the remaining 92.53%. all the recyclables that are recovered are then taken to recycling plants according to their categories where segments get to be sorted:
- Carbon-based affluences recycled to produce stimulant, and
- Biodegradable portions of paper, plastic, ferrous and nonferrous items that are taken to reprocessing sites (Bovea 2009:2).

According to Bovea (2009:2) the compact ability in bundles of many discarded substances are found at their various facilities and are referred to be deposited on a landfill, and are made without energy recovery.

Table 2.1 Structure of municipal solid waste in the learning area.

Segment	**Percentage (%)**
Carbon-based affluences	57
Paper/ cardboard	15
Plastic	10
Glass	7

Metal	4
Fabrics	4
Others	3

Source: Bovea 2009:2

The composition of waste is shown in Table 2.1 above that is where it is established that during available phase, its ideal manner of household waste assortment is being dealt with on a mixture of careful assembling of glass, paper/ cardboard and grouping at resources range and street-side pooling of the whole unwanted products (Bovea (2009:2). The well-designed unit of the system is the running of 1 ton of local authority solid waste produced in Castellónde la Plana with a composition as presented in Table 2.1 accordingly.

Table 2.2 Effectiveness on waste pre-treatment and treatment facilities.

Name of arranging plant	**Segments recuperated**	**Percentage %**
Glass arranging site	Cullet	90
	Waste	
	Metal	3
	Glass	7
Paper arranging site	Paper	60
	Cardboard	38
	Waste	
	Plastic	2
Wrapping	HDPE	8.65
	LDPE	12.02
	PET	18.52
	Ferrous	0.65
	Non-ferrous	11.91
	Mix	12.45
	LPB (carton)	6.81

	Waste	29
Substantial regaining facility	Paper (cardboard)	2.29
	Metal	2.19
	Plastic	0.37
	Organic material	44.68
	Waste	5046

Source: Bovea 2009:2

The information, organised towards the effectiveness of the waste pre-handling and handling services (Table 2.2), are considered and interpreted to obtain the current ideal manner presented in the baseline scenario which is the current system of Castellón de la Plana municipal management of compacted waste which is encountered within the area (Bovea 2009:2).

According to Bovea (2009:2) recent European Union implementation of the 2008 National Waste Plan up to 2015 (PNIR 2008), saw it as essential to alter their central laws regarding the environment, as the legislation was amended and implemented. It has already been tolerated and implemented in some other European countries such as Spain, where one of the objectives are being viewed and drafted; and the management influences the compacted waste structure which was described by the National Waste Plan Section 2 which is supplementary geared to moderate the proportion of the unwanted products that are taken to hygienic landfill sites in Spain.

For the ultimate removal of the unwanted products, dualistic alternatives were considered that are: (a) landfill sites that has no energy regaining and (b) landfill sites that has energy regaining. Incineration by means of energy regaining has not been carefully deliberated as a substitute route to landfill, because the local authority's management of solid waste plan accepted in the area (Castellón de la Plana) at the moment does not reveal the burning of unwanted products alternative as a service and established that, there is no other burning of waste facility in that terrestrial region (Bovea 2009:3).

Table 2.3. Assortment target: growth of the volume of loads to be composed with caution.

Waste Items	**Percentages**
Paper or cardboard	80
Glass	80
Plastic	100
Metals	100
Carbon-based affluences	50

Source: Bovea 2009:3

In Table 2.3 above is where the different rates of success are being taken into account with regard to the fulfilment towards a careful assortment objectives provided in Table 2.2, whereas 50% of the assortment objectives projected and attained, and measured of which targets are fully met. The scenarios to be analysed are also defined through the combination of different collection models according to the ‘‘optimistic” scenarios and checking in the system for handling the recyclable portion and the unwanted products to be taken to landfill sites. The awareness-raising campaigns are used to encourage people to preserve unwanted products from their houses as a least quantity and to reutilize them, the collection targets shown in Table 2.3 are reflected depending on the householder’s responses. The two different ways that citizens responded in are said to be giving an upswing to scenarios that can be considered "optimistic" and “pessimistic”. Whereas, in the 24 possible scenarios local authority’s management of solid waste scenarios presented within the alternative scenarios proposed, the four parameters were combined that were described above results (Bovea 2009:3).

Table 2.4. Recycling and recovery targets.

Aims in the PNIR 2008–2015	**Percentage (%)**
Reprocessing magnitudes by objects:	
Paper/cardboard	60
Glass	60

Metals	50
Plastics	22.50
Reprocessing proportion	55–80
Regaining proportion	>60
Biological treatment proportion	>50

Source: Bovea 2009:3

According to Bovea (2009:2) in order to achieve the waste percentage that is referred to hygienic landfills in Spain, in reaching the targets the alternate scenarios are likely to reach were well-defined by linking different strictures, as it can be witnessed in the alternative scenarios proposed. It is also demonstrated in Table 2.3 along with other purposes associated to reprocessing and regaining in Table 2.4, which sets numerous assortment goals to be accomplished throughout the control process.

Table 2.5. Assortment classification sampled in Spain: segment and percentage of group.

Pooling system.	**Convey system (street-side container).**	**Convey system (high-concentration resources arrays)**
1	Recreation waste (89.98%)	Glass (2.26%)
		Packaging (1.85%)
		Paper/cardboard (5.51%)
2	Recreation waste (86.53%)	Glass (3.29%)
	Packaging (4.29%)	Paper/cardboard (5.89%)
3	Rest waste (79.17%)	Glass (3.16%)
	Putrescible (8.26%)	Packaging (1.97%)
		Paper/cardboard (7.44%)

Source: Bovea 2009:3

In Spain, According to Bovea (2009:3) local authority solid waste is composed by means of an indispensable volume of a variety of patterns. The outcomes from a survey that was covered across all local and regional authorities with more than 50,000 citizens in Spain were put in place to define both patterns presented in Table 2.5 as are most extensively utilised as a measure at a central level. They are regarded as outstanding due to the segments that are dealt with at household level considering the detachment with the assembly spot. The third case study will be discussed and the different methods that are being used by some developed economies ought to be defined in the succeeding section.

2.3.3The case of the United Kingdom (UK)

In UK for example, the principal phase within the compacted waste ruling encompasses the unwanted products that were produced by the people, shops or minor enterprises and kept on the sites; they follows a major assortment, when the unwanted products are been composed and taken also to a dumping site. In his research study Ali and Snel (1999:61) is troubled by the community-based ingenuities in major assortment; which are the composition and abstraction of unwanted products from a certain area. In other greatest authorities and their regions, Ali and Snel (1999:61) establishes that it is the responsibility of a local authority to collect the unwanted products and convey them to the dumping site; even though in other areas there are some back-up procedures for the management of waste. Tasks and obligations at times are uncertain and also consistent.

Ali and Snel (1999:63) emphasises that the management of waste makes part of the ultimate thriving local authority services, and various strategical administrations are incapable to handle the fast mounting pressure on the approved system for managing waste. This gives a motive to why unregulated local people pledge themselves to recycle. The view of an ideal model for organised people that are involved in the composition of the unwanted products has not yet been realised and the authors did not intend to recommend any model.

Ali and Snel (1999:62) approves that local people pledge to recycle in numbers because of the conditions they are faced with, and with the aim to prolong their engagements in addressing communal subjects, concerns and teething troubles. In comprehensive expressions, it can be comprehended by means of three positive protagonist players conferred to as people that are pledging inventiveness:

- Home occupants who create waste;
- Unwanted products accumulators, as people who bring together discarded products; and
- Transitional organisations, like community-based organisations and non-government organisations, who performs different roles: such as, acting in a divergent astuteness properly as helpers and on the other hand as sensational as buyers or as sellers who can get in to a contract with individuals that are reprocessing and can assign the waste products accumulators. In a major unwanted products assortment pattern, the purpose is to deal with the pure ingenuities of the people and to address issues connected with their socio-economic strains (Ali and Snel 1999:63).

Ali and Snel (1999:66) explains that volunteer revolutionists jointly locate a specific individual for major assortment, who will then favour a least possible fee provided and pay separately to the unwanted products accumulator. The structure functions initially due to the corporation demonstrated by the unwanted products accumulators, and because of societal commitment established through the joint effort to make sure that the unwanted products accumulator gets paid regularly including even non-contracted optional monies and hand-outs.

According to Ali and Snel (1999:60) the procedures and patterns prepared for the assortment, conveyance and discarding of local authority solid waste in unindustrialized nation states is somehow difficult. These comprise proceedings assumed by the official bodies and the unofficial unit within the central administration, and the residents.

2.3.3.1 EXNORA (Excellent Novel Radical) zero waste management model

It is established that EXNORA zero waste management model have been the driver towards the movement for the conservationist regarding ecological developments that have taken place in the communities surrounding the area of Chennai (the capital city of the Indian state of Tamil Nadu) ever since 1989. The local authority has enabled to provide sufficient service the EXNORA zero waste management model came to the party and promoted community-based projects. The first organisations to tackle the Management of Solid Waste were the NGO's and the EXNORA saw that the local people's area-based projects are an ultimate manner in which to dispense messages from conservational, societal and authoritative sectors causing an unequal as well as accountable societies (Colon and Fawcett 2006:912).

In the 1990s the area-based organisations existed which were spontaneously formed and arrange by local people towards the urge of EXNORA in public issues disentanglement. They were sometimes called CIVIC EXNORAs (CEs) and they provided unified Management of Solid Waste, as well as the unwanted products separation and reprocessing and also conducted house-to-house unwanted products pooling service.

It has been known to be the zero waste management schemes. In managing and controlling those public projects EXNORA does not take responsibility, because they only acted as the facilitators, motivators and providing technical support, an evaluation of projects only impede the review and adjustment of their model (Colon and Fawcett 2006:916).

2.3.3.2 The zero waste management models

According to Colon *and Fawcett* (2006:919), the purpose of a locally-based organisation engaging the management of waste pointing towards zero-based perspective is however, to freshen-up the area thereby arranging a house-to-house pooling service of domestic waste and the wide-spread streets sweeping; to minimise the load on the ground for discarding, by reprocessing as much unwanted products as possible in the

area; and to give an acknowledged social status to local waste pickers by engaging them to do the work.

Just about ninety-five per cent (95%) of the unwanted products from homes by mass are possibly decomposable. Undeniably, quantities used during the undertaken study by Colon and Fawcett (2006:920) of the community-based household management do confirm, by using the figures published by the local authority organisation of Chennai they indicate that fifteen per cent (15%) of domestic unwanted products was indeed mineral decomposable substance, which could be taken for sale to the recognised reprocessing manufacture, and eighty per cent (80%) of the unwanted products from homes was continuing material that could be discarded. If these segments could be alienated at source and treated locally, only five per cent (5%) of the unwanted products from homes as a load would need to be controlled by the local authority syndicates. The arrangement is set up, run and financed by the locally-based organisation itself (Colon and Fawcett 2006:920).

Regular meetings are held by collectively organised public representatives who hold a responsibility to manage the workforces and their financial records; they gather information regarding the monthly fees paid by the people of a certain area, link to their resident authorities and oversees all the processes. The people pay in order to participate in unravelling of their discarded products into carbon-based and mineral segments and stop scattering on the streets. The tools and the set-up needed are tricycles as pooling vehicles, and land for more splitting and discarding of the acceptable supplies.

The mineral decomposable substances are sold to resident traders. Preferably, the money made from the sales of the decomposable substances and stimulant, on top of the funds collected from the participating families, is sufficient to bear the service, including its function and protection (Colon and Fawcett 2006:931).

2.3.4 United States of America (The case of Massachusetts)

According to Young (2007:17) the unit-based program can occasionally lead to residents feeling that they are losing unrestricted garbage disposal services. If individuals do not have an idea that they are already paying for waste assortment through their property taxes and from their rental fees, they may possibly resist paying for a service that had been alleged to be unrestricted. According to Young (2007:17) maintain that "there is indeed a great deal of evidence in the literature that states residents of unit-based societies either strongly support, highly approve or rather have few complaints in regards to their areas solid waste management implementing a Pay As You Throw program once the economics are explained to them" (Young 2007:18).

According to Young (2007:18) as stated by the Institute of World Resources study "an instance dumping charges would produce net economic savings of $0.17 for every cash of earnings unruffled where landfill costs are high, similarly after the gross costs of curb-side recovering processes were paid". Young (2007:18) interpreted that "in composition the entire public adjustable rate programs may not be applicable". The above-mentioned researcher's analysis emphasised the following characteristics which reflects adjustable rate pricing that are not likely to be effective in the public which are:

(1) People with reasonable and ecologically adequate landfill sites;

(2) People with insufficient or no nearby reprocessing amenities;

(3) People with open spaces situated close, which makes the land susceptible to prohibited dumping; and

(4) People who are in battle with paying adjustable rates (Young 2007:18).

It has been revealed that a precarious aspect in executing an operational unit-based system is however getting the support of the people, designated representatives and other key public interested party, which according to Young (2007:18) is perpetrated by domestic waste removal which may be taken for granted as an unrestricted service and that people may possibly withdraw from the idea of a proposed user fee for a unit-based program and it can also cause controversy towards city elected officials who could have

promoted the program. In fear of not being re-elected, office-bearers might give an unconscious negative reaction to Pay As You Throw (Young 2007:18).

Young (2007:19) establishes that to circulate the stumbling block for both the people and office-bearers, workshops subsidised by the 19 Environmental Protection Agency (EPA) of the United States in Washington D.C. and Boston was held in the past to work on improving outreach plans. It lead to founding the needed distinct aspect in the effective execution which was supposed to give people a sense of authority by educating them so as to place the ingenuity on the ballot papers first. In addition to that, the International Institution that administers the management of local authorities directed multiple district seminars on platforms that assisted the local authority and the district officers in the execution of similar ingenuities on the minimisation of waste. Because most local authorities lacked funding for additional outreach and educational services, the sessions believed to concentrate mainly on launching an operational source lessening program with nominal share. They also concentrated on getting different entrepreneurial types and then advanced in suitable platforms to work with entrepreneurial set-ups that formerly emerged.

Young (2007:19) maintain by means of the city of Los Angeles as an example that, the sessions held revealed how numerous operational groups signified diverse entrepreneurial sectors might join forces to formulate techniques to lessen inhospitable backdrops with peripheral local authoritative effort. The relationship intensely promoted unit pricing to produce important lessening in the volume of waste that people locally put readily for direct pickup. They distinguished that numerous local authorities saw their size of domestic waste drop owing to unit pricing, an improvement that would have resulted in an inordinate length of time being supplementary to a single landfill existence probability not raised.

According to the view of this descriptive study, it is evident that developed countries in the world seem to be the victors of the right direction with regard to the practice of the systems and methods of managing waste, in order to be able to stand for challenges

faced through waste elimination practice. They controlled and maintained their people with proper progressive measures that are possibly achieved through hard work by all stakeholders collectively.

The next section will discuss waste management practice in Africa in terms of different countries and different regions within the continent, in order to determine the impact of their people's participation with regard to unwanted products creation and conformation.

2.4 WASTE MANAGEMENT PRACTICE IN AFRICA

It is established by Couth and Trois (2010:1) that several nation-states in Africa have set dedicated targets in effort to put in to practice the chain of command on the management of waste and lessen discharges coursed by carbon-based affluences. For instance, the proposals that led to the declaration agreement during 2001 in South Africa at the capital city of the then northern province which is now Limpopo province (Polokwane), targets of about fifty per cent (50%) lessening in the unwanted products that are taken to landfill sites by the year 2012 and heading to the year 2022 a detailed plan containing zero waste intention is expected to be in progress (DWAF, 1998). There are indeed some contractions towards reaching the goals set because of excessively determined targets and budgetary funds that are applied at local level which are irrelevant. It is a usual set of circumstances encountered by much of the countries in African.

Couth and Trois (2010:1) stated critically that, there is a broad-spectrum movement of the people from rural and less developed areas to the developed areas all around Africa; consequently, management of waste practices vary much between the less developed and the developed areas and along the lines of the upper middle class and other advanced areas, normally are enormous settlements adjoining the upper middle areas and mostly requiring infrastructures. In aid of Africa, the definition for the upper middle areas derived from localities with 250 to 1000 people each km2 with heights faced in the capital cities such as Nairobi (a city in Kenya) where the number of people

surpasses 1250 for each km2 which is single individual per 8 m2 (Couth and Trois 2010:1).

2.4.1 Waste creation and configuration

The key organic absolution from the management of waste practices is methane from landfill fumes that relies openly on the organic feature of the segment of the unwanted products that are readily decomposable. Studies offered concord that the mean recyclable feature for unwanted products from the developed area ranges around fifty six per cent (56%) and the creation of unwanted products is just about 230kg in a year. It is acknowledged that there are considerable differences in measuring the biogenic undesirable feature and creation in societies with different socio-economic statuses.

A thorough research completed by Couth and Trois (2010:2) quoted that the less developed nation-states carbon-based unwanted products is forty-one per cent (41%) for low earnings, fifty-seven comma six per cent (57.6%) for middle earnings and twenty-seven comma eight per cent (27.8%) for excessive salaried individuals in that order. Confidence is elevated by reason that records do concur with a study that was assumed in 2006 by the domain bank that governs the pecuniary policies of the world focussing on the management of solid waste into vocational and conservational wellbeing. This gives the impression that for nation-states with small earnings the biogenic unwanted products worth sixty-two comma five per cent (62.5%) containing a plus/minus thirty-six per cent (+/-36%) difference and the mean creation which was 205 kg/ha per year with a plus/minus twenty-five per cent (+/-25%) difference of those undesirable products (Couth and Trois 2010:2).

In addition, Couth and Trois (2010:2) noted that the study by the domain bank that governs the pecuniary policies of the world reduced biogenic unwanted products as a mean of sixty-two comma five per cent (62.5%) for states with small earnings fourty-two comma five per cent (42.5%) for developing nation-states, and thirty-one per cent (31%) for developed nation-states. The worthy nations categorises nation-states in Africa as sixty-eight per cent (68%) minimum industrialised nation-states, twenty-eight per cent

(28%) moderate industrialised and four per cent (4%) great urbanized. Established over and above the population of around 1 billion Africans and that forty per cent (40%) are formerly built-up, this is equivalent to around fifty Metric tons per annum (50 Mtpa) of biodegradable waste which is predominantly land filled and adds to methane creation in the defenceless outer space. The next section discusses waste according to the different regions in Africa; the first one is rural waste which is discussed below.

2.4.2. Rural waste

Couth and Trois (2010:2) are certain that, a huge segment of dehydrated less developed unwanted products is searched and reprocessed, and much of the carbon-based unwanted products are used for feeding animals and stimulant. Certainly, carbon-based unwanted products from some built-up areas in Africa were by tradition used as food for animals such as pigs on a marketable measure, for instance, Cairo (a city in Egypt), Lusaka (a city in Zambia) to make biomass pieces or as subsidiary for anaerobic digestion (AD) greenery. There is a reasonable reduced carbon framework from less developed areas unwanted products in Africa all together. In 2004, organic absolutions in the nation-state of Chad were about 0.0127 terrestrial carbon observations (tCO2) per capita associated with a despicable 1.0215 terrestrial carbon observations (tCO2) per capita in Sub-Saharan Africa.

2.4.3 Peri-urban waste

Couth and Trois (2010:2) establishes that in peri-urban areas the duty for the management of waste is largely split between the local authority and the public. Lusaka has only half of its people provided with merely twenty per cent (20%) of the services. It is measured that for the prosperous implementation of sustainable management of waste that is maintainable, even in large cities such as Lusaka, moderate resolutions should be tracked based on the creation of real jobs. Volunteerism should not be an option as the notion of managing waste is an essential social, economic and environmental necessity. Waste should therefore be managed as an occupational

phenomenon, and the systems of partnership between the public and private be protracted to integrate the informal sector (Couth and Trois 2010:2).

Resources or material recovery are said to be a strategy that ought to be incorporated in nation-states that are still developing for the reason that it may determine the development of an organized system of the management of waste, as a consequence the amount of unwanted products that entails discarding can be sizeable in reduction in order to afford a significant work engagement and develop public and environmental state of affairs (Couth and Trois 2010:3).

The means for reclamation offers a source of income for a reasonably enormous total of individuals under subordinated cost-effective division. It is possibly implemented based on binary levels:
1, Labour-intensive reclamation of the solid waste by people before assortment, handling, or discarding, and
2, A composite of labour-intensive and automated methods carried out on a moderately large scale according to a plan that can be certified by the local authority materials recycling facility (MRF). Filthy and hygienic MRFs necessitate security and the latter needs distinct assortment of dry decomposable substances, such as metals, paper, textiles, glass, cardboard, plastics etc.

Due to the pecuniary necessities of the MRF, a thorough search should be more of an recognised procedure in many developing countries with waste separated assortment and then sold to a trader who will transfer it onto the people who process unwanted products (Couth and Trois 2010:3).

The go-through process is performed in three stages according to Couth and Trois (2010:3) which are: stage one is the source separation where households separate refuse of higher market value such as papers and paper products, bottles, food containers, plastic materials, tin, glass, metal, old clothes, shoes, etc. Then sell it to street hawkers. In the second stage, informal pickers collect different items of low

market value from on-site storage bins and open storage spaces. The items include broken glass, cans, cardboard, waste papers, polythene, rags, polyethylene terephthalate (PET) plastic bottles, coconut shells, metals and miscellaneous commercial waste discarded by householders. The final stage is the recovering of reusable and recyclable materials from disposal sites (Couth and Trois 2010:3).

Couth and Trois (2010:3) are convinced that, scavengers recover unwanted products that are decomposable whereas assortment trucks are unloaded at dumping areas. In view of Cairo as a primary case in point of a controlled searching, where a great measure of unwanted products reclaim and reprocessing operation is controlled by an efficient and well organized scavenger cooperative group of about 70,000 people called the Zabbaleen. The Zabbaleen is said to engage in the mission for the assortment of unwanted products, their transference and dispensation. This collection of individuals recovers and recycles between seventy per cent (70%) and eighty five per cent (85%) of all the assorted unwanted products which are then organised and composted in the central administration subsidised MRFs. They categorize all different constituents of the waste stream including plastics, paper, cardboard, torn clothes, metals, and glass. It is highlighted that the MFRs do not perform well due to the reports made about the lack of training, inadequate quality control and poor maintenance (Couth and Trois 2010:3).

According to Couth and Trois (2010:3) the analysis of two miscellaneous clarifications are prepared in Senegal on behalf of the city of Louga concerning unwanted products assortment and searching, and that is primarily done by putting in place the street containers and house-to-house assortment prearrangement. The home-grown engagement in employment is significantly growing as the capital costs are being lowered due to the succeeding alternative which is regarded as being more appropriate. Additionally, convenience through trucks also makes it more suitable for the urbanized area's arrangement. House to house pool assortment again makes it more operational and extensive to control unwanted products. "This view is further supported by evidence for Cape Town in South Africa where informal settlements are recognised and therefore receive the local authority's assortment of waste and cleansing services. Since vehicle

access in less-developed areas is difficult, in Cape Town the solution is driven by a community service alternative" (Couth and Trois 2010:3).

In addition, Couth and Trois (2010:3) maintain that the assortment of unwanted products and the amenities for cleaning are offered to the private companies in a form of a tender. In the process people that are expected to operate would be those that are from the less-developed areas that are actually serviced and that the all manual workers and their supervisors need to be provided with a minimum hourly rate pay. Respectively everyone will have to operate 400 houses to carry out weekly assortment of unwanted products in bags provided to dwellers and delivers them to a central grouping point. Each worker is also expected to make sure that the street is clean and clear in terms of litter; and people are given trollies in order to be able to transport their bags to a central transfer point, before final discarding at landfill sites.

Pecuniary measures are necessary when it comes to the assortment of unwanted products. Therefore the cost effectiveness is imperative for the local authority to collect the aforementioned products, budget prices provided by private operators are believed to be frequently cost effective due to deep-seated connections from officials and the local elected representatives hooked on the process, corruption with officials stirring themselves by requiring kickbacks for any agreement, for allocating contracts, economies of scale and requirements of a positive cash-flow to compensate staff, materials, fuel and equipment which is evident from a number of papers (Couth and Trois 2010:3).

Denationalisation of the services for the assortment of unwanted products relies on local authority's aptitude and preparedness to pay. In Botswana, many local authorities cannot pay for the service and those who can; do not have a willingness to pay, consequently the concept of management of waste is often not attractive to the private sector, forcing State funding of the system for management of solid waste. Addis Ababa (a city in Ethiopia) is classified as one of the dirtiest cities in the world; there is also a poor waste collection service. Waste is collected in wheel-barrows and by donkey and

carts, and placed in skips which are then transported to dumps for disposal (Couth and Trois 2010:3).

Furthermore, Couth and Trois (2010:3) establishes that, funding is insufficient for the services required to manage waste. It is also well-known that during the year 2002, merely one per cent of the total local budget was for the handling of solid waste whereas by customary transnational principles that should be twenty to forty per cent (20-40%). The worse part of this is that, Ethiopia does not have the strategy in order to manage its national waste. In unindustrialized nation-states, the remaining waste is primarily disposed in unrestrained landfill sites, and the search for products that will be reprocessed occurs on the sites as the junk is off-loaded from trucks, the landfill sites also do not have plotted containment. Landfill gas is not collected and combusted and consequently escapes to atmosphere. Unrestrained dumping of unwanted items is believed to be the primary source of organic discharges from management of waste in unindustrialized nation-states.

2.4.4 Urban waste

In fact the management of waste is often low on the representative officials' agenda in unindustrialized nation-states (Couth and Trois 2010:3). Insufficient developed management of solid waste is linked to the controlled funding of communal services and the lack of technical and human resources. Other characteristics which also augment to the provided state of affairs comprises of the low level of attentiveness of local authorities concerning the environmental and communal health impacts resulting from mismanagement of the waste systems, the cultural animosity towards waste-relating in many cultures to contamination, wickedness and death that systematically contributes towards placing Local authorities management of solid waste last among confined priorities, growth by population and its liability on resources and the creation of unwanted products owing to aspirations to advanced nation-state living standards and depletion series (Couth and Trois 2010:4).

Everyday assortment of unwanted products; perfect cleaning of the streets enactment and the establishment of unpolluted landfill sites are the most important requisites in terms of the highly regarded management structure. Earnings for everyday assortment of unwanted products derive exceptionally from a local authority tax. Couth and Trois (2010:4) pointed Maputo city in Mozambique as an example, which has required a distinction on the assortment system by adopting a tax strategy on electrical energy.

“It anticipated disagreements and transformed into a standard tax for electrical energy supply; however it delivered adequate earnings for assortment of unwanted products from just about fifty per cent (50%) of family units. Services such as the assortment and discarding in the city of Lusaka are said to be bankrolled by cross subsidisation from the much developed areas to the peri-urban areas. The project concludes the successful implementation of sustainable management of waste, even in large cities such as Lusaka, moderate resolutions should be pursued to promote job creation and contribute to improvement of living standards” (Couth and Trois 2010:4).

In the next section the discussion focuses on South African’s standpoints/viewpoints in managing waste. The effects of these standpoints on existing policy framework in the country and on the country’s waste information system will also be discussed. A thorough explanation of a waste information system as an integral part of the country’s health care system for effective management of waste is also discussed in this section.

2.5 THE SOUTH AFRICAN VIEWPOINT ON WASTE MANAGEMENT

Nahman and Godfrey (2009:5) the route of effectiveness in South Africa towards managing waste have in the past been ungracefully and not properly financed. Main concerns include insufficient assortment of unwanted products services for a disproportionate percentage of the people, illegitimate dumping, unconstrained management of waste activities that includes disposal facilities that are not permitted, an absence of airspace at legalised landfill sites, insufficient minimisation of unwanted products and reprocessing ingenuities, a lack of basic information on waste, lack of

lawgiving instructions and putting them into practice, and actually, some degree of waste-related lawgiving guidelines in the first place.

In response, towards the National Waste Management Strategy (NWMS) the Department of Environmental Affairs and Tourism (1999) emphasize the need for integrated management on waste, which implies co-ordination of responsibilities within the waste management category. The Department of Environmental Affairs has been designated as the lead agent for integrated waste management (DEAT 1998). In addition, it is hoped that the recently promulgated Waste Management Act No. 59 of 2008 will address many of the specific issues referred to the above (Nahman and Godfrey 2009:5).

In particular, to modify waste from landfill through minimisation of it and recycling is an encompassing policy objective under the White Paper on Integrated Pollution and the Management of Waste of the Department of Environmental Affairs and Tourism, the NWMS and the Waste Act, which recognises the importance of moving waste management up the waste hierarchy. Global experiences of the phenomena have shown that such objectives can be achieved through the use of Environmental Impact statement (Nahman and Godfrey 2009:5).

Nahman and Godfrey (2009:6) added that, to deal with the issue of insufficient funding, the NWMS call upon the Polluter Pays Principle (PPP). In the context of solid waste management, the PPP implies that all waste generators, including households and companies, are responsible for paying the costs associated with the waste they generate. These include not only the direct costs associated with the safe collection, treatment and disposal of waste; but also the external costs of waste generation and disposal, such as health and environmental damages (Department of Environmental Affairs and Tourism 1999:87). The NWMS states that the PPP can be implemented either through command and control regulations, or as economic instruments.

However, although taxes and charges exist in the transport, energy, water and waste management sectors, Call Admission Control mechanisms still dominate environmental policy in SA, including Solid Waste Management, with the central administration depending on public provision of services for managing waste and regulatory instruments to deal with the problems arising from the formation of unwanted products and removal. Conversely, this is likely to change under the new Waste Act, which provides the necessary enabling legislation within which environmental impact statements can be implemented as regulations (Nahman and Godfrey 2009:6).

Nahman and Godfrey (2009:6) considers that presently the only product tax in South Africa with clear environmental objectives is the plastic bag levy, while there is also a proposed levy on tyres and a potential for the expansion of product taxes to such items as packaging, batteries, and electronic equipment (National Treasury 2006). There are also a number of industry-initiated buy-back and deposit-refund schemes in South Africa, linking largely with glass and plastic beverage containers and steel beverage cans (Nahman and Godfrey 2009:6).Yet again, the concept can be perceived otherwise and potentially be expanded to include other products.

Nahman and Godfrey, (2009:7) finally found that charging for waste collection in South Africa varies widely between local authorities, and the extent to which local authorities use true quantity-based charging which is based on the actual weight or volume of waste generated is however not clear. Even where they exist, Environmental Impact statements in South Africa tend to be ineffective because they are typically used for cost-recovery or revenue-raising purposes, rather than as incentives for changing behaviour. It is said that there is generally a trade-off between these two outcomes, because taxes that are effective in changing behaviour will destroy their own tax base to some extent; while taxes that are effective in raising revenue cause little change in behaviour.

According to Nahman and Godfrey (2009:7) the revenue created is generally channelled strategically towards general government funds rather than used to finance environmental expenditure. According to the Finance Department, earmarked taxes reduce transparency, increase the scope for special interest groups to capture revenue, and create inflexibilities, resulting in an inappropriate allocation of resources. Treasury therefore does not allow revenue from environmental taxes to be earmarked for environmental expenditures, arguing that central administration spending decisions should be separated from revenue collection, via the normal fiscal budget process.

Thus, for example, revenue from SA's plastic bag levy has gone into general central administration funds rather than being used to finance recycling of plastic bags, which was its intended purpose. A compromise may be to use 'soft' or 'partial' earmarking, whereby "revenues will flow via the fiscus with the provision that special consideration be given to fund certain activities but with no fixed commitment to allocate all the revenues from a specific source to such activities" (Nahman and Godfrey 2009:7).

Waste is the provisions of commodities that are not main products for which the originator has no further procedure in terms of his or her own purposes of production, transformation and consumption, besides those of which he or she wants to dispose though are products produced for the market.

Wastes may be generated during the removal of raw materials, in treating raw materials into becoming intermediate and towards being final products, the consumption of final products, and other human activities (Nahman and Godfrey 2009:7).

Until the year 1997, waste management was not regarded as a national primary concern in South Africa. The direction in the management of waste as it stood by then was focusing primarily on the unwanted products removal which was reactive given that it occupied needs when they come up. The all-inclusive interconnected management plan of waste was hardly ever, if eternally, assumed. The management of waste was generally accorded a slight priority in the past and as a result it impacted destructively

on the environment surrounding South African and affected the health conditions of its people (Nahman and Godfrey 2009:8).

In terms of Section 24 of the Constitution Act of 1996, it is specified that every person in South Africa reserves a right to an environment that is not harmful to human health, and imposes a duty on the state to propagate legislation and to implement policies to ensure that this right is defended. Up until now, a number of steps have been taken to ensure this environmental right, including the publication of the Environmental Management Policy for South Africa (1998), the publication of the Draft White Paper on Integrated Pollution and Waste Management (Notice 1686 of 1998), the promulgation of the National Water Act (1998) and National Environmental Management Act (1998), and the development of a National Waste Management Strategy (1999), of which this Action Plan is part.

The project for the development of a National Waste Management Strategy for South Africa was initiated during 1997 by the Department of Water Affairs and Forestry (DWAF) and the Department of Environmental Affairs and Tourism (DEAT), with financial support from the Danish Co-operation for Environment and Development (DANCED). The overall objective of the NWMS is to reduce the generation and environmental impact of all forms of waste and to ensure that the health of the people and the quality of the environmental resources are no longer affected by uncontrolled and uncoordinated waste management. In line with the IP&WM approach, the NWMS addresses all elements in the hierarchy of the management of waste (DEAT 1998:51).

2.5.1 Policy Environment

Once properly deigned, correctly implemented and properly enforced, the policy environment can critically be inaugurated in changing peoples' behaviour and the way of thinking. Conversely when coming to the implementation of the strategical programmes, the least possible provisions for the removing of unwanted products using landfill sites as setup-field for such purposes in order to allow individual managers of different landfill sites to decide; whether to allow people to search for recyclables on

their sites or not, it is the responsibility of this managers to answer to the commanding bodies, which limits the individuals' chances of being approved in order to recycle with harmony (Benjamin 2007:7).

Under the law giving statutory, the district of Sedibeng manage to bring together the strategy towards the management of waste practices incorporation which was drafted as the first unified managerial plan on waste.

The current operational mini dumps are not registered for operation and for the dumps to be registered some serious improvement on the systems, machines and materials must be made in order to operate the local mini dumps, therefore the license and operation requirements needs to be in accordance with the minimum requirements of the lawgiving statutory and possibly will bring about an acquisition for the service provider (Benjamin 2007:9).

According to the Constitution of the Republic of South African (Act No 108 of 1996), the management of waste towards the delivery of services is undeniably a local administration function (RSA 1996). The existing prestige of the management of waste in SA is therefore an indication of how well local authorities succeed in performing this function (Nhamo et al. 2009:46). The research emphasis is on the contributions of community-based organisations to societal and environmental subsistence ability. It divulges the exact work that these organisations do, how they manage to sustain themselves and provide for their families by picking up waste and selling it to the recycling centres at a price set by the centres, and how unpleasant the policies on the management of waste of the local authority .

The Polokwane Declaration that emerged out of the first national waste summit in 2001 commits the central administration, the private sector and the people to lessen the unwanted products scattering and improve removal by fifty per cent (50%) and twenty-five per cent (20%) respectively by 2012 and to achieving zero waste by 2022.

Oelofse and Godfrey (2008:36) are certain that, clause 15 includes a specific commitment to, “promote employment and economic empowerment opportunities, in particular in Small, Medium and Micro Enterprises, through increased product reuse and material recycling” (Benjamin 2007:39). While the 1998 National Environmental Management Act endorses recycling as a key element of minimization of unwanted products approaches it does not articulate clearly the role of what it is referred to as waste-pickers in the existing reprocessing practices. The lawgiving paper do state the reprocessing factor and techniques to standardize the type of work but without placing a legally binding obligation on those who are responsible for the management of waste, including the central authority’s entity responsible for the management of waste (Oelofse and Godfrey 2008:40).

The White Paper on Integrated Pollution and the Management of Waste (the White Paper) sets out the idea towards values, strategic goals together with objectives that government will have to use in order to achieve integrated pollution and the management of waste in South Africa. One of the goals that have been identified for achieving waste management moderation strategy towards integrated pollution is which relates to information management (WPIPWM 2006:8).

This goal is conversely to develop and sustain databases and information management patterns to provide convenient information to interested and affected parties that will support effective waste management moderation strategies towards integrated pollution (WPIPWM 2006:8).

The objectives listed in respect of the goal include establishing effective information systems to inform decision making, measuring development in policy implementation and enabling thorough people participation in the management of waste matters.

In order to achieve the goal, the White Paper indicates that government will establish -

- an adequate national ambient (relevant to all sectors) environmental quality ascertaining network through a reliable approach to monitoring;

- a register of pollution and waste releases and transfers and a register of waste checkers and waste disposal spots(including the estimation of non-point sources of pollution);
- an appropriate way of storing and distributing the information frequently and on appeal;
- steady and standardized records among different central administrations units and domains of the central administration so that information can be simply organised and combined;
- standardized methods for the layout of information apprehending;
- a process for the ordered publishing of statistics on ambient environmental quality; and
- A role for responsible citizens in effluence and unwanted products monitoring (WPIPWM 2006:8).

The White Paper is not a binding document. Yet, it provides a clear mandate for the development of a WIS. In this regard it is noted that the White Paper envisages that a WIS will be integrated or linked to a broader pollution information system. The National Waste Management Strategy project was initiated to give effect to aspects of the mandate provided by the White Paper. During this project a substantial amount of work was done in respect of the development of a WIS (WPIPWM 2006:9).

Despite the total of environmental laws and regulations that are prevailing in South Africa, legislation is incompetent and often overlapping. DEAT has by some means introduced a Law Reform Process that is believed to review existing environmental legislation and the legislation required to implement the NWMS that will highlight the following:

- Where legislation is duplicated, and
- Where legislation is deficient with respect to implementation of the initiatives within the NWMS.

Even though it will be possible to implement the strategies developed within the NWMS, the following are key requirements in this regard:

- Political will;
- Sufficient funds that are available timeously;
- Sufficient staff with the appropriate skills;
- The meeting of Institutional requirements;
- Stakeholder commitment to the process, and
- Comprehensive civic education.

With specific reference to Information Systems, the Draft White Paper on Integrated Pollution and Waste Management for South Africa (Notice 1686: 1998) states as one of its goals; generally *Goal 6*: Information management: To develop and maintain databases and information management systems to provide accessible information to interested and affected parties that will support effective integrated pollution and waste management (DWPIPWM 1998).

It is within this context that the reporting structures and information flow have been developed within the NWMS. The information to be reported by data suppliers is sufficient to support integrated pollution and the management of waste and the structures are said to ensure that the information is readily available to all interested and affected parties (WPIPWM 2006:10). Waste information system will be discussed in the following section.

2.5.2 Waste Information System

There are suspected to be a number of points that are to be addressed in the long-term that is believed to be up to 2012 and beyond, within the National Waste Management System, (WPIPWM 2006:10) namely:

- To establish effective and efficient information systems, including the development of appropriate pollution indicators, to ensure informed decision making, measure

progress in policy implementation and enable public participation in integrated pollution and the management of waste governance;

- To strengthen and build the capacity of the central administration to collect, analyse and use relevant information and knowledge for integrated pollution and the management waste from all sources, including formal, non-formal and traditional sources;

- By disseminating information in an accessible format through formal and informal channels including communication media;
- By developing a register of pollutant point and diffuse sources for pollutant releases, in preparation for an eventual Pollutant Release and Transfer Register (PRTR);

- To develop a register for all waste handlers, and;
- Register all waste disposal sites (WPIPWM 2006:10).

In the short-term of between 1999 and 2004 conversely, the focus said to be set on gathering:

- Information precisely necessary for all priority initiatives within the NWMS.
- Information which is freely available in the people and in the private sector.

It is believed to be needed to ensure that there is capacity within government to run the WIS and to use the information that it has in the short-term. Information is being distributed widely using several forms of communication and media. Registration of waste handlers and waste disposal sites forms part of the short-term goal of the WIS (DWPIPWM Notice 1686:1998).

The Action Plan encompasses specifics about the activities that are said to be implemented to meet the short-term objectives within the WIS initiative. The first data suppliers required to report the prescribed data included:

- That information essential to the development of the other NWMS priority initiatives.

- Information that is readily available.
- Information specifically required to reach Goal 6 in the draft IP & WM White Paper (as described in Section 1.2).

Three complete rounds of data collection, verification and aggregation were possible within the short-term period between 1999 and 2004, through which it is estimated that 70% of the total waste stream in South Africa has been identified and quantified (WPIPWM 2006:11).

In the next section a thorough explanation of a waste information system as an integrated health care for effective management of waste is established in the study as an example of how waste management department in Emfuleni Local Municipality can address the issue of waste recycling by convening workshops and provide accurate information to the community-based organisations around the area in order to effectively implement the process of recycling at source which include all segments of the community.

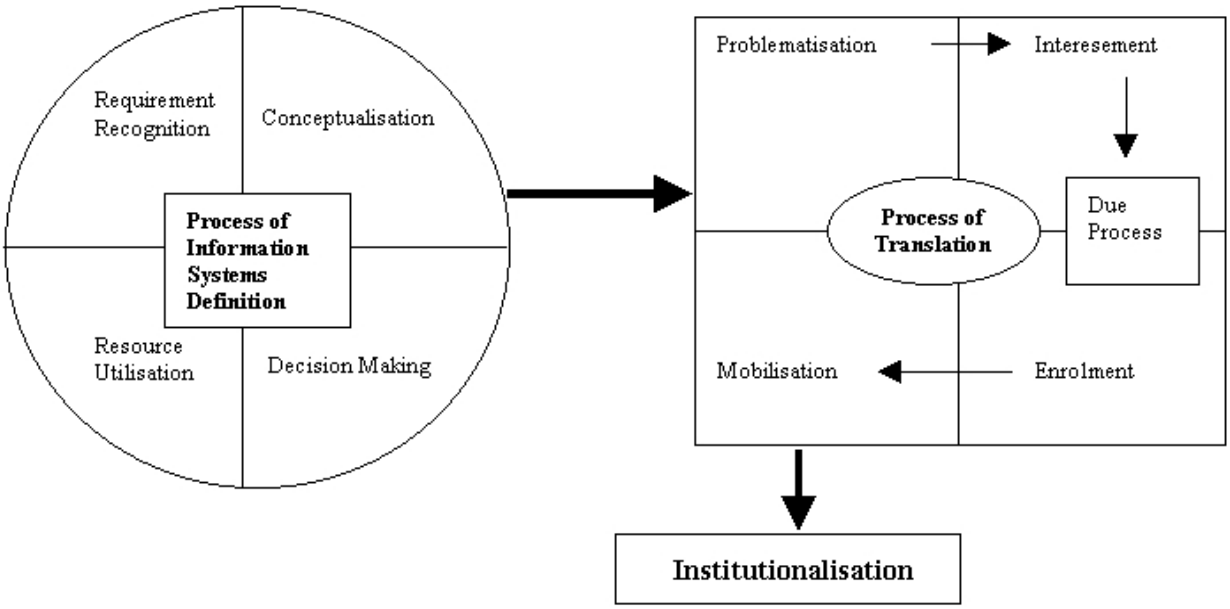
2.5.3 A Waste information system as assimilated health care for effective management of waste

Initially in South Africa waste was not given much effectiveness it deserved and it was only in 1998 that the integrated contamination and the management of waste process admitted waste as a fundamental issue in their official papers. Afterwards a national management of waste as a system was developed and started by the water affairs and forestry departments (DWAF) together with the environmental affairs and tourism department (DEAT). As a matter of course South Africa is actually a participant on a number of global issues related to health care waste (Delcarme, 2004:2). Information is by some means accessible on the databases and information management systems that are providing to all the actual incorporated pollution and management of waste supporters. The perspective is mainly the reporting structures and the information flow that have been established within the NWMS through a waste information system (WIS). Delcarme (2004:2) is of the opinion that, in the short term of 1999-2004, within

the NWMS, the focus was in deed to gather information precisely required by all significance initiatives that were readily available in the public and private sectors.

Currently insufficient data exist relating to effects on proper waste made through health care in South Africa and consequently decisions can be at the very best reactive. It is vital that South Africa recognises the need for research and promote solutions from within the country. Divisions on environmental health systems have impacted on the ability to evaluate and disseminate surveillance information directly. Information that is able to be accessed on time and appropriate, has not been obtainable to environmental managers, decision-makers and to the people. The lack of appreciation for high quality surveillance data and a weak commitment by the society towards public health are still some of the major barriers experienced (Delcarme 2004:1).

Figure 2. 1. Institutionalisation framework for Healthcare waste information systems

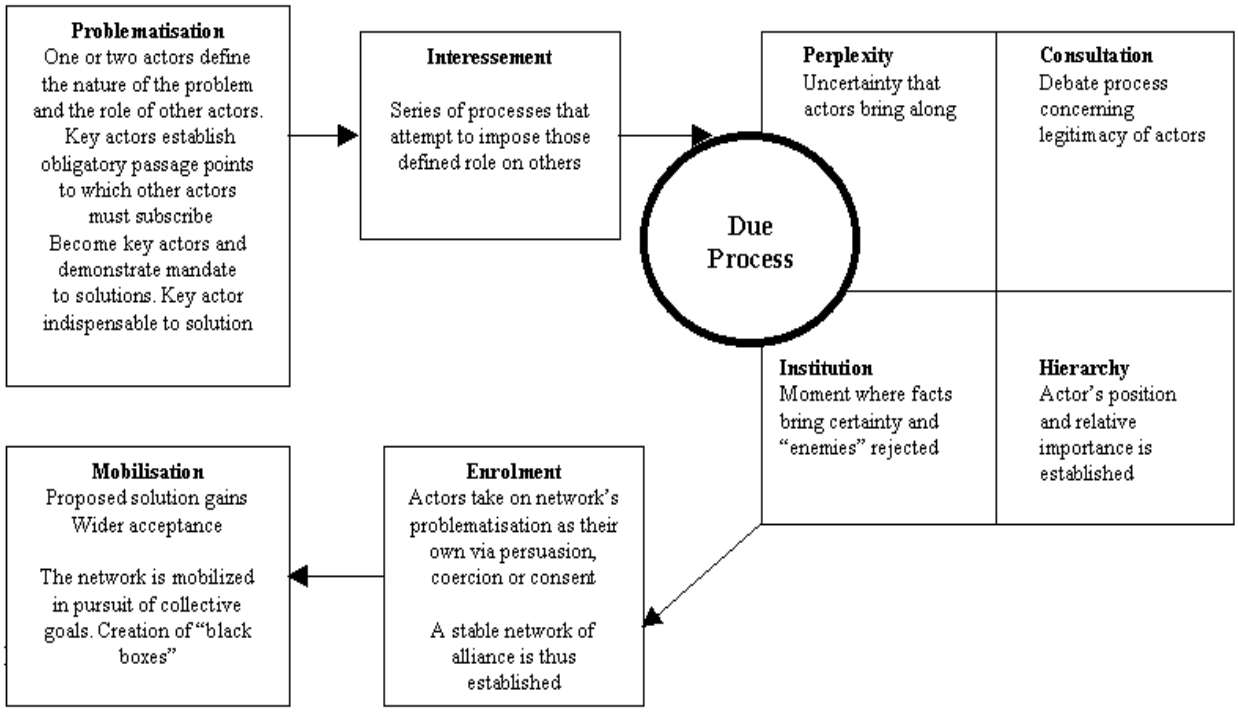


Source: Delcarme (2004:3).

Effective health care waste management is dependent on, among others, a reliable, robust and consistent body of information. The need to obtain accurate information for the entire country is fundamental to improve the current situation. Information is the foundation of both delivery with caution and public health. On the other hand, unlike

other sectors though public health has remained slow to move into the information era and significant applications of information technology have yet to be implemented. Even though the public health sector has been motivated to improve its administration, workforce and infrastructure in forming an advance logical system, extensive progression is needed to try and construct a correct effective and efficient environmental health information system (Delcarme 2004:3).

Figure 2. 2. ANT: Process of innovation translation



Source: Delcarme (2004:5).

Delcarme (2004:5) explains that during this process the waste generators have now been influenced or forced into accepting and interacting with the integrated health care waste information system (IHCWIS). A stable network of alliance is established and interaction with the information system is believed to be taking place currently. The IHCWIS as a solution now gains wider acceptance and becomes part of everyday life. Successful institutionalisation can now occur. Additionally, a broad and reliable

information set, comprising major assistance from all bodies that contribute to the waste tributary in general is established. The information systems will also monitor compliance with a number of international treaties, to which South Africa is a signatory in the long-run. To tackle the challenges of community-based organisations and waste management system, it is of the essence that partnership between the people, private sector and the central administration is maintained.

2.6 CHAPTER SUMMARY

Any municipality should establish a pushy partnership with the community-based organisations within its area so as to properly determine what is exactly needed in order to eradicate the poorer atmosphere which surrounds its premises and also help its community by limiting the percentage of unemployment. The Emfuleni Local Municipality should not be an exception in this regard. In this chapter, international perspectives were outlined with specific references to the cases of Philippines, Spain, the UK and the Massachusetts in the USA. The practice of the management of waste in the African continent was apprehensively cited and the discussion was then narrowed down to the South Africa context.

Though partnership should be accompanied by other measures that unleash the practice of being forceful and persuasive, the public-private partnership strategy is somehow crucial if followed consciously. In the following chapter one will carefully offer an impression of the practice of waste management system at Emfuleni Local Municipality.

Chapter 3 will focus on the status quo with regard to the legislation which encompasses an environmental perspective in terms of waste management within South Africa, with a key focus on the Emfuleni Local Municipality. Waste information system and waste management practice in ELM will also be summarized as well in Chapter 3. Deficiency and exceptionality will also be utterly exemplified.

CHAPTER 3: AN OUTLINE OF THE PRACTICEOF THE SYSTEM OF MANAGING WASTE AT EMFULENI LOCAL MUNICIPALITY

3.1 INTRODUCTION

In Chapter 2 the international perspective on community-based organisations management of waste and the African perspective on waste management as a practice were defined. The South African viewpoint on the management of waste, its policy environment and also the waste information system were discussed. In this chapter the research will narrow the focus to the municipal situation partaking strictly in Emfuleni Local Municipality. This chapter discusses the Constitution of the Republic of South Africa (Act No. 108 of 1996) in terms of the environment legislation and the Solid Waste By-laws that affect community-based organisations involved in waste management in Emfuleni Local Municipality. The aim is to understand the legislative context from which waste management is undertaken with regard to the involvement and operation of the community-based organisations.

The chapter also discusses the practice of the management of waste around the area in detail and reflect on the different disposal points with regard to their locations, function and the collection service of household refuse. The discussion will also reflect on other category of structures that are responsible for people centered development which are non-governmental organisations (NGOs) that should challenge official development thinking and advocating of a new order based on human values and environmental sustainability.

Emfuleni Local Municipality forms part of the Gauteng south region and it integrates the two main busy areas of Vereeniging and Vanderbijlpark, with the locations (townships) of Sharpeville, Boipatong, Bophelong, Sebokeng, and the old township of Evaton. The area experienced the distant past of the civil and pecuniary difficulty as an effect; tough experiences had impacted negatively on the finances frequently for nearly twenty years. It has resulted into compacted budget discrepancies and in general inflexible progressions on infrastructure investment.

According to McKenzie (2005:27) following the consequences of the solid concentrations on preservation and comparable little compensation intensities for the services, the system of waste removal faces actual great levels of discharge and high volumes of waste in many areas, mainly Sebokeng and Evaton locations where the unwanted products was valued at about the order of eighty per cent (80%) of the system of managing waste in the area. The next section will discuss the Constitution of the Republic of South Africa (Act No. 108 of 1996) which is a broad background for ethical management of the environment.

3.2 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (Act No. 108 of 1996)

Confined in Section 8 of the Constitution of the Republic of South Africa (Act 108 of 1996) is the provision of a comprehensive framework which is believed to direct the spirit of all legislation in South Africa through the Constitution solicitation. Included in this legislation is also the environmental legislation. The agreeable Section 24 of the Constitution (Act No. 108 of 1996) addresses environmental rights when it states thus: "Everyone has the right to:

(a) an environment that is not harmful to their health or well-being; and

(b) have the environment protected (for the benefit of present and future generations) through reasonable legislative and other measures that:

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development".

The Constitution of the Republic of South Africa (Act No. 108 of 1996) therefore requires that the generation, handling, treatment and disposal of solid waste management do not infringe on the rights of the people. In this regard, the involvement of the individuals working within the community-based organisations offers a solution for

addressing the challenge of managing waste in different areas of the local authorities concerned. Clarity of terms within the waste stream is pronounced in the next section.

3.3 SOLID WASTE BY-LAWS

3.3.1. The Definition

In relation to any premises it is established that anyone who occupies properties is however expected to put in a hawker who occupies a site for their own purposes; or an owner which is the person whom the legal title to the properties is assigned to from time to time and if there's no one who occupies, therefore, whoever is assigned as the titleholder (the owner), lessee, licensee or otherwise has, in anytime, control over those properties. In case where the person in whom the legal title is conferred to is in some way bankrupt or deceased, or is reasonably under any form of legal scrutiny, the person which the administration and control of that person's property is entrusted as curator, trustee, executor, administrator, judicial manager, liquidator or other legal entities will legally be the beneficiary of such (National Water Act No. 36 of 1998).

3.3.2. Representatives

In any instance where the local authority is not capable to determine the identity of a person, then a person who is entitled to the benefit of the use of the properties or a buildings thereon, it is established in such case that where the premises have been leased for a period of thirty years or longer, the lessee thereof; In relation to a piece of land delineated on a sectional plan registered in terms of the 1986 Sectional Titles Act, the developer or the body corporate in respect of the common property; and section as defined in the Act, will register the name of the person whose name appears in the section under a sectional title deed, and will also include the lawfully appointed agent of such a person (National Water Act No. 36 of 1998).

3.3.3. Dumping and littering

Section (1) of the National Water (Act No. 36 of 1998) stated that no person is required to dump, deposit, discharge, spill, release waste, cause or permit such waste to be dumped, discharged, spilled or released, whether the waste is in a container or not, at

any place whether publicly or privately owned including but not limited to vacant land, rivers, waterways, catchments, sewers and storm water drains, except in a container or at a place which has been specially indicated, provided or set apart for such purpose there might be prohibition to such behaviours.

3.3.4. Collection and removal of waste

It is established that a local authority is responsible in providing unwanted products removal service for all occupied properties within the waste removal zone and the occupant of any premises must be legally responsible for all charges imposed for the service, regardless of whether or not that kind of service is utilised, and on the other hand whether or not the service is provided on a day other than the normal day of assortment; and that any charges levied for the service must be prescribed in the local authority's tariff charges (National Water Act No. 36 of 1998).

The local authority must regulate in terms of the capacity of refuse bins, bags which should be used by occupants for waste removal purposes, the number of bins, bags or containers and the days on which the service is said to operate. A private service provider for collecting waste, may deliver containers to the sites if they have information about the quantity of refuse generated on those sites and the suitability of waste for storage in containers, their accessibility and adequacy of the space provided by the occupant at any sites for refuse collection vehicles, the said waste, according to the local authority can be more suitably stored in containers instead of bins. It is established that some containers delivered by the local authority or a waste service provider in terms of section 1 of the Sectional Titles (Act No. 95 of 1986): shall remain in the ownership of the local authority or the private waste service provider (National Water Act No. 36 of 1998).

3.3.5. Hazardous waste and industrial effluent

Any costs which may be incurred by the local authority in the process of lessening any trouble caused by the absolution of harmful waste or industrial emissions in infringement of the provisions of the authority's by-laws, it must be abided by and be

restorable in form from the titleholder for the discharge of the unwanted products or emission (National Water Act No. 36 of 1998).

3.3.6. Garden waste

It is maintained that the local authority may, occasionally, reserve some specific sites for the dumping of garden waste and other decomposable materials. The sites referred to in must be entitled by means of notice boards initiated specifically for the assigned sites and that any waste referred to in subsection (1) must be transported to the site by a means of transportation capable of carrying a load of not more than one tonne. It is regulated that no person, entering the site must by any means throw any unwanted items other than that considered in subsection (1) in the containers provided at the sites and also emphasised under the 1986 Sectional Titles Act subsection (1) that no secluded small agricultural service, or conservancy, operator or service provider may enter a site designated by the local authority for the disposal of garden waste, except when the operator or the service provider enters the site in the course and scope of the business of the operator or service provider (National Water Act No. 36 of 1998).

3.3.7. Builders' unwanted items, fragments and waste substance

In congruence to the National Water Act (36/1998) it is clear that where in the opinion of the local authority, extreme volume of waste is acceptable to gather on a site before or even during building processes, it may also be in a form of a written notice ordering the titleholder of the site to have that waste affluence removed within the period specified in the notice and that any titleholder who fails to comply with the notice will be guilty of an offence and the local authority may take out that waste commodity from the site and may in some way recuperate the costs of the removal from the titleholder (National Water Act No. 36 of 1998).

3.3.8. Notices and penalties

It is established under subsection 15 of the 1998 National Water Act section (1) that the Municipality may serve a notice on the people residing at any premises, wanting that person to clear any waste on the premises in a manner and within a time indicated in

the notice only If an individual does not submit to the requirements enacted by the notice, whom a notice has been obliged, and the individual will be guilty of an offence and also held accountable and confined with penalties given from time to time by law.
It is eminent that every individual who violates or fails to act in accordance with any endowment of the by-laws will be held accountable and they will be legally responsible on judgement to a fine or to be held in custody, or to both fines and to the supplementary punishment as determined by a court of capable prerogative (National Water Act No. 36 of 1998).

3.4 WASTE INFORMATION SYSTEM AT EMFULENI LOCAL MUNICIPALITY

According to Masindi (2011:14) certainly municipalities are custodians of landfill sites and that by law, they should know the type of waste that is made by industries within their areas of jurisdiction and this will help them to determine the type of waste that will be suitable for the area. Waste from residential household is deposited in hazardous landfill sites. In simpler terms municipalities must be in a position to know what type of waste is deposited in the landfill as a mechanism to protect the area from pollution (Masindi 2011:114).

The requirements of the Waste Management (Act No. 59 of 2008) entail that all industries operating within the borders of the South African Republic required to provide data to the central administration regarding the type of products they produce, the type of waste they make, the disposal area they use for the disposal of their by-products including the processes they follow for the disposal of their waste. The central administration is involved in the promotion of the unwanted products reprocessing and the registration of waste that is required from industries to encourage other corporations to use by-products from other private traders as virgin material for their products. For example, ash that is generated from the Lethabo Power Station is used by bricks manufacturing companies as virgin material for their bricks (Masindi 2011:15).

3.4.1 Compliance and Enforcement

As far as the minimum requirement is concerned, the least possible provisions for the removal of waste by landfill sites recognise that operations in all landfill sites must be legal and must comply with specifications of the Act. Existing landfill sites must be registered or licensed under the Act and all sorts of waste to be predisposed in respective landfill that must first be checked before disposal. The law further specifies that any new development of a new landfill sites, industry and major project, must undergo an Environmental Impact Assessment process as a way to determine whether the project in question could create problems in the immediate future or not (Masindi 2011:15).

3.4.2 Penalties and Offences

The clauses in legislation as cited above are important in imposing charges against offenders to remedy the situation. Charges to be imposed to offenders or rather polluters are prescribed in regulations adopted in the running of unwanted products checking facilities. Penalties will have to be imposed on offenders to ensure that funds that will be required by authorities to rehabilitate the affected piece of land, is tolerated by offenders (Masindi 2011:16).

3.4.3 Waste Disposal

To a layman on the street, waste disposal entails the throwing away of waste by one into his/her backyard without considering its ultimate consequences. In South Africa today waste that has not been recycled must end up at the sanitary landfill but in some other countries the same waste can be used for some to generate certain products before disposal. Other than recycling, waste can be used to generate energy and produce fuel that can be used by all members of the community. Private companies are employed by municipalities to provide a service that municipalities are not in a position to perform. This will somehow require skills, resources and personnel. The type of waste at hand shall determine the area or the type of landfill site to be used (Masindi 2011:17).It is maintained that waste that is generated and collected from different household is regarded as overall waste and is predisposed of at a general landfill site.

Chemical and harmful waste from industries including waste which is in a form of medicinal, that emanates from medical clinics and health centres is disposed of at hazardous landfill site that are managed by private and specialized waste management companies. Rules that are applicable for the disposal of all forms of waste are embedded in the Minimum Requirement for Disposal of Waste by Landfill sites as well as provisions of the Waste Management (Act No. 59 of 2008) (Masindi 2011:17).

3.5 WASTE MANAGEMENT PRACTICE AT EMFULENI LOCAL MUNICIPALITY

The management of waste is reflected in the subsequent key functions: household, illegal dumps, commercial and industrial refuse collection, mini dump transfer facilities, townships, Central Business District cleansing and landfill sites operations and management. Residential waste is collected once a week in the following areas: Sebokeng, Evaton, Sharpeville, Boipatong, Bophelong, Tshepiso, Vanderbijlpark and Vereeniging, (a total of 154,330 households) is actually serviced on sustainable basis. The increased figure in sustainable household collection now also includes Evaton West and Bophelong Focus and the Mantevrede Agricultural holdings (ELM 2006:14).

According to Samson (2003:100) the management of waste comprises the lowest outline of home amenities and did not get an indication in the review of ten years by the president. Services have been lengthened in the locations (black township areas) and it is established in the study conducted in the course of 2003 towards the union of the workforce in South African local authorities “the South African Municipal Workers Union (SAMWU)” and discovered that, the affluent and working class areas did not receive the same quality of service. This is predominantly because cutbacks and privatization has been executed excessively. On the other hand, the suburbs are normally serviced by local authorities and commercialised syndicates owned by the authorities, while communities are frequently serviced by private service providers. Cleaning streets and open spaces are most likely to be abandoned because this service cannot be charged to individual households. The level of service all over the Vaal Triangle area is clearly insufficient. Uncontrolled littering is commonly faced by everybody in the area,

particularly around taxi ranks, and open ground and they are frequently used as informal dumps (Hallowes and Munnik 2006:51).

Business waste is anticipated to be collected daily in mainly the Vanderbijlpark and Vereeniging areas, (a total of 1,453 stands) the total serviced stands and households is 134 483. Full street sweeping services are also being prepared in mainly the CBD areas of Vereeniging and Vanderbijlpark and also at the noticeable commercial centers, Sebokeng taxi rank and at all main roads. When it comes to great service delivery and ultimate dumping of waste at landfill sites; Council only provides for a general collection of waste service that includes general household waste, removal of unselective or illegal dumps in some public spaces in all of the regions and mass removal of garden refuse and builders' rubble on a pre-paid payment system (ELM 2006:14).

The Department of Waste Management is formally operating 4 mini dumps as transferal stations in the Vereeniging area and controls Waldrift, Boitshepiville and Palm Springs landfill spots. The department has three main depots located in Sebokeng assisting the northern area, Vereeniging assisting the eastern area and Boipatong assisting the western areas. The Department of Waste Management is currently performing the subsequent functions within Emfuleni Local Municipality which are in line with the central and provincial statutory plans (ELM 2010:1):

The ELM provides a weekly household collection to 154380 households and implements new service demands on a continuous basis. The daily collection in the business areas around is six days per week and providing on a pre-paid basis all bulky refuse that cannot be collected using the usually bag system throughout the municipal area. A two weekly removal of all illegal dumping in all hot spots identified within the municipal area is being provided as well. Also facilitates litter collection from all main roads and open spaces and cleaning of public toilets (ELM 2010:1).

According to ELM (2010:1) a well maintained, licensed infrastructure and daily service six days a week of all mini transfer stations to provide sufficient capacity to cater for disposal needs of residents and also a well maintained, licensed infrastructure and daily

serviced 7 days a week of all landfill sites to accommodate and accept all general waste requirements of the residents in all areas of the region are accommodated as well (ELM 2010:1).

The education and awareness campaigns on the minimisation of unwanted products strategies are being prepared, in order to improve environmental management to prolong the landfill site life span; and instil a sense of entrepreneurship amongst the people, in some part of the area are already in progress. The compilation of a master plan to determine present and future needs in order to provide a long-term planning interventions is sustained (ELM 2010:2).

3.5.1 The apparent Doppstadt Shredder DW 2560 machine

According to Emfuleni Municipality External Newspaper (2009:6) the machine weighs 19 tons and is capable of shredding trees with a diameter of 500 to 600 mm with ease. It is basically a single shaft rotation drum of which the speed can be controlled with staggered front end teeth mounted all over the drum. The speed of the drum rotation can be controlled through revolutions depending on the load of greens that it needs to shred at any particular time. The whole operation of the machine is automatic and also equipped with conveyer belts that take the shredded material to a loading point at one side of the machine. The greens are being fed at an open loader bay at the top of the machine where it gets shredded during operations. Once shredded, it falls on a conveyer belt at the bottom of the machine (ELM 2009:6).

With the proclaimed machines it is evident that the municipality aims to clean up all areas in Emfuleni and to encourage people to stop illegal dumping, keep their places clean and also protect their trees and environment. Emfuleni Local Municipality's department of waste management indicated that after consulting with other departments, especially the Law Enforcement Unit; it came up with a strategy that stands on four pillars, that are: the anticipation to work together with different departments and the public, by ensuring Laws application and providing guidelines to make cleanliness obligatory, to conduct public awarenesses and education campaigns,

lastly to direct plans for economic fortitude to ensure poverty alleviation through creation of all-encompassing jobs (ELM 2009:6).

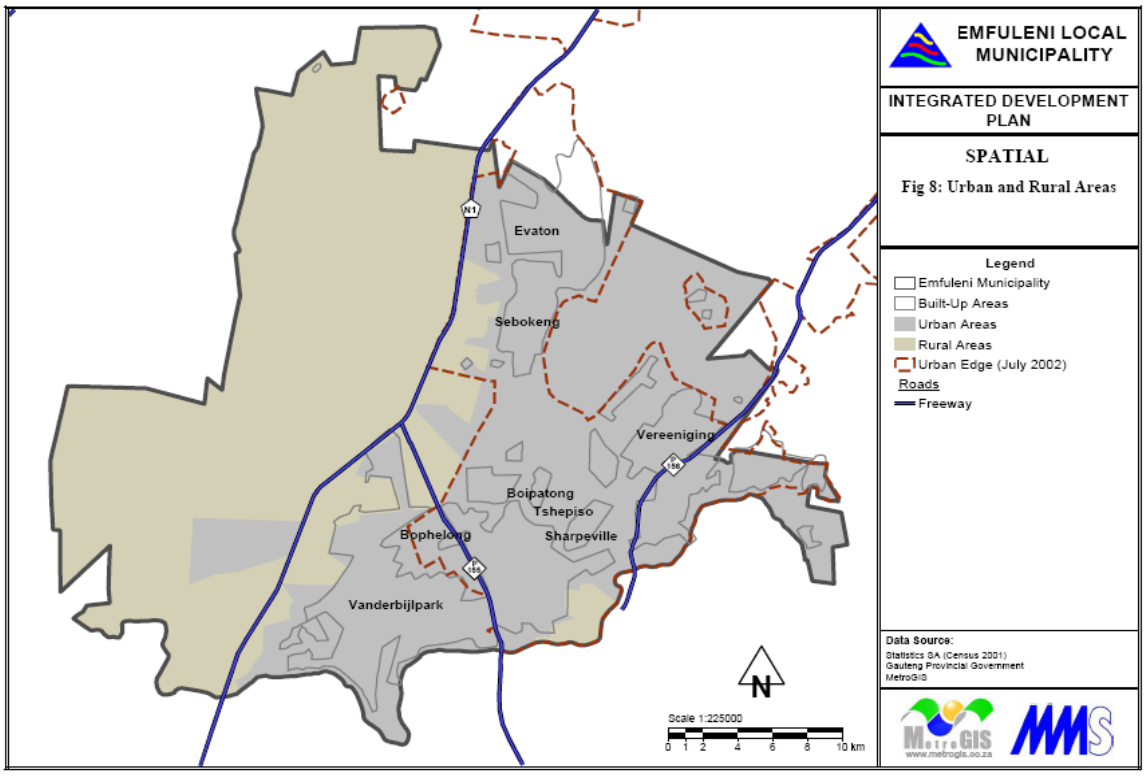
The management further explained that they are doing this because they want people to have good health and better living by keeping their places clean and green (ELM 2009:6).

3.6 DEFICIENCY AND EXCEPTIONALITY IN EMFULENI LOCAL MUNICIPALITY

The number of people who are actively involved in the informal waste collection sector account for nine per cent (9%) of the entire workforce of the Emfuleni Local Municipality. These people are viewed as being employed although their income is insufficient and sometimes unstable. The garbage trucks arriving at dumpsites are confronted by more than 50 dump pickers at a time. These dump pickers are contending towards the recyclables which are plastic sheets and metallic substances, taking them into their large bags. The market for recyclables produces minor pickings but the recyclers' counts as having jobs (ELM 2006:16).

Street traders set up their workspaces mainly at taxi ranks, but because people are poor, their income from trading is small. Joblessness in Emfuleni, using the broad definition, was fifty-one per cent (51%) in 2001 and increased to about fifty-four per cent (54%) in 2003. More than half the households in Emfuleni are not capable of paying for the costs of basic subsistence and about sixty-four per cent (64%) of them are not able to meet the expenses of extra essentials such as school fees and medicines as well as maintenance (Hallowes and Munnik 2006:40). The geographical map of Emfuleni Local Municipality is precisely reflected below (ELM 2006:16).

Figure 3.1. The Geographical Map of Emfuleni Local Municipality



Source: (Elmar 2006)

It was established by Hallowes and Minnik (2006:40) that within the Emfuleni Local Municipality, more men than women are employed and women are probably faced with low paying piece of jobs. Women are very much exposed to poverty. Poor households are also embraced with more people than better off households; any money that comes in has to support more people in many of the households. Most children are dependent. They are the poor of the poorest. Social security combined with the child support grants lessen this poverty to some extend but do not reverse it.

A reputation of being one of the cleanest towns in Guateng province and in the whole of South Africa is preserved in Emfuleni. This is due to the introduction of the highly equipped machine called Doppstadt Shredder DW 2560 model and Doppstadt Windrow Turner.

It is noted that the equipment mentioned above is just the first in a series to establishing a composting plant whose aim is to lessen the waste capacity by taking the green waste out of Landfill sites. This is also linked to the law-making Environmental Management legislation by the National government, the Waste Management (Act No. 59 of 2008), which makes provision for waste streams to be reduced (ELM 2009:6).

3.6.1 Process coupled with the edging of waste

The machine started with its operations dating from Monday the 31st August 2009, and took a weekly round at the landfill sites of Boitshepi and Waldrift and all mini dumps that are situated in Vereeniging, including Blackwood in Three Rivers where green waste is gathered to be shredded. The shredded material is then transported to a portion at the back of Waldrift Landfill site where composting of the material is done. Apparently the Waldrift landfill site is now also being licensed as a composting plant (ELM 2009:6).

3.6.2 Advantages

With the purchase of the equipment and final intended usage, the Department of Waste Management and the Landfill Management is required to achieve the following:

- Reducing operational cost to Council;
- Complying with the Waste Act to lessen the mainstream of materials to be land filled;
- Creating compost to be used on the slopes of landfill sites (progressive rehabilitation of landfill sites);
- Creating means to acquire compost for use by the Department of Parks to beautify their area, and lastly,
- To make available compost that can be used in community projects to beautify areas and establish vegetable gardens (ELM 2009:6).

Residents have been called upon to leave their green waste with minimum pollution and as such they were given bins in which they had to dispose of unwanted refuse.

The introduction of the Emfuleni Local Municipality's environmental police force, the "Green Scorpions," which was launched in July 2009 in order to crack down polluters, illegal dumping, trading and any by-law transgression is helping a great deal in this regard. In the initial stages of what the Department of Traffic was calling a "planned specialised enforcement operation", the dedicated unit's examiners that were aiming to crack down on deliberate, illegal pollution of the environment, the disposal of hazardous waste in the vicinity and the general degradation of the Emfuleni environment had a very tough job on their hands. The Green Scorpions consists of 10 members appointed as By-law Enforcement Officers who are led by one superintendent. Johannesburg Metro Police Academy provided them with intensive training in the area of By-law Enforcement and the Unit is working closely with Municipal Courts. The Unit has also held numerous educational workshops and has made it possible for the members of the public to access information in an effort to increase environmental awareness (ELM 2009:7).

According to the Department of Waste Management, the establishment of the unit brought compliance issues under intense scrutiny as many cases involving chemical plants and factories are frequently reported. These cases involve the breaching of environmental legislation over the past years by the plants and factories. Disposal of waste has been a focal point of inspection in the Vanderbijlpark and Vereeniging areas where the Green Scorpions analysed all dumps in these areas and their surrounding neighbourhood. In Sebokeng, Evaton, Palm Springs, Bophelong, Sharpeville and Boipatong inspectors are also carrying out enforcement in relation to illegal dumping, illegal shelters, illegal containers, the homeless people and illegal posters (ELM 2009:7).

On the Vaal River, the Green Scorpions served compliance notices on companies and factories that are continuously throwing hazardous waste and sewerage in the river. By some means the tendency has been a perennial problem for the municipality without a solution in sight. Inspectors have vowed to protectively monitor the Vaal River for illegal fishing and sewer spillage since the river is the pride of the people of Emfuleni.

An education and awareness campaign and issuing out of compliance notices has been part of the local authority's daily duty.

Inspectors have engaged with fishermen on the topics of illegal fishing in the area, Metsi-A Lekoa for sewer spillage, factories and companies for illegal dumping and ordinary residents for illegal household structures in an effort to address those serious challenges of by-laws transgression (ELM 2009:7).

3.7 CHAPTER SUMMARY

The importance of a well-planned and correctly applied partnership between community-based organisations and local municipality is essential in terms of developing the communities it serves. The strategies and guidelines on community-based organisations are not that exceptionally comprehensive in detail. The biggest drawback in implementing these strategies is the lack of supporting legislation that forces the community-based organisations to pamper in the very process of recycling. A properly planned and applied strategy to include the individuals in community-based organisations is therefore a prerequisite for any local authority if any people development approach were to be launched. A perfect structured process of recycling is in fact a requirement for any individual involved in community work and also development as a whole.

The more serious the community-based organisations in waste management system around the area are the more the communities will be improved. Unemployment is also the biggest issue in the area. Numerous strategies have devised to help solve this problem but it still emerges. The challenge in this regard is to develop, implement and enforce the latest legislation to force the masses to be involved in the process of recycling. Indeed, the lack of co-ordination by private sector, the community and local municipality has resulted in the existence of community-based organisations being regarded as being non-existent and not being optimised.

The categorisation of the communities involved in recycling also needs to be reflected upon as there are individuals serving under the so called “street committees”; others recycling alone and taking their recyclables to some private recycling centers. Therefore, the notion of community-based organisations needs to be seriously visible. The Emfuleni Local Municipality has some of the best strategies and plans to address the involvement of community-based organisations in their disposal and the full implementation of this category needs to be prioritized in order to achieve their goal effectively.

In the next chapter the empirical research and design on the realisation and viability of community-based organisations is discussed as the community-based organisations can twist the image of the environment that surrounds the area in which they operate. Community-based organisations serve as a link between the private sector in recycling programme and their local municipality. In the value chain of the system of managing waste community-based organisations can be described as mediators within the environmental spectrum.

CHAPTER 4: EMPIRICAL STUDY: THE LINK BETWEEN THE COMMUNITY-BASED ORGANISATIONS AND THE SYSTEM OF MANAGING WASTE ON THE DELIVERY OF SERVICES AT EMFULENI LOCAL MUNICIPALITY

4.1 INTRODUCTION

This chapter analyses the survey conducted to solicit the responses of both the individuals within the community-based organisations and Emfuleni Local Municipality's Waste Management Department's officials regarding the contribution made by recyclers around the area. The purpose in this regard is to analyse the participation by the community-based organisations in recycling and their willingness to ensure a clean and hygienic Emfuleni Local Municipality. In fact the focus is to measure the pressure that is experienced by individual recyclers, their socio-economic status and the support mechanisms they receive in the area. The survey was done in order to echo into the challenges faced by the recyclers in order to acquire a better knowledge of what exactly is being done in the field and also at the landfills up until the last stage where the recyclables are being sold to the buy-back centres.

The first-hand interpretive work on the link between the community-based organisations and the system of managing waste on the delivering of services at Emfuleni Local Municipality is discussed as the community-based organisations act as vibrant protagonists in the value chain for the system of managing waste. The community-based organisations serve as an element of necessity within the waste stream in forming part of the management of waste group that links municipality and the private sector. In the waste tributary they can be described as mediators between the environment and the people. Certainly they are the environment-literate organisations.

Questions were drafted according to the open ended and close ended methods. The two types of interview schedules were prepared, where the first one was prepared specifically for individuals involved in recycling and the other one for the municipal officials.

The survey provided new insight in terms of issues that are affecting the recycling community and the challenges they usually face on daily bases, such as the negative judgment from the public, the pressure upon their shoulders in providing for their families and also the need to be assisted with resources that they must have in order to use when recycling.

4.2 RESEARCH METHODOLOGY

The next section articulates different methods used to attain data owing to the research conducted.

4.2.1 Literature study

In assisting this research to be more realistic monitoring of literature has been part and parcel of this study from day one, in order to acquaint the researcher with the actual practice and the development of the recycling as a trend. Fox and Bayat (2007:35) do agree that literature monitoring is a resourceful requirement to reveal the reality of the collection of the preceding and the present literature in a certain area of knowledge, the main purpose and aim of reviewing narrative theories be to offer a concrete academic summary of the current study, ideas and simulations with regard to the particular research problem and to gain inside into previous developments (Fox and Bayat 2007:36).

4.2.2 Empirical survey

Survey is regarded as the most proficient way of indulging into research and as a process of sustaining data and providing the first-hand information towards a particular phenomenon to be studied. The researcher in the study used forty-five (45) individuals in recycling to identify and test the specific point of departure. According to Wegner (2000:90) all schedules are set aside to retain information of all the data gathering progresses. They are also set aside to retain crucial information on many consumer issues. It is said to be of importance to consider a number of issues when conducting a research. It largely guided by the purpose of the study and the kind of information that is necessary to answer the research question.

It is advantageous if the researcher is observant and is able to think properly in the process of information gathering. The data collected have to consist of first-hand notes and the researcher's clarifications of the observations. It is provided that records of the fieldwork summaries are not all shown in the ultimate paper of the research. Like other aspects of field research, it is said that proficiency comes with practice (Babbie and Wagenaar 1992:297).

4.2.3 Qualitative Method

In qualitative approaches, the relationships between theoretical constructs and empirical observation must also be validated. As is perhaps well known, this relation is usually seen in terms of empirical indicators and theoretical concepts (Eyles and Smith 1988:12). Steyn *et al.* (1994:7) depicts that qualitative data can often be represented in a quantitative manner. Many characteristics that are said to be inherent in a person's cannot be reflected numerically. Data that is not numerical would include: information on the colour of a person's eyes or hair, information on a person's attitude towards his church or work; and information on the subjects that a student includes in his degree course.

On the other hand, it is also possible to divide quantitative data into categories, such as age which can be represented as young, middle-aged and old. A large data set often contains more than one type of data. An example is a questionnaire in which information on the respondent's age and marital status is requested in addition to his views on matters that are related to the main topic of the questionnaire (Steyn *et al.* 1994:7).

4.2.4 Reliability

The researcher went on to evaluate views from forty-five (45) individual recyclers at different landfill sides, six (6) children that are involved in recycling and four (4) top municipal officials from the waste management department in and around the Emfuleni Local Municipality area. It is proven by Wegner (2000:89) that to establish the reliability of survey data; a researcher should perform split-half reliability tests on the collected

data. This requires that a sample be divided into equivalent subsamples and compared for similarity of responses on similar items.

Fieldwork has a lot of difficulties when is come to reliability; however, fieldwork delivers comprehended subjective dimensions. There is also a need to be cautious therefore of any unintentionally sensitive measures within research (Babbie and Wagenaar 1992:307).

4.2.5 Validity

To establish the validity of a measuring instrument such as an interview schedule; it should be compared to some other standard which is thought to be correct (Wegner 2000:89). In ensuring validity with regard to understanding the impact of community-based organisations on waste management service delivery, the legitimacy of the study provided the researcher with an essential task to collect information that specifically reveals the true diverse culture of recycling in Emfuleni.

According to Babbie and Wagenaar (1992:308) principles of validity are internal in the process of exchanging ideas. Reasons for the analyses must be provided with regard to the authentication represented; the person who is seeking the truth have to present logic in their argument and are recommended to show reliability and the trustworthiness in their study. Critical evidence and the search for initially accurate arguments are important procedures in the process of validation. The outlined approach to justification assumes that theory and evidence are separate or related in some uncomplicated way, but analytical involuntary, research means that concepts and indicators are developed simultaneously.

4.2.6 Data collection

The actual collection of the data, in other words, the fieldwork does not present many problems if the planning has been done carefully. This step takes as little as an hour or as long as several years, depending on the nature of the investigation and on the availability of funds and research assistance (Steyn *et al.* 1994:3). The researcher in this study made use of a notebook and a pencil as an accompanying tools to interview

schedules; sampling method and observations to acquire the necessary data was also applied, where analysis has been made on individual recyclers, children in recycling, municipal officials and community-based organisations to make sure that thorough validity is being made.

Most interview schedules, especially those used in large scale research studies, tend to be structured. A well designed feedback form comprises of a number of precisely commendable questions and predictable responses alternative that may openly reflect the relevance between the study objectives and hypothesis, structured questionnaires tend to be used extensively in descriptive research studies. In outlook of the analysis of data, well designed feedback forms become easy to manage and present and their records are easy to evaluate (Wegner 2000:90).

4.2.7 Sampling

Sampling is any balanced separation of the element of the population that is obtained in the process of picture-perfecting the capacity so as to be studied. Sampling is known as the procedure wherein the entities are taken from a cluster (Fox and Bayat 2007:54). A database of different community-based organisations and street committees of people that are recycling within Emfuleni Local Municipality was sourced from the Municipality's Waste Management Department. The database consisted of twelve registered community-based organisations in different sides of the area of which only ten (10) are operational. In this ten community-based organisations forty-five (45) individual recyclers from different landfill sides, six (6) children that are involved in recycling and four (4) top municipal officials were interviewed.

Two biggest sites and one popular recycling centre were considered sufficient as they represent fifty three per cent (53%) of the population according to waste statistics on the operational Community-Based Organisations in the Emfuleni Local Municipality.

Accordingly sampling is the selection of a part to represent the whole. Thus, sampling takes place in the selection of a topic, the location, the people to be studied, the concepts and variables which are used, the data which are collected and methods employed, and the relationship on which the analysis is focused. Peil (1995:23)

maintains that, economic and time constraints often do affect what is included and what is somehow omitted, but then the principles of sampling provide guidance for making the most of the resources available. Therefore every stage of the research process forces some kind of sampling.

4.2.7.1 Non-probability Sampling

It was very difficult to get to other landfill sides and recycling centers because of the lack of finance for transport. Other recycling centers were busy being upgraded into becoming buy-back centers, because of time constraints one could not reach several others. In the study the researcher used non-probability sampling as a requisite, which commends that the population entities for analysis are far-sightedly included and at times in the sample process the chances are slim for them to be involved. This system is often used in studies that require sampling to be compelled for the reason that convenience is assured and inexpensive (Fox and Bayat 2007:58). According to Peil (1995:25) non-probability samples are often used in Africa because adequate sampling frames are not available. Wegner (2000:111) sustains that, the use of a non-probability sampling method is guided largely by the purpose and stage of the research study.

4.2.8 Interview Schedule

An interview can be described as a conversation with a purpose. In an informal sense everybody uses interview to obtain information, in many cases questioning will start with general questions, or alternatively with questions that are easy to answer, more specific and more complex questions can follow up certain points to clarify them.

The researcher went straight to where recyclers are usually found at the landfill sides and identified easily approachable individuals as respondents. Interviews are not uniformly successful. Respondents differ in ability and motivation, interviews differ in skill and experience, and the interview content differs in feasibility (Hannagan 1982:37).Used carefully the interview is an excellent method of collecting quiet complicated information. In practice the amount of information collected by interviewing is limited by time and cost.

Steyn *et al.* (1994:46) emphasises the fact that, the ability to convince the respondents of the importance of the interview is an essential trait in a fieldworker. The actual interview should be conducted when a respondent is in person in attendance and it should be interesting throughout. If the sample is large, it is better to employ a number of fieldworkers rather than to use only one extremely bored and uninspired person. Interviews again were conducted firstly to the individual recyclers at their landfill sides and with those at their buyer's premises which are the recycling centers, and with the individuals that are within the community-based organisations in the area to advance the comparable features of information provided. Also the municipal officials of Emfuleni Local Municipality under Waste Management Department were interviewed to get a thoroughly explanation of processes that are followed to ensure that progress is being made towards the growing culture of recycling and also to measure the acknowledgement of waste pickers around the area.

- Open-ended questions

The interview schedule were standardised so that the information gathered is consistent with the aim of stimulating responses that would provide an inside into whether recyclers has the municipal support in activity around the area . Two types of questionnaires were prepared for municipal officials and the individual recyclers in the community-based organization.

- Interviews

Interviews were conducted with forty six (46) individual recyclers from different communities around Emfuleni; five (5) other individuals from Boipatong at the Boitshepiville Landfill side and top four (4) municipal officials.

4.2.9 Questions

The fact that many schedules are poorly designed or include poor questions indicates the difficulty of producing a well-designed form and clearly understood questions. The objective of producing a questionnaire is to collect information; therefore it is worth organising it carefully (Hannagan 1982:40).

In the study the researcher used interview schedules as a unique method of specialisation to specifically collect the empirical data. The questions tested the possible continuation of recycling and the socio-economic development of recyclers with regard to the particular volume of products that are being recycled, where respondents were requested to express themselves freely and offered platforms around recycling issues without limiting their determination to discuss possible ideas to develop the phenomenon.

Steyn *et al.* (1994:45) maintains the fact that, a schedule must look good so that a respondent will want to complete it, it is therefore essential, where possible, to provide interview shedules in the mother-tongue of respondents. It is in fact important for the schedule to be short and concise; ideally not more than two pages, so that it can be printed on a single page. In long schedules the most important information should be obtained as early as possible since respondent's concentration and interest usually decline as they approach the end of the schedule.

4.2.10 Ethics considered in the research

The actual undertaking of ethical conduct in research makes it supreme to fully anticipate behavioural standard aspects of many passionate researchers. Fox and Bayat (2007:148) noted that ethical considerations are obviously raised especially if the research involves people directly. The researcher in this study conducted research with a thorough consideration of the principles that are associated with ethics which are meant to be considered when indulging in academic research; by requesting permission which came in a form of a letter from the municipality in order for respondents in the field to participate in the research process.

No respondent was forced to participate and were guaranteed confidentiality equally owing to their right of confidence that was and must not be violated due to some private matters involved. Only specific and relevant information was communicated with all the volunteered participants also provided the respondents with an insight concerning the purpose and aim of the study.

4.3 LIMITATIONS IN CONDUCTING RESEARCH

In conducting this research the researcher was expected to do fieldwork and gather unique information that specifically points straight to the course. It was tough because there were many difficulties that the researcher was faced with, the fact that in the study area there were many sides separated from each other with huge distances that cannot be covered by walking and that called for transportation, which was required for the researcher to travel from one specific side in the area to the other and the finances to cover the costs of travelling and the provision of food, health security due to environmental effects at landfill sides and the security at large during the particular days of fieldwork. The researcher had to cover all the areas in order to conduct an extensive exploration towards the research study. As a result all of the above-displayed arrangements were not accessible and that limited the researcher's efforts.

The socio-economic status of many individuals that are recycling is very low to average and they have been approached by many people who acted as if they will provide something tangible, but after getting what they want, they left and never returned to give feedback of whatever brought them to the waste pickers attention, and that discourages any group or individual who formally desires to hear their story. It has been difficult for the researcher to encourage some individuals to participate and the researcher had to back-off because of some security reasons. At the landfill sides it was not easy to get the respondents to participate because when the garbage trucks approaches people will rush to the trucks in order to pick and choose their recyclables and the researcher had to be patient and wait long hours before people can be sociable; sometimes it will rain even before the researcher can start engaging recyclers.

4.4 BIOGRAPHICAL INFORMATION OF THE RESPONDENTS

Four municipal officials in waste management were interviewed as a target group; fifty-one (51) individual recyclers who are capable of influencing those who are not involve in recycling to take part in it were also interviewed in the field and others at one of the recycling centers around the area.

Table 4.1: Biographical list of respondents

Group	Males	Females	Total
Individual recyclers	34	11	45
Children in recycling	5	1	6
Emfuleni Local Municipality - Waste Management Department	2	2	4
Total number of respondents	41	14	55

4.5 CHAPTER SUMMARY

The survey that one went through was a true reflection of the sense that individual recyclers in the community-based organisations are willing and able to be part of the Emfuleni Local Municipality's inspirations of its environmental campaigns to promote friendly and green towns and townships through interviews and questionnaires that were designed for that purpose. The ELM is required to support the community especially in the revision and reconsideration of their by-laws to provide concerted education to its people and the community awareness campaigns to be prioritised. Questionnaires that were designed for municipal officials revealed that waste management department has about ten (10) registered community-based organisations which cooperate systematically with the environmental unit that assist the department in the control of illegal dumping and also motivate recycling. The department is faced with challenges ranging from environmental risk to recyclable market to be clarified to the community-based organisations around the area through their continuous recycling workshops and the Botle-ke-botho clean environment campaigns. In the next chapter, findings, conclusions and recommendations are discussed.

CHAPTER 5: FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

The delivery and approach used in the study has provided greater insight into the exact key objectives of this research. Findings and conclusions to this research are discussed in the next section, and the clarifications on the theoretical statement are described in the study; with recommendations to the Emfuleni Local Municipality which are determined to complete the research.

5.2 FINDINGS

Littering by community members at the storm water channels causes contamination of the Vaal River which is said to be the only supplier of water specifically for the Emfuleni Local Municipality area. Contamination of water at the river side can result in some people developing diseases such as cholera and other related illnesses. The Rand Water Catchment is the only catchment that is used for the cleansing of water in order to be utilized and consumed by the whole community in the area.

One cannot see even a piece of a paper, 1 or 2 litre container and their lids, a can or a tin laying on the streets around Emfuleni because of their values in terms of recycling. The Waste Bill has ordered municipalities to include recycling as a programme in their everyday projects. Waste products that are being dumped into the landfills end up building huge mountains of garbage and as a result that contributes to unpleasant gasses or fumes that affect the air that people breathe and the situation becomes uncontrollable. Recyclers are facing lack of resources such as big plastic bags, bins and trolleys to deliver their waste to the recycling centers. Some people started recycling by carrying their recycling bags on their shoulders until they were recognized by the recycling centers around Emfuleni Local Municipality and are being given identity cards and trolleys due to their experience in recycling.

Waste pickers when busy picking up waste products, because of poverty and starvation they tend to consume some of the packages and take some home. There are also others who are only interested in finding something to eat, they take some torn clothes

that they come across, they wash and sell them to their fellow recyclers and other people in their townships especially kids' clothes, and old toys . They sell newspapers to the recycling centers. In terms of safety, for individuals carrying heavy loads in their trolleys it becomes risky because sometimes they have to face the oncoming traffic, the weather is not always favourable and in cases of rain, for instance, it becomes very difficult especially when a person pushes a trolley where there's much water. Due to the lack of resources a person becomes exposed to catastrophes such as lightning which can results in some devastating injuries or death. Women recyclers are also exposed to danger because they are required to travel distances between their pick up points and the recycling centers, safety is not guaranteed and they can get raped and robbed of their belongings. As a result, some Non-Government Organisations habe been formed such as the South African Waste Pickers Association (SAWPA) which comprises of at least three hundred and twelve (312) members both women and men that are recycling around the ELM area.

Conflict also develops amongst the waste pickers due to sabotage of recyclables by one waste picker to the other which is triggered by the little value they get after selling their products. This people are so passionate in getting money to buy some necessities in order to survive each and every day, though they sometimes find tools to use for their own purposes. They classify their recyclables according to their types which are plastics, metals, paper and bottles. The researcher came across six (6) children that were under the age of seventeen years (17), were still attending school and recycle during the holidays, they recycle bottles and had to fill-up their large plastic bags before they can take them to the private recycling centers around the area, so as to make money for the holidays and some of them do fundraise in order to provide for their families because of the roles they have to play because they are from the child headed households. The highest pay they receive was R266, 00 during the holiday only if their bags were filled enough.

Trolleys are categorised in a sense that, people that are registered under a certain recycling center are given new yellow painted and numbered trolleys for them to be identifiable by the police.

The individual waste pickers especially those with handmade trolleys are not allowed on the roads when their trollies are not well enough to carry loads of recyclables, it appears that a person can face a sentence of about eighteen (18) months behind bars when found with an unfit or unwell trolley on the road.

At times when the municipal workers are on strike it becomes hard for the waste pickers to perform their duties because the municipal workers will not allow them to take waste, as a result this people will be faced with hunger until the municipal workers get back to work because picking up waste is the only mechanism they use to generate income in order to put food on the table. The municipal garbage collectors are strategically used to collect light-weighted garbage bags since much of the waste would be taken out by recyclers.

There are several activities that are taking place in ELM that are in some form of projects and programmes to improve the recycling initiative, and these activities are performed by the NGOs, CBOs and certain street committees within the municipality. This are the Botle-ke-botho which is undertaken as a provincial programme, and the reason it is existing is that, it started at the local level and aims to promote the creation of employment, mitigate deficiencies and to ensure sustainable development to the people of the area, and the Gauteng Clean and Green Programme which established the Green Town Competition to promote greening, waste management, sustainable agriculture, energy saving and water conservation.

The adjudication by the Botle-ke-botho wanted to reflect whether there is a working relation between the community and the municipality and found that the community is not adequately knowledgeable in terms of some environmental issues such as energy saving and that of the climate change in particular, littering being the main contributor to these encounters, however Ward 41 and Ward 33 within ELM has won the Green Town Competition and it has been victorious due to the establishment and plantation of food gardens, the working relations with the water service provider which is the Metsi-a-Lekwa and the environment-literate number of people which is also increasing in both the communities. The community is fully committed to work hands in gloves with Botle-ke-botho in terms of their environmental issues.

Indeed in some other Wards there are people who seem to be passionate to work towards their environment and the Waste Management Department of ELM, did however informe the Ward Councillors to invite the Department to their meetings in order to try and inform the community about their environment and strategies to follow in order to become enlightened about their surroundings. Many Wards in ELM are suffering due to lack of resources for the community to use in terms of recycling and it is because of the lack of money from the municipality to cater for that.

The money that a particular Ward has won in the competition requires the municipality to ensure that is being used only for the environmental purpose. The provincial government came forward with some means to help the Botle-ke-botho with the budget and resources to help the communities. The only challenge which is faced by the Botle-ke-botho is that of some few Ward Councillors who tend to withdraw from the idea, which makes it difficult for the Botle-ke-botho to pass the information to the community because it is required that the Ward Councillor must fill the Botle-ke-botho environmental agreement form and if not the community will be dimmed.

5.2.1 Objectives of the research study

Attempting to solicit the problem statement and research questions, the study aimed to provide an insight on the community-based organisations and waste management system. The objectives of the research study involved the following:

1) To explain the concepts Waste, Waste Management System and Community-Based Organisations for service delivery; 2) To investigate the impact of the Community-Based Organisations and the System of Managing Waste at Emfuleni Local Municipality; 3) To provide an impression in optimizing the community-based organisation for the implementation of a the System of Managing Waste in Emfuleni Local Municipality; 4) To provide a set of recommendations on Community-Based Organisations for successful implementation of the System of Managing Waste at Emfuleni Local Municipality. All the objectives were attained.

5.2.2 THEORETICAL STATEMENT

The theoretical statement of this research submitted that:

In effect the execution of the system of managing waste regarding the delivering of service relies on the dynamic contribution by and partnership with the Community-Based Organizations. A community-based organization plays an important role in structuring development corridors and for service delivery by municipalities.

The theoretical statement is for that reason correct due to the following:

a) The Emfuleni Local Municipality has some of the best strategies and plans to address the involvement of community-based organisations in their disposal and the full implementation of this category is a priority in order to achieve their goal effectively.

b) The impact of a well-planned and correctly applied partnership between community-based organisations and local municipality is necessary to develop the people it serves.

c) Community-based organisations provide a basis for developmental strategies because other than recycling waste the same waste can be used to generate energy and produce fuel that can be used by all members of the society and in so doing they are capable of organising and bringing the people together around mutual concerns and needs.

5.3 RECOMMENDATIONS

- The Emfuleni Local Municipality waste management department needs to have a one common practice in waste management series, there by formulating comprehensive environmental management aspect which can be propagated.
- All ward councillors within the Emfuleni Local Municipality should participate in the Botle-ke-botho provincial programme by convening public meetings and initiating programmes within the community in order to keep their wards informed and clean.

- Ward councillors need to organise community-based organisations within their areas of jurisdiction.
- Sophisticated municipal recycling awareness campaigns need to be plotted by the Department of Waste Management.
- Recyclers need to give much attention to classification of waste products and the Municipality needs provide them with large plastic bags to sort all their recyclables.
- The ELM Department of Waste Management and the environment-literate community-based organisations must make sure that effective measures are being properly implemented to ensure the smooth propelling of the recycling development.
- Establishment of facilities for regained waste is also crucial for the ELM to launch
- The ELM essentially ought to develop a recycling and intoxicating plan so that separated sentimental waste should not be mixed with the rest of the undesirable waste.

5.4 CONCLUSION

The chapter outlined the findings, recommendations and conclusion of this descriptive research study. Findings of the research study were deliberately broadened to give a clear picture on the acknowledgement of the individuals that are recycling and the passion they initiated in recycling. It was indicated that the number of individuals in recycling is increasing and that communities are becoming more and more involved in recycling waste at source.

Sustainable service delivery through involvement of all stakeholders is crucial and energies must be consumed in coordinating both the municipality officials, community-based organisations, recycling centers and the buy-back centers to try and come up with applicable advanced strategies to re-manufacture re-usable materials in order to save using raw materials as it is expensive to do so, create jobs and develop entrepreneurs with the idea to alleviate poverty within the unemployed.

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APPENDICES

APPENDIX A

A LETTER FROM EMFULENI LOCAL MUNICIPALITY THAT GRANTED PERMISSION TO CONDUCT INTERVIEWS

Emfuleni Local Municipality
P.O. Box 3
1900
Ref: N. A. Ludidi
0823228562
0169868445
30 August 2011

Dr Lukamba- Muhiya. Tshombe
North West University
Vaal Campus
VANDERBIJLPARK
1900

Dear Dr Lukamba

REQUEST FOR MR MOSS TO CONDUCT INTERVIEWS IN WASTE DEPARTMENT

Mr Moss, Student Number: 20469594, is hereby granted permission to conduct interviews in Waste Department for purposes of completing his Masters Mini–Dissertation study. The student will be assisted by our Waste Management Officer who has been designated within the Waste Department establishment in terms of Section 10 of the National Environmental Management: Waste Act 2008 (Act No.59 of 2008).

The student should feel free to contact the Manager: Waste and Landfill through the above contact numbers to discuss and arrange for his interview sessions.

Hoping that you find this in order

N. Ludidi
Ms Alma Ludidi
Manager: Waste and Landfill Management

APPENDIX B

RESEARCH INTERVIEWS SCHEDULE

B1: For Municipal Officials:

The section seeks information regarding the impact of the community-based organisations and the waste management department of the local municipality influence towards improving the state of the community-based organisations

- Gender of the respondent
- Race of the respondent
- Position of respondent
- Years of waste management experience
- According to you, do you think that the environment is clean in terms of air and open water in the area of ELM?
- According to you, do you think that community garden projects are important in the areas surrounding ELM?
- Does the department of waste management in ELM recognise the existence of community-based organisations that are recycling in the area?
- If yes, how many organisations did the department come across?
- Is there any policy from the municipality that binds individuals to recycle in the area surrounding ELM?
- If yes, what is it called?
- Is there any legislative framework that protects the community-based organisations recycling in the area surrounding ELM?
- If yes, what is it called?
- What are the main purposes of recycling waste by the individuals/community-based organisations in ELM?

- What are the challenges faced by the department regarding the community-based organisations?

- Does the department consult with the community-based organisations to discuss environmental issues?

- If yes, how frequent do such consultations take place?

- How is the schedule for the refuse removal being conducted in ELM?

- What actions do you feel need to be taken to improve refuse collection service?

- What do you think about the openness of the department of waste management officials to the community?

- Is their services manifested enough towards the needs of the people?

- The following are proposed to improve service delivery by the department to the community-based organisations:

- What is your vision for the future in the department?

- Any other information you willing to share

B2: For individuals:

Profile of respondent

The section seeks the information regarding the respondents' personal details, income status and their residence concerns in the study area

- Which section in Emfuleni Local Municipality?

- Gender of respondent

- Race of respondent

- Age of respondent

- For how long have you been recycling?
- Can you explain
- What's your average monthly income?
- Does your family have any other source of income except your own?
- Educational level
- If other, please specify
- Where you born in the Vaal area?
- If you weren't born in the Vaal area, why did you come here?

Service rendered

The section seeks the information regarding the respondents 'tasks relating to recycling and their socio-economic constraints in terms of services provided by the local municipality

- Are you recycling regularly?
- What kind of refuse products do you pick up daily?
- Do you do the classification of refuse collection on your own?
- If no, where does the classification of waste products take place?
- Is the landfill site close or far from your community-based organisation?
- Do you receive cash every time you produce/submit your recyclables?
- How much money do you receive through recycling?
- Is this money efficient enough to satisfy your needs?
- Is there a community-based organisation in the area where you do recycling?

- If yes please explain
- Do the local municipality know your organisation?
- Do you participate in the community-based organisations' meetings/ activities?
- Do you receive cash by yourself or through the community-based organisation?

Political involvement

The section seeks the information regarding the respondents' participation in issues addressed by the community towards bettering their situation

- Do you know who your Wad Councillor is?
- If yes, what is her/his name?
- When last did you attend a community meeting?
- Do you have street-committee in your community, which is responsible for making community needs known to the local decision making structures and the local municipality?
- If yes, is this committee in your opinion effective in making community needs known?
- Is this committee successful in getting the community demands and needs met?

General

The section seeks the information regarding issues that a respondent feels the need that they need to be addressed

- Any other information you willing to share