

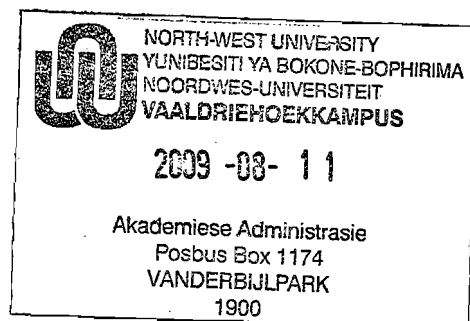
COMMUNITY PARTICIPATION IN WASTE MINIMIZATION: THE CASE OF
EMFULENI LOCAL MUNICIPALITY

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DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my own exertion; all the sources that I have quoted have been indicated and acknowledged by means of a complete reference; and the work has not previously in its entirety or in part been submitted at any university for a degree.

N. A. Ludidi

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27 July 2009

Date

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ABSTRACT

The purpose of this research is to understand factors contributing to successes and challenges in community participation especially in waste minimization initiatives; in order to inform policies and contribute to improve the design of the initiative. The objectives of the research are: firstly, to understand the current state of public participation in waste minimization at Emfuleni Local Municipality. Secondly, it is to determine the extent of willingness of the community to participate in waste minimization initiatives. Thirdly, to determine strategies on how to promote public participation in waste minimization. Fourthly, to identify constraints and challenges of public participation in waste minimization and what kind of support is required for the community to participate in waste minimization initiatives at Emfuleni Local Municipality. Respondents were drawn from fifty households within the community of Bophelong Extension 13, Emfuleni Recycling groups, Waste Management officials, Gauteng Department of Agriculture, Conservation and Environment stake holder participation unit and Waste Buyers in Vanderbijlpark. The researcher employed mainly a qualitative research design and data was collected through questionnaires and interviews. Quantitative study was done on officials and responses were ranked according to the importance of the factors influencing community participation.

The findings of this research indicate that the community is willing to participate in waste minimization initiatives. 42 % of respondents are currently NOT participating in waste minimization initiatives. It was noted that all community respondents promised and are willing to participate in waste minimization strategies. The research further indicates that there is a considerable number of constraints and challenges prohibiting successful community participation in waste minimization. The constraints include lack of knowledge especially regarding composting initiatives to minimize organic waste and the separation of waste, lack of infrastructure to exchange waste for cash, lack of time, lack of transport, lack of political support, lack of starter packs to initiate own waste minimization plant and lack of financial support to ensure that waste minimization initiatives create opportunities for job creation. This study recommends, amongst others,

that the community requires support to participate meaningfully in waste minimization initiatives in the form of: awareness and education, infrastructure for reclaimed waste, waste recycling bins, project funding, community involvement and support from the Emfuleni Local Municipality and the private sector.

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CHAPTER ONE

INTRODUCTION: PROBLEM STATEMENT AND RESEARCH METHOD

1.1 INTRODUCTION

This introductory chapter provides the orientation and background to the study. The problem statement and the reason for the need for the research is also outlined. The hypothesis is stated, so are the research questions and objectives for the study. Further, the methods for the research, that is, literature review and empirical research and design are described. An outline of chapter topics concludes this chapter.

1.2 ORIENTATION AND BACKGROUND TO THE STUDY

Todaro and Smith (2006: 556) maintain that participation means to further human capabilities and other goals of development. Authors cite an example of how United Nations failed in their development plans because community participation was neglected. The World Bank adds that if reforms are undertaken in a serious and sustainable way, government and civil society should take ownership of development projects and reforms. Genuine community participation provides a foundation for democratic and responsive government.

Community participation signifies that people are both ultimate beneficiaries of development and agents of development. According to van der Waldt (2004: 15) where citizen participation is implemented at grass-roots level, the government structures become flexible enough to give beneficiaries and other affected groups the opportunity to improve the design and implementation of community programmes and projects. This enhances the sustainability of the projects and increases ownership of initiatives in the long-term. This participatory approach benefits the government and citizens in that government policies, programmes and projects are easily implemented thus improving

much needed service delivery. The community becomes knowledgeable, capacitated and empowered on issues affecting their livelihood.

A study conducted by Ile and Mapuva (2008: 127) recommended that government engages and consults frequently in policy formulation, in this case waste minimization policy. In other words the government should cultivate the culture of community participation and stakeholder engagement in public affairs that affect their development.

According to Kakumba & Nsingo (2008: 109) community participation encourages a sense of coerciveness within the society and builds public support.

In terms of section 20(d) of the *Health Act 1977* (Act No.63 of 1977) local municipalities have the responsibility to collect and dispose waste within their areas of jurisdiction. Section 81(1) of the *Local Government Municipal Structures Act, 1998* (Act No.117 of 1998) requires every municipality to prepare an Integrated Development Plan (IDP) to ensure integrated service provision for its duties and functions within its area of jurisdiction. The Integrated Waste Management Plan (IWMP) is a sector plan requirement for IDP as outlined in the National Waste Management Strategy of 1999. This strategy puts emphasis on waste avoidance and minimization including recycling through to responsible disposal.

The Gauteng Department of Agriculture Conservation and Environment (GDACE) has developed guidelines for Waste Management Plans for Local Government to assist Gauteng municipalities to implement waste management strategy in line with South African legislation. The guidelines emphasize the importance of public participation in waste management as a constitutional right in environmental management. GDACE adopted a programme, *Bontle-ke-Botho* to assist local authorities to develop their own integrated waste management plans in a way that will promote community participation. Programme themes include waste and litter prevention which focus on waste management especially community based waste management products (Mbanjwa 2005: 2).

Waste generation is a result of most industrious and human activities; it is therefore extremely unrealistic to think that waste can be completely eliminated. The best way to handle waste is to adopt an approach that does not harm the environment and utilize methods that are supported by the community who are impacted by the waste management. Khan and Faisal (2007: 1) propose that attention should be paid to formulating and following a sustainable approach to waste management by integrating strategies that hopefully produce the best option despite difficulties associated with the task of sustainable integrated waste management.

Waste management includes the collection, transportation, recovery and disposal of waste. It includes the supervision of such operation and after care of disposal sites. The European Council Directive on Waste encourages prevention or reduction of waste production as the best solution. The recovery of waste by way of recycling, re-use or reclamation includes use of waste as a source of energy if prevention cannot be attained (Nurmesniemi, Poykio & Keiski 2006:1930).

Challenges of excessive waste generation necessitate the involvement of communities in their areas to minimize waste in order to improve the living standards through their participation. In the United States of America recycling became a strategic norm in waste management and was recognized in the 1990s. This was achieved through facilitated communication between waste managers and stake holders who adopted the approach because it had economic spin offs and paid particular attention to environmental issues (Khan & Faisal 2007: 1). The National Environment Waste Management Bill (2007) puts emphasis on recycling, re-use, reduction and repair. It provides penalties for non-conformance and non compliance of municipalities.

1.3 PROBLEM STATEMENT

The Emfuleni Local Municipality was established in terms of Section 12 of the *Local Government Municipal Structures Act 1998* (Act 117 of 1998), which guides the MEC of Local Government in a province to establish a municipality in each municipal area.

Emfuleni Local Municipality is one of the three local municipalities that constitute the Sedibeng District Municipality.

The municipality is situated on the western part of the District and extends along a 120 kms axis from East to West. It covers an area of 987.45kms. It shares boundaries with Metsimaholo Local Municipality and Fezile Dabi District Municipality in the Free State Province; Midvaal Local Municipality in the East, Johannesburg Metropolitan area to the North and Potchefstroom Local Municipality to the West (Final IDP Review 08/09).

Vereeniging and Vanderbilpark are the main towns servicing business activities of Emfuleni residents. The total population is estimated to 658422 based on 2007 community survey. Administration consists of five clustered departments namely, Finance, Corporate Services, Public Safety and Community Development, Local Economic Development and Basic Services. Waste and Landfill Management is one of the departments of Basic Services Cluster. The Municipal Manager is the head of administration. The Executive Mayor has Members of the Mayoral Committee and public participation processes are handled by the Council Speaker's Office.

Some factors contributing to the slow participation of community in waste minimization are:

- There seems to be much community ignorance on the relationship between active participation in waste minimization and a healthy environment due to a lack of sustained environmental campaign on waste minimization.
- Other weaknesses affecting waste minimization at Emfuleni Local Municipality are high unemployment rate and poverty leading to apathy of affected families and individuals in participating as citizens.
- The role of community liaison officer at the Speaker's Office is to assist with dissemination of information to promote public participation in waste minimization but very little is done to reach communities.

1.4 RESEARCH QUESTIONS

Emanating from the problem statement above the researcher will endeavour to find answers to the following questions:

- What is meant by community participation and waste minimization?
- What resources and infrastructure are available to support community participation in waste minimization at Emfuleni Local Municipality?
- What are the indicators of successes or failures of community participation in waste minimization at Emfuleni Local Municipality?
- What recommendations can be considered to ensure maximum community participation in waste minimization at Emfuleni Local Municipality?

1.5 RESEARCH OBJECTIVES

Consequent to the research questions outlined above, the research objectives are highlighted as follows:

- To give a theoretical exposition of the concepts community participation and waste minimization and service delivery
- To analyse strategies supporting community participation in waste minimization at Emfuleni Local Municipality
- To conduct research into the successes and failures of community participation in waste minimization at Emfuleni Local Municipality
- To provide recommendations that may promote community participation in waste minimization at Emfuleni Local Municipality.

1.6 HYPOTHESIS

Effective waste minimization strategy depends on an active community participation and partnership, a process the Emfuleni Local Municipality has not fully activated.

1.7 RESEARCH METHODS

In order to conduct the research the following methods will be adopted:

1.7.1 Literature Review

The theoretical section of the study was supported by comprehensive utilisation of available literature. Books were extensively consulted on the subject of community participation in waste minimization. Library search was done at North West University. Relevant legislation and council policies were retrieved from Legal Library through permission at Emfuleni Local Municipality. These are: *the National Waste Management Strategy.1999*; *the National Environment Waste Management Bill (2007)*; Operational Plans of Waste and Landfill Management Department; documents of waste minimization and waste disposal volumes at Emfuleni Local Municipality depots. Journals, magazines such as 'Resource'; 'Urban Green'; 'Imiesa' and 'Government Digest' were consulted.

1.7.2 Empirical research and design

The scope of research is qualitative, concerned about social phenomenon under investigation from the participants and in this case community members. Quantitative research focused on the municipality officials.

Questionnaires and structured survey questionnaires were used to obtain the opinion of the officials and community. The researcher used both closed and open ended questionnaires derived from the research questions. Closed questionnaires make it easier for the respondent to complete within a short space of time. Using both closed and open ended questions has an advantage of reaching a lot of people at a very low cost. The researcher considered questionnaires consisting of demographic data such as age, gender,

occupation and number of people at home. Situational factors will refer to the support from the Municipality and Provincial Government; attitudes and personal environmental behaviour, recycling intentions and participation.

Participants interviewed were as follows:

CRITERIA	DESCRIPTION
Operations and Management: 1.T. Redelinghuis 2. M.Laubscher 3. K.E. Masindi	The officials are Assistant Managers responsible for day-to-day operations, collection and disposal of waste. They were important in the selection of the best option in waste minimization
Landfill operations: Mr Oupa Loate	Superintendent who was needed to give data on volumes of waste recycled and waste deposited on landfill sites
Clr Mauren Dasoudil	Chair person of Rotary Club responsible for recycling at source in Vanderbijlpark sub-urban areas
GDACE: Zingisa Smale	Director: Waste Management. Who gave implications of Waste Bill for Municipalities
Buyisa-e-Bag: Benny Mokgoga	National Public Organization for Plastic Recycling- A partner of GDACE in waste minimization campaigns and Bontle- ke- Botho.
Current Recyclers: Zone7 Sebokeng Bophelong, Palm Springs, Evaton, Three Rivers	The groups were important to assist in the study on the value of waste minimization and need to extend recycling to other areas.
Selected households:50 Community members in the Emfuleni L.M. area	House holds were important to indicate their willingness to separate their waste before it is collected by municipality truck for disposal to the landfill site.

Waste Buyers: D. J. Afpapier & Mamashe	Gave information on waste separation
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1.7.3 Choosing the sample

Sampling consisted of officials who are currently involved in solid waste management. Community members are directly involved in recycling at Emfuleni Local Municipality townships and sub-urban areas. Therefore judgmental sampling was applied. According to Mbanjwa (2005: 11) the researcher must consider ethical issues such as negotiating access, confidentiality of identity, good faith and participant's right to withdraw.

1.7.4 Participant observation

The researcher has gained ample knowledge of waste management at Emfuleni Local Municipality as she has been the head of Waste Department from 1996 to date. The researcher gained adequate knowledge and understanding of the challenges related to service delivery in Waste Management Department of Emfuleni Local Municipality.

1.8 OUTLINE OF CHAPTERS

Subsequent to the above, the organization of chapters follows the sequence of chapters below:

CHAPTER I: INTRODUCTION

Problem Statement and Research Method.

CHAPTER 2: Theoretical Exposition of Community Participation and Waste Minimization.

CHAPTER 3: An overview of waste minimization strategies at Emfuleni Local Municipality.

CHAPTER 4: Empirical study of community participation in waste minimization at Emfuleni Local Municipality.

CHAPTER 5 Findings, recommendations and conclusions.

CHAPTER TWO

THEORETICAL EXPOSITION OF COMMUNITY PARTICIPATION AND WASTE MINIMIZATION

2.1 INTRODUCTION

This chapter discusses the theoretical framework of the study on community participation in waste minimization. The chapter describes community participation in the locality as well as international experience to give a broad overview of community participation concept in waste minimization. The communication strategy is outlined as means of promoting maximum participation because the community must play a very important role in waste minimization. Principles of community participation, participation processes and benefits of participation for both the community and government are discussed.

2.2 DEFINITION OF COMMUNITY PARTICIPATION

According to Nzimakhwe (2008: 44) community participation is the involvement of citizens in a wide range of administrative policy making activities, determination of levels of services, budget priorities and including acceptance of physical construction projects so that government is oriented in programmes based on community needs and encourage a sense of cohesiveness within the society.

Phago and Hanyane (2007: 94) define and see community participation to be characterised by two way exchange of information between the people and the legitimate authority resulting to the provision of valuable information about the needs and aspirations of the local people to the public authorities in order to initiate and implement decisions in entering partnership commitments.

The two definitions entail citizen participation which is facilitated by expertise from the government. These expertises are from local, provincial and national government. They engage community in policy formulation, decision making and implementation.

Emphasis is on information exchange between officials and community in order that the community may participate productively.

2.3 VIEWS ABOUT COMMUNITY PARTICIPATION

Kroukamp (2002: 50) indicated that participation of the citizen in government activities aims to establish sound relationships between the various participants and to be successful should be preceded by negotiation to determine the rules to be followed in process of participation. The author cites six guiding rules to be followed when participation is promoted:

- Community participation must begin at the lowest level within the community. People who are consumers of service at ground level must gain wisdom and know the benefits of participating in projects and understand what the advantages of such participation are
- Community participation must take place at all stages of particular project. These stages include briefing session, ways to present plans, available assistance for citizens, implementation, evaluation stage and whether the project is feasible or not.
- Community participation is more than casting a vote or an isolated activity. Community must be able to take decision in the management of its own affairs. If involved community will sustain the project and work as a collective.
- Community participation process must deal with resource allocation and control including services needed to achieve the goal. Community must be able to identify their strengths and weaknesses, opportunities and strengths. In this way they will be able to organize themselves as seen in groups of NGOs and CBOs.

- Community participation must deal with existing loyalties. Sometimes projects fail because people lose interest as time goes by. People should build tolerance within themselves.
- Community participants must be cautious about possibility of conflict in some form. Community and government officials must be able to deal with the conflict that emanates from their activities, example slump in markets that discourages economic activities of the groups.

2.3.1 Seven basic steps in development of plan of action towards the participation process

The steps to be discussed below may be applied in situations that need community participation. They will be followed in waste minimization public participation process.

- Form a group of interested people. Active community members must be identified and become involved in the planning and development process of the organization. These will be valuable participants who will be utilized in future activities of the organization, example existing NGOs who are already involved in community projects. A planning group is then established to prepare the rest of the action plan.
- Get to know and involve the targeted community. The community profile must be studied to understand population size, economic activity, existing CBOs and NGOs and problems prevailing in the area. Let the community understand its needs and identify those challenges they need to overcome, example in waste management.
- Choose initial activities that have a large appeal and reasonable chance of success. The aim is to have maximum participation, example organize busses to take people to the hall for meeting or Mayoral Imbizo.

- Develop a plan of action. The plan should be based on realistic and achievable goals. This will attract other members to agree on the goals.
- Evaluate the proposed components with potential support to make sure they agree with planned actions. Unpack project proposal and deliberate on components example terms of reference and the scope of project.
- Implement the plan of action. This step starts with problem identification during implementation and creation of strategies to correct these problems. Volunteers should always be thanked and their participation acknowledged.
- Evaluate on an ongoing basis. Areas with poor success should be noted and analyse those things which went wrong. This will help participants improve their performance example re -explain what was not understood.

2.3.2 Value of community participation

Kroukamp (2002: 52) states that in as much community participation is a nuisance, time consuming, costly and frustrating; it cannot be ignored. The author advocates community participation for the following reasons:

- Community participation constitutes affirmative activity. It is an exercise that restores dignity because people become involved, instills self reliance and creativity. Citizens find meaning in social equity, democratic theory and issues of public interest such as policy changes.
- Community participation becomes a means of mobilizing the resources and energies of the poor to unleash their potential for better life. It consolidates democracy by ensuring that values of the organization are enhanced. Citizens are able to satisfy their needs because their views become known through their involvement.

2.4 REASONS FOR COMMUNITY PARTICIPATION IN WASTE MINIMIZATION

Waste minimization supports waste management strategies in a municipality. The components of integrated waste management include strategic management planning, environmental planning, environmental management, information and community participation and proper project management. Waste generation has increased at an alarming rate as population growth increases in urban areas. Introducing waste minimization projects and encouraging communities to play a role in waste reduction activities will solve some littering problems (Emfuleni Local Municipality IDP 08/9 to 10/12).

Other reasons for community participation in waste minimization are:

- To get cooperation of the public in implementation of the waste reduction methods.
- To change the mindset of routine waste collection, transportation and disposal on landfill sites to waste minimization activities.
- To promote a culture of a clean environment in terms of health practices and improvement of quality of life.
- To prevent dependency on local government function of removing waste from all open spaces in addition to household refuse collection and eradicate poor mentality and behaviour of the community to think that they are creating jobs for municipality workers (Mbanjwa 2005: 20).
- To instill a sense of self help to unemployed groups through recycling projects that will improve house hold income by selling reclaimed waste to buyers in the region.

- To conserve the landfill space by reducing final disposal of reclaimable waste on these landfill sites, playing a vital role in reducing effects of global warming and climate change
- To educate community that household food security can be sustained by composting in the yard for sustainable agriculture and reducing poverty.

2.4.1 International experiences of community participation in waste minimization

According to Mbanjwa (2005:14) international experience proved that public participation in waste minimization is a global concept to be implemented by Governments in their programmes which affect community and their decisions. The author cited that the Ireland Department of the Environment and Local Government developed a policy on recycling in 2002. There were constraints regarding improvement on the recycling activity. The project could not take off successfully because there were no recycling facilities such as buy-back centres or mini-transfer stations and no reprocessing facilities for reclaimed waste. Waste was contaminated and therefore had no value for recyclers. It was difficult to engage on public participation process under such circumstances. The Government devised a plan to counteract the identified constraints and established the following mechanisms:

- Establishment of a recycling consultative forum
- Funding for infrastructure through local authorities
- Development of segregated household waste collection service in all major urban areas through regional waste management plans
- Upgrading of buy-back networks for rural areas
- A grant scheme for small scale recycling projects
- Establishment of environmental funds

Industries were compelled to contribute to the cost of minimizing the environmental impact of their activities. The results of the exercise were enormous and half of the European community is recycling regularly (Mbanjwa 2005: 15-16).

In Scotland, local authorities minimize waste generation of householders, commercial and industrial waste. According to Mbanjwa (2005: 17) a study was done at the University of Pricley to understand recycling behaviour of the Scottish people and develop understanding of what causes behavioral change. It was established that there were socio-demographic differences where affluent householders, older residents, two person household and car owners participated mostly in recycling. When approached and asked why they also do not participate in recycling, they cited that they do not have recycling containers, no enough material to add value to their activity, time is a major constraint and that they do not have bags (Mbanjwa 2005: 18). This means that the community must be provided with a conducive environment in order to participate in waste minimization. Mongkolnhalaiaarunya (2005: 28) cited by Mbanjwa (2005: 19) stated that in Thailand people do not separate waste at home and their attitude is that municipality must execute all public tasks. The study conducted by Mongkolnhalaiaarunya (2005: 28) in Mbanjwa (2005: 21) was to establish if it was possible to mobilize communities in urban areas to participate in waste management.

The study had to focus on community recycling project that encourages separating waste and bring valued recyclable waste to exchange point. Exchange was in the form of a tray of eggs for the poor. Rich people participated less in the project for fear of loosing their dignity though they are most generators of waste than poor people. Poor people were motivated to get something in exchange. Children also collected waste from their homes and sell it to the waste banks that are operated by the community youth. Waste recycling is also introduced to schools and children are educated on recycling behaviour at an early age (Mbanjwa 2005: 22).

2.4.2 South African experience concerning community participation in waste minimization

In South Africa there are various facilities such as mini-transfer stations, mini-recycling centres and buy-back centres. In terms of *the National Environment Waste Management*

Bill, Sections 11-13 recycling, re-use and reduce waste is emphasized so much that penalties will be imposed on all those municipalities that are not prepared to implement waste minimization strategies. Public participation process must be improved. The Deputy Minister: Ms Rejoice Mabudafhatse had a series of public participation meetings in nine provinces on the implication of the Bill. The Gauteng MEC: Agriculture, Environment & Conservation, had a series of workshops with waste managers on the Bill. The *National Environment Management Act 1998 (Act no. 107 of 1998) Section 24* proposed such methods to ensure adequate and appropriate opportunity for public participation as a key element to address waste issues in a practical manner.

Recycling in South Africa is not subsidized. At Emfuleni Local Municipality previously disadvantaged householders are poor and unable to pay their rates and taxes for services provided. Forty three percent (43%) of this population has registered as indigents for government subsidy (Emfuleni Local Municipality IDP document 08/09). It is very difficult to engage community on waste minimization as they need food before going to the field for recycling. Where there are existing recycling groups the municipality supports them in the form of transport for their reclaimed waste, so as to encourage those who are reluctant to be part of the project. Their participation statistics can be seen as self- help success story in the region as shown below:

Table 2.1 RECYCLING FROM PALM SPRINGS LANDFILL SITE

Materials	Jan 2008	Feb 2008	Mar 2008	Apr 2008	May 2008
Plastics	158m ³	80m ³	72m ³	246m ³	137m ³
Coke Bottles	193m ³	180m ³	282m ³	224m ³	252m ³
Milk Bottles	112m ³	159m ³	222m ³	224m ³	196m ³

Hard Plastic	26m ³	11m ³	66m ³	47m ³	56m ³
White Paper	5m ³	4m ³	14m ³	19m ³	11m ³
Card Box	121m ³	12m ³	30m ³	196m ³	115m ³
Scrap Metal	71m ³	43m ³	67m ³	93m ³	68m ³
Glass	73m ³	47m ³	8m ³	24m ³	18m ³

(Waste Management SDBIPS: 07/08)

The above break down shows the extent of little community participation in waste minimization despite the education given to them on how to minimize waste and reduce poverty.

2.4.3 Constraints in the community participation process in waste minimization

There is a world wide lack of awareness and education programmes. Information on waste minimization needs to be disseminated to all community members. If they know their role and how to handle their household waste it becomes easy for both Municipality and community to deal with problems and challenges regarding their participation. Example is that the community may need to know how bottles, tins and paper will be collected from sidewalks.

In some instance public is reluctant to participate in waste minimizing activities because municipal workers have not conceptualized Batho-Pele Principles. This discourages community willingness to participate in the programme as citizens. Community complains that they do not have funds to initiate the waste minimization project. Funds assist community to attend community meetings where they will gain knowledge on the project and be able to participate. Information given to the community may include what

resources they may have to commence the project of waste minimization in locality and how they can group and name themselves, eg Mama-Shes. Resources at hand mean availability of skip bins/containers, storage facilities for sorting; separation at source by community and where they take reclaimed material to (Emfuleni IDP Public Participation Meeting 22 September, 08).

2.4.4 Obstacles influencing greater community participation

As much as the public would like to be recognized by government in waste minimization initiatives, participation will be difficult without development programmes and institutionalization of the waste reduction projects within the organisation. According to Sewell and Coppock (1977: 149) federal government in Canada was generally less powerful than the central governments in countries like Great Britain or United States. Environment in Canada had its place in provincial control and definitely participation at local level was difficult. Another obstacle which may be experienced in public participation on waste minimization is the specific concern about other environmental issues like sewer spillages, pollution of the rivers and air quality example in the Vaal.

Waste minimization may be viewed as a minor exercise though nowadays waste is the main cause of environment degradation. Sewell and Coppock (1997: 157) describe the attitude of politicians and officials as contributing to less participation as supported by:

- A belief that the government through political process represents the public and that more direct public participation is a challenge to that political process
- A belief that the politicians know what the public wants and do not require input on each decision
- A belief that public participation is cumbersome and time consuming
- A desire not to expose the decision making process to public scrutiny
- A belief that much of governmental decision making merely requires technical advise and that the public is not qualified to provide such advise

- A fear that forums for public participation will become a platform for radical ‘unrepresentative’ groups to spout their concern and will lead to conflict and noise (Sewell and Coppock 1977: 152).

These attitudes need to be phased out and the concept of public participation in waste minimization be promoted. Politicians and officials must conceptualize public participation as long as they are in public service.

2.5 THE PROMOTION OF COMMUNITY PARTICIPATION IN WASTE MINIMIZATION

Community participation in waste minimization can be promoted in various ways. In a municipality it starts with the Integrated Development Plan (IDP) and ward meetings. The IDP co-ordinator for public participation publishes series of IDP meetings to be held in various municipal regions. The IDP document contains all the municipality projects including waste minimization projects. This is an opportunity to inform the public about their role in waste minimization. Maximum attendance is achieved by informing people that there will be buses at pick-up points to assist those who are far from the venue.

Municipalities have listed waste minimization as a lowest priority in the waste management departments. Funds are always cut and the project stalls whilst waste problems escalate day by day. Municipality can make available unused buildings, upgrade and give them to the community as sorting areas. One of the challenges facing recyclers is transport for their recycles or sorted material. When they hire private transport, the price is very high and they take very little money of what they sold (Emfuleni Operational Plans Feedback: Waste 07/08)

The office of the Deputy Prime Minister in London (2002: 39) released a publication on factors stimulating community participation initiatives. Local government co-operative strategy standard was regarded as the most important factor. None of the local authorities identified and suggested “local government networks” and to the researcher it was most

important. Learning from other local authorities how things are done is an approach where good practices are copied. Examples include Emfuleni Local Municipality may visit Mogale City to observe how citizen participation is managed.

2.5.1 Principles of Good Governance

According to Atlee (2008: 1) the Community Development Societies Principles of Good Governance are:

- Promote active and representative participation towards enabling all community members to meaningfully influence the decision that affect their lives.
- Engage community members in learning about and understanding community issues such as the social, environmental, political and other impacts associated with alternative courses of action.
- Incorporate the diverse interests and cultures of the community development process and disengage from support of any effort that is likely to adversely affect the disadvantaged members of a community.
- Work actively to enhance the leadership capacity of community members, leaders and groups within the community.
- Be open to using the full range of action strategies to work towards the long term sustainability and well being of the community.

Atlee (2008: 2) believes that democratic processes are developmental and there is wisdom involved in these processes. The author cited processes such as making collective decisions, solving social problems and creating shared vision. The following principles offered some guidance for designing democratic processes:

- **Include all relevant perceptions**

Public participation is not about allowing people to rubber stamp decisions. Creative inclusive perception generates more wisdom than mechanical inclusion of people. This means there should be information sharing to the public about participation and waste minimization.

- **Empower the people's engagement**

People should be involved in the creation of democratic decisions. They will support the implementation of the decision and have the feeling of the "We, the people will prevail

- **Ensure high quality dialogue**

Most public forums need good facilitation to ensure high quality dialogue. This is to ensure that dialogue is deepening understanding, build relationship and expand possibilities.

- **Establish ongoing participation process**

Intelligence is the capacity to learn and learning is an ongoing process therefore collective intelligence can manifest most powerfully in democratic process that are continuous. Once-off consultation will not reinforce learning and participation will not yield results (Atlee 2008: 2).

Sewell and Coppock (1977: 15) advise politicians and public officials that the public should be well informed so that they participate meaningfully in waste minimization strategies. Public should know about issues of waste generation, management and problems of environmental degradation which have a negative impact on social and

health status of the citizens. If the public is poorly informed they will not be able to sustain a high level of participation in waste minimization.

According to van der Merwe (2003: 43) public participation is a dynamic concept involving knowledge sharing between officials and public. Officials should reach public by inviting them to the public hearings as part of policy or programme development process. The invitation to a public hearing can be done through local news paper, council meeting and ward meetings. In this approach local environmental forums and committees will be involved from the initial planning, during implementation and reviewable of waste minimization project.

2.5.2 Increasing level of community impact

According to van der Merwe (2003: 43) public participation is demanding and therefore officials should adopt certain models to assist community to come on board. The model below depicts ways and tools to be used to encourage community to be involved in environmental governance and decision – making.

Table 2.2 Public Participation Spectrum of the International Association for public participation.

Inform	Consult	Involve	Collaborate	Empower
Provide public with information to assist them to understand the problems and solutions on waste minimization strategies	To obtain public feedback on alternatives and decisions on waste minimization	Work directly with the public throughout the process to ensure that public issues and concerns are understood and considered on	To partner with the public in each aspect of decision making and identification of preferred	To place final decision-making in the hands of the public

		how to minimize waste	solution on methods of waste minimization	
Promise to public officials will keep them informed.	Promise to public officials will keep them informed, acknowledge and provide feed back how their inputs influenced decision.	Promise to public officials will work with them to ensure that concerns are reflected and feedback given on their inputs.	Promise to public officials will look to you (public) for direct advice and innovation on ways to minimize waste.	Promise to public officials will come back and implement what you (public) decided.
Tools used: Workshops, one day seminar, local news papers and radios	Tools used : Public meetings, News Letters, local news paper	Tool used: workshops, meeting with the co-coordinator of public participation in Speakers Office	Tools used: Citizen advisory committee and participatory decision making	Tools used: delegated decision.

(van der Merwe 2003: 43)

The nature and scope of public participation is influenced by the practical issues affecting success of consultative process such as clarity about the expected input from stakeholders, organizing effective meetings, and providing appropriate feedback on comments received. When groups are included officials must consider level of interaction

and deliberations, management and facilitation because the level of comprehension is not the same. If workshops are conducted, practical recommendations will be developed on waste minimization (Sowman 2005: 6).

2.5.3 Success of community participation in waste minimization

In developing countries public participation is used to improve the quality of life of the poor communities where the concept yields a very good deal of success and local acceptance. Stephen, Vargas and Kruger (2001: 1) advocate that people must be an integral part of the process. Authors studied approaches used in public participation in Chile, Brazil and South Africa. It was established that communities are a dynamic group whose physical environment is shaped by socio- economic factors. The success of public participation lies with the interaction of the mayor and administration that must be supportive of the concept by allocating funds to sustain the process such as budget allocated for hiring of buses and printing of handouts for the series of public meetings. The advantage of this community- political- administrative interaction is that they all focus their efforts strategically.

Stephen *et al* (2001: 7) admitted that public participation is not yet recognized as a democratic right and involvement of the community as a tool to solve deteriorating environment through waste minimization. Public participation in waste minimization will need to connect with other environmental strategies of education like waste management and agriculture (Stephen *et al* 2001: 9).

In South Africa public participation was conducted for the first time in 1995 when public inputs were requested by Consultative National Environment Process (CONNEP). Stakeholder input was valuable in the development of new environmental policy. Consequent to public participation the *National Environmental Management Act 1998 (Act No107 of 1998)* was adopted (Sowman 2005: 4).

According to Sowman (2005: 4) community participation strengthens the relationship between government and its clients within the civil society, therefore enhance the trust of the public in government. Another advantage is that the process contributes to the international information exchange on public participation in waste minimization decision making, assist in development of guidelines and resources that will assist local communities to develop and implement public involvement plans.

The UN-HABITAT views community participation in developing countries to be a critical process in solid waste management. Mention is made of Egypt, Kenya, the Republic of Korea and Thailand. In Cairo, means of waste transportation is muscle power like donkey carts. Emphasis is on the sorting of recyclable material resulting in the municipality having the lowest cost for waste collection in the world (Hampwaye 2005: 83).

2.5.4. Managing communication in waste management

Involving the community to participate is indeed a project which needs personnel, equipment, money, quality time and planning. The level of communication determines the standard of deliberations and planned interventions of the team to distribute related information on waste minimization. Communication is seen as a critical success factor to manage expectations of the customer and stake holders. The community must not be taken by surprise. When they are expected to participate in waste minimization they will do so provided that all that needs to be done is properly communicated and their role is identified in the project (van der Waldt 2007: 62).

2.5.5 Communication plan

The waste management team must understand that during the planning and implementation phases of community participation process the institution should take cognizance of the fact that waste minimization is an institutional problem which needs to be integrated with the organization's systems and procedures. Community participation

in waste minimization needs full attention and support of senior managers, finance and Local Economic Development departments as business units and public private partnership throughout the organisation. To succeed in the public participation endeavour, the organization should use corporate communication to keep the community informed about community participation in waste minimization.

The advantage of communicating and informing the community about their participation in waste minimization is that the exercise provides an opportunity for an organization to be a good corporate citizen within the community. A proactive institution can start by working with the municipality officials and community groups to offer advice and guidance to its employees and members of the community. Lack of good corporate communication may discredit an institution and be regarded as bad corporate citizen. The institution should have a well organized effective communication programme available for implementation. In most municipalities this is entrusted in the office of the Speaker and in Province, Stakeholder Engagement is in the office of the MEC: Agriculture, Conservation and Environment (van der Waldt 2007: 63).

2.5.6 Communication management as knowledge area

According to van der Waldt (2007: 24) communication management is the knowledge area that is required to ensure that there is proper collection, dissemination and storage of information which includes the following:

- **Communication Planning**

Most people staying in informal settlements cannot attend meetings if transport is not arranged for them to the venue and coming back home. Pamphlets can be less effective because of language difference. Areas must be divided into regions to improve access to the venue, for instance, clustering Sharpeville, Vereeniging and Ruster-vaal.

- **Information distribution**

The waste management team must prepare information which will be used in the identified regions and clustered areas. Same information should be used throughout and community should be allowed to make inputs.

- **Administrative closure**

Administrative closure is the gathering and disseminating information to formalize project completion. Full participation of the community will be characterized by waste separation at home, papers used for cleaning of windows and vegetables grown in backyards. Communities bring ideas also how they will best minimize waste (van der Waldt 2007:64).

2.5.7 Importance of communication in promotion of community participation in waste minimization

The objectives of promoting communication in community participation are:

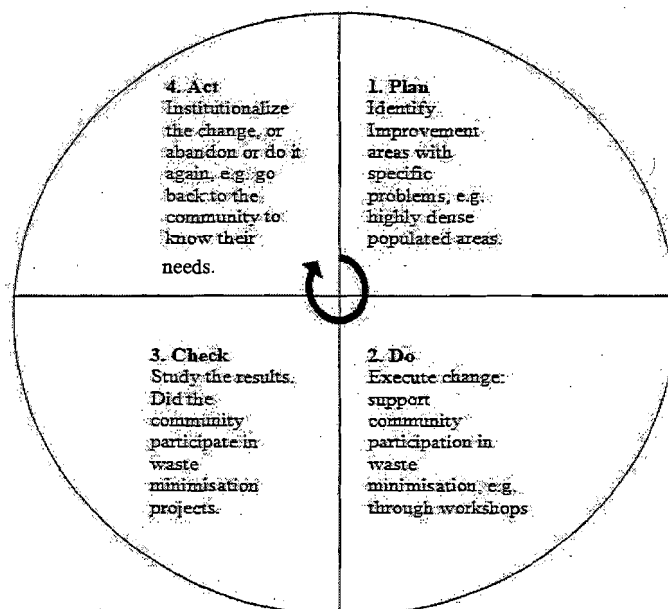
- To ensure that all the different participants in waste minimization have information pertaining to when and what they must do in order to achieve common goals and how information links with other activities and inputs like clean air, clean environment.
- To ensure resolution of any problems and confusion that inhibits the implementation of waste minimization in the region, example, waste sorting in the region.
- To ensure that waste minimization is linked with other parts of the institution and other parts of the environment that will assist its implementation responsibilities, example, composting waste will sustain agricultural projects in Local Economic Development while reduction of biodegradable waste in landfill site reduces methane production (van der Waldt 2007: 4).

2.5.8 Where to start in communication management

Proponents of communication strategy brought about a circular model which depicts that communication is a continuous process and each step relates to each other. van der Waldt (2007: 45) maintains that the community must be involved in all the stages from the initial planning. The planning stage involves identification of special problems, community profile, type of settlement and socio – economic status of the community.

The second step is execution phase where officials support the community in their endeavour to minimize waste. They work together towards a common goal, that is; waste minimization. The third stage is to act where issues are raised on difficulties to participate in waste minimization. Officials should also play a role of mentoring the community on how to participate in community projects such as waste minimization. The fourth stage is the assessment of the extent of success of the project. Officials identify if the community does not understand issues such as sorting waste at home and if they do not follow the rules workshops have to be organized to coach the community (van der Waldt 2007: 45).

Figure 2.1 Steps in involving community to participate



(Extracted from van der Waldt 2004: 200)

The steps outlined in the diagram are interrelated and interdependent, that is, the next step will not occur without fulfilling the requirement of the preceding step. This simplifies methods of implementing the projects so that every group becomes aware of the activities in each step. The steps have the advantage of identifying gaps during the activities and give sufficient opportunity to the community to continuously think how they can accomplish the set goals. Their participation becomes highly valued as they come with solutions themselves.

2.5.9 Communication strategies for waste minimization

The aim of a communication strategy is to reach and empower residents by distributing information that is user friendly. The strategy allows the community to make inputs on the best way to minimize waste.

Table 2.3 Municipal communication strategy

STRATEGY	PURPOSE AND HOW TO ACHIEVE OBJECTIVE
1. Direct contact	Visiting current reclaimers in their sorting area to hear their experience
2. News letter and local news paper	Preferably in languages used in the Vaal to avoid language barrier e.g. VaalSter, Vaal Vision
3. Council meeting	To reach the community, ward councilors to enhance communication
4. Public meeting	To reach a large number of residents in promoting participation in waste minimization
5. Information briefing	Achieved through press conference with the executive mayor to have high level political support.

6. Citizen participation forums	They are at the grass root, aware of waste problems and therefore will form part of promoting waste reduction
7. Ward and Environment committees	They are directly involved in the area will ensure waste reduction occurs
8. Focus groups	They work together with the community and will ensure waste minimization is supported for clean city
9. Public hearing	People used in dumping illegally and routine weekly household collection may have an issue about waste minimization .Poor mindset may change
10. Brainstorming sessions	May assist to unleash ideas on implementation of waste minimization in the areas through deliberations
11. Complaint register	Waste department may have a register on complaints about excessive illegal dumping. Will assist community to take decision on how to minimize waste in their areas
12. Site visits	Visit existing mini refuse dumps to establish if composting can be done in these facilities
13. Exhibition	Open days can be organized by Municipality in community halls and stalls invited from NGOs and CBOs free of charge to empower community through their work and achievements.

(Van der Waldt 2007: 26)

2.6 FEATURES OF SUCCESSFUL COMMUNITY PARTICIPATION IN WASTE MINIMIZATION

A community that has adequate knowledge on waste minimization becomes active and needs little supervision. The community is able to use their own initiative to solve problems related to a project.

2.6.1 Effective implementation of waste minimization project

Waste minimization is a project which needs to be implemented by the community itself as primary generators of waste both in affluent and previously disadvantaged settlements. It is an activity influenced by socio- economic environment whereby people with less access to jobs can participate fully whereas rich people are just busy to minimize waste. Local community participation facilitates problem solving, identifies needs and resources and determines the capacity of community members. When people are directly involved in development activities, more members of the community benefit, example in pre-schools and crèches play grounds are designed with painted vehicle tyres for child development (van der Waldt & Knipe 2006: 144).

- **Continuous process of education and learning**

Van der Waldt and Knipe (2006: 143) identified three types of knowledge and concluded that every individual in the community should acquire and absorb knowledge so they contribute meaningfully to the development process in the community. The three types of knowledge are:

- **Social knowledge**

Social knowledge is the type of knowledge acquired and processed by the individuals as a result of their daily association with other people and institutions, example, copying from other townships like Dobsonville how recycling is done.

- **Scientific knowledge**

This is knowledge acquired when a problem is experienced and solutions are proposed on the basis of facts, example, recyclers may experience theft of their reclaimed waste therefore need a secured facility which can be locked so that the project is sustained without them feeling threatened by failures.

- **Transformation knowledge**

The third knowledge is knowledge gained through interaction between social and scientific knowledge. It occurs when people are eager to extend their knowledge in striving to improve their situation and to raise the level of the community or institution. In waste minimization community participation and involvement will improve their environment and reduce the risks associated with excessive waste generation; illegal dumping and water, air and land pollution. In transformational knowledge communities make an active contribution to their development. Once the community becomes aware of their conditions and problems they experience, they become accessible to change. This stimulates and encourages them to participate more easily in development process. Example, street hawkers in cities and towns will reduce litter to prevent blockage of storm water drainage system (Maraise & Armitage 2004: 483).

- **Community uses its own initiative in implementing development activities**

When the community participates in the development process they gain capability to use their own views to address the specific conditions and problems in their area. The outstanding feature in community participation is self confidence, pride, initiative, creativity, responsibility and co-operation with local Municipality (van der Waldt and Knipe 2006: 142- 143).

2.6.2 Enlighten the community on what waste minimization constitutes

Rural- urban drift has contributed to environmental degradation due to the generation of large quantities of waste. Population increase and rapid industrial development are the major contributing factors in developed countries. Less developed countries produce less solid waste. Waste management has become a major problem in urban areas where influx of people from rural areas has increased. This phenomenon requires waste minimization strategies to prevent the negative effects of poor waste management (Sujauddin, Huda and Hoque 2007: 1).

Waste minimization entails recycling, re-using, and reducing waste before it is deposited on landfill site. Sujauddin *et al* (2007: 2) categorized waste that can be separated into the following:

Paper = paper/ book/ printed material

Pack = packaging material

Cans = can/ jar/ tin/ metals

Textile = textile/ rags

Glass =glass bottles/ ceramic

Vegetables = waste food / waste

Wood = grass/ leaves/ wood

Plastic = milk bottles/ juice bottles

In Western Europe there are two main alternatives of treating municipal and industrial waste, namely, energy recycling where plastic is incinerated with some energy recovery. A second alternative is a mechanical recovery where plastics are granulated and re-used (Salmiathon and Garforth 2006: 18).

Marmo (2007: 687) advises that organic waste of good quality must be brought back to the soil in order to contribute to the improvement of soil conditions. This captures carbon and authorities will comply with requirements of Kyoto Protocol. Kyoto Protocol is an international resolution which seeks to reduce carbon release into the atmosphere with an

aim of averting effects of climate change. If bio-waste does not end up on landfill sites it reduces the emissions of methane gas from landfills thus reducing air pollution.

In a study conducted on urban and peri-urban farmers who specialized in high value crops for urban consumption or export, the authors used a “recycling loop” with five study areas, namely, urban waste production, waste processing (composting), compost demand, economic viability, marketing and distribution; and legal, institutional and communal setting. The study on composting yielded good results and was supported by a Canadian International Development Centre (CIDC) and its Cities Feeding People (CFP) awards Programme- AGROPOLIS (Danso, Preschel, Fialor and Giordano 2005: 1401).

Mondini (2008: 681) discovered that agricultural soils are of particular importance in that soil organic matter reduces green house gas (GHG) derived from agriculture. Soil organic matter improves soil physical properties; supply nutrients and enhance nutrient uptake; protects crops from certain plant diseases and reduce adverse effects xenobiotics. Soil organic matter reduces carbon dioxide released into the atmosphere. The conclusion of the study was that composting waste food, grass and tree leaves benefits all living creatures and improves the quality of life. People should also view waste minimization as a life sustaining strategy and not a mere waste reduction mechanism (Mondini 2008: 671).

2.6.3 Disadvantages of participation initiatives

In the study conducted by the Office of the Deputy Minister (2002: 42) in London, two thirds of authorities responded to the survey indicated that community participation initiatives lead to consultation exhaustion among the public official and there is misrepresentativeness. Fifty three percent (53%) can raise public expectations that the authority cannot meet such that people may think there is direct employment and salaries in waste minimization if they participate. The process of community participation cannot be avoided in any municipality as this is enshrined in the constitution in order to protect the democratic rights of the citizens.

2.7 CONCLUSION

Public participation in waste minimization needs to be adopted by all public officials. It is better implemented at local authority level as these government bodies are nearer to the communities. In order to participate, communities must know their role in waste minimization. The mayor and municipal manager have a responsibility to ensure that there is funding to support public participation processes. Information on waste minimization is disseminated to the public by organizing a series of public meetings so as to reach as many people as possible to avoid distorted information reaching other people. In South Africa public participation is conducted to obtain public inputs on policy matters, developments and new projects. Waste minimization is one of the projects that require community participation to solve the problems of waste generation in the region. Recycling waste, tins, bottle, plastic and metal improve the quality of life of the families, composting sustains agricultural products and cleans air. These benefits must be cited to the community as the project of waste minimization requires their involvement. Chapter three gives an overview of waste minimization strategies at Emfuleni Local Municipality.

CHAPTER THREE

AN OVERVIEW OF WASTE MINIMIZATION STRATEGY AT EMFULENI LOCAL MUNICIPALITY

3.1 INTRODUCTION

The third chapter of the study on community participation in waste minimization seeks to highlight strategies designed for waste minimization in the Emfuleni Local Municipality Solid Waste Department. It is recognized that waste minimization is not a core function of the local authorities. Municipalities are expected to promote waste minimization by involving communities. The roles of politicians at ward level, officials in waste department and community groups are discussed in this chapter. Extent of waste reduction at Emfuleni is outlined and means to sustain waste minimization are addressed.

3.2 DEFINITION OF WASTE MINIMIZATION STRATEGY

According to the Gauteng Department of Agriculture, Conservation and Environment, waste minimization is defined as a simple strategic reduction of waste at source through improved product specifications. Waste minimization includes management measures: quality, improvement and recycling (Gauteng Provincial integrated waste management policy, September 2006).

The waste minimization strategy is an operational plan designed to assist waste management departments to reduce waste volumes deposited into landfill sites with an aim to improve environmental management in the long-term; save landfill airspace and relieve poverty to those who are unemployed who sell recycled waste (SDBIP Emfuleni Local Municipality 2008/2009).

3.2.1 Vision and Mission Statement of Emfuleni Local Municipality and Solid Waste Department

The Emfuleni Local Municipality operates waste minimization strategy through its vision and mission statement. The vision of Emfuleni Local Municipality is:

“We are a dynamic integrated people centred provider of excellent service that continuously improves the quality of lives”. The mission statement comprises the following elements:

- Provide a number of services to meet government millennium developments.
- Promote labour intensive service delivery methods to alleviate poverty.
- Establish partnerships with the community
- Utilisation of corporate agreements for urban greening projects.
- Utilise research and development to improve service delivery.

The mission statement is broken into core strategies that are linked to key performance areas namely:

- Restore dignity campaign

Operation restore dignity is a special project of Emfuleni Local Municipality which has been and will be implemented in five townships that form part of Top20 priority townships (TPT) namely: Evaton, Boipatong, Bophelong, Sharpeville, Sebokeng including Rustervaal. The aim of the campaign is to restore the value and ethics of dignity to local residents to be proud citizens of Emfuleni Local Municipality and South Africa. The Executive Mayor emphasized in his speech (Operation Restore Dignity Speech 12 November 2008) that cleaner communities are healthier, safer, and happy communities. Reducing, reusing and recycling waste will keep Emfuleni clean.

- Poverty Alleviation

Poverty alleviation in waste management is related to the functions of the department. Unemployed people are given opportunities to participate in the waste programme on an annual basis. These labour intensive people are engaged in the cleaning of CBDs, streets, landfill sites and household refuse collection.

- Waste Minimization

The programmes of waste minimization are implemented in transfer stations of Bophelong, minidumps, collection stations, landfill sites and townships.

- Carbon Credits

The project is facilitated by Sedibeng District Municipality and is funded by the Central Energy Fund. Three landfill sites have been identified namely, Zuurfontein, Boitsepi in Boipatong and Waldrift in Vereeniging. Notice of public participation on Environmental Impact Assessment is attached as “**Annexure A**”.

- Integrated Waste Management Strategies

In terms of National Waste Management Bill 2007, all Local Municipalities must have an integrated Waste Management Strategy which is approved by council to guide implementation of objectives (Emfuleni Local Municipality Organogram: Waste Department Preamble 2008). Emfuleni Local Municipality successfully developed Waste Management Plans based on Integrated Waste Management Strategies which is attached as “**Annexure E**”.

3.2.2 Emfuleni Waste Minimization Strategy

Government has committed itself to the sustainable service delivery and proper waste management systems by fostering information exchange with community and other government departments and help to match needs for solutions to waste management problems with available tools, assistance and resources. The waste minimization programme is about ensuring clean environment, upliftment of quality of life of the inhabitants and restoration of human dignity in terms of the *South Africa Constitution*

1996 (Act No 108 of 1996) namely, everyone has a right to an environment that is not harmful to their health and wellbeing.

The World Summit on Sustainable Development (WSSD) which was held in the year 2002 in Johannesburg gave impetus to the Johannesburg Plan of Implementation (JPOI). The JPOI guidelines are based on Local Agenda 21 which was the core of WSSD. The Gauteng Department of Agriculture Conservation and Environment initiated Bontle-Ke-Botho (BKB) clean and green programme based on the Johannesburg Plan of Implementation guidelines and targets. In terms of the BKB programme, the aim is to promote sustainable environmental management including waste minimization which covers recycling, reuse and reduction of waste. The programme encourages municipalities, wards and schools to take care of their nearest environment. BKB rewarded schools, wards and municipalities that showed interest in the programme and commenced with waste reduction programme. Emfuleni Local Municipality, wards and schools participated in the programme and were also rewarded with Local and Provincial prizes since 2002 (GDACE Waste Management Plan 2007)

3.2.3 Polokwane Declaration of 2001

The document committed municipalities to reduce waste by 50% by year 2012 and to zero waste in landfill sites in 2022. The Waste Management Bill, 2007 deals intensively with waste reduction, reuse and recycling. The bill has been discussed at the nine provinces of South Africa and is ready to be signed by the President of the country to be enacted. Emfuleni Local Municipality is equally bound to ensure that waste minimization strategies are put in action and that the community should play a major role in the implementation phase (Waste Management Bill 2007).

3.2.4. Roles and responsibilities of the various government departments

The three spheres of government have major responsibilities and roles in ensuring participation of the residents in the area of jurisdiction.

3.2.4.1 Local Government

Local government is in the first instance accountable for the provision of refuse removal service and proper landfill site management. Through Environmental Health practitioners, government must promote health and hygiene in its communities. The local government must also take responsibility to create an enabling environment through its by-laws and ensure that decisions on level of service are both appropriate and affordable. Local government is required to develop an Integrated Development Plan (IDP) which is aimed at the integrated development and solid waste management in the area of its jurisdiction. One component of this plan at Emfuleni Local Municipality is Service Delivery Implementation Plan (SDBIP) which entails waste minimization as a strategy in waste management in the region. The SDBIPs also give opportunity to review current service levels and backlogs and set clear objectives with quantifiable performance indicators as seen in non financial statistics on the number of houses that do not have a weekly refuse collection services as well as the number of buy back centres. Councillors, local government, officials and communities are encouraged to participate in the development of the coherent strategy to agree on the priorities and approach on waste minimization.

3.2.4.2 Provincial Government

The provincial government is responsible for supporting local government in achieving their objectives and ensuring that they perform effectively. Support can be provided in a number of areas such as financial, human resource and technical areas. Gauteng Department of Agricultural Conservation and Environment is responsible for setting standards of waste collection and recycling. It launches anti-litter and awareness campaigns in Municipalities to ensure that illegal waste dumps are not established. The department of Waste and Landfill Management acts as an implementation agent in Emfuleni Local Municipality. The department ensures that there is weekly sustainable household refuse collection, clearing of illegal dumps and landfill site operations. The

minimum level of service prescribed for each household is a once a week curb-side refuse collection (Emfuleni Service Delivery Report 07/08).

3.2.4.3 National Government

At the sphere of National Government, there are a number of role players that are responsible for waste minimization. The Department of Environmental Affairs and Tourism passed a Plastic Regulation in 2003 to regulate plastic generation and disposal of plastic bags. In supermarkets bags are obtained at a fee and the funds generated are distributed to establish buy-back centres through the company called Buyisa-e-Bag. Buyisa-e-Bag is a section 21 company appointed by the Department of Environmental Affairs and Tourism to uplift the standards of Municipalities in the field of waste minimization (Plastic Federation of SA, April 2008).

3.2.4.4 Role and Responsibility of Sedibeng District Municipality

Emfuleni Local Municipality is one of the Municipalities that comprise Sedibeng District Municipality. The role of the district towards its locals is to formulate policies, give support and promote sound intergovernmental relations. The district formulates integrated Waste Management strategies for Local Municipalities in which waste minimization is emphasised. Emfuleni Local Municipality's Integrated Waste Management Plan is currently revised and public participation was held in December 2008.

Sedibeng District developed Sedibeng growth and development strategy, an environmental programme of action for the Sedibeng Region (Environmental Plan of Action 2007). The strategy identifies environmental quality as a key barrier to the region achieving its goal of improving the quality of life of its citizens. The district recognised that successful cities care about their environment and its sustainability. These successful cities manage environmental issues effectively, develop initiatives to cleanup their environments and move towards using resources in more sustainable ways. These

approaches are adopted based on the understanding that if these issues are not addressed, avoidable cost will be accumulated that will consume large amounts of public, private and household funds in future. The district came up with an activity plan that is as follows:

- Clean and Green Sedibeng

Waste Collection systems and quality throughout the region and greening initiatives are not shared – identification of objectives and the manner in which they can be made sustainable.

- Waste Management

The Waste Minimization Action Plan for the region must look at the means to improve recycling and reuse rates as well as reducing waste generation. Sedibeng District will assist with core issues to strengthen the project.

- Development of a waste information system for the region

This will assist in understanding the impact of initiatives that are taken forward such as recycling initiatives. It will provide robust information base for integrated waste planning into the future.

- The Development and implementation of industrial waste exchange for the region

This activity will be based on the results of work undertaken under the auspices of the DANIDA National Waste Management Strategy Project. The project entails waste minimization in industries where waste of the other industries is used by the other to produce a different product. Waste exchange activity takes place when waste is exchanged between waste management organisations or authorities in order for it to be of mutual benefit to both parties. Waste from one could be raw material for the other. For

example, Cape Gate in Vanderbijlpark can sign an agreement to exchange their waste with Iscor/ Mittal Steel.

- The Development and implementation of an airspace management strategy for the region

Composting organic waste to improve agricultural practices and chipping wood to compost will assist in preventing tree trunks deposited on landfill sites an activity which will reduce landfill space. At Emfuleni Local Municipality the project is underway and is driven by Sedibeng district and funded by Central Energy Fund.

- Ensure that stakeholders work together effectively

In the growth and development strategy Sedibeng commits itself to form a strong partnership to build effective IGR structures. This will include effective stakeholder engagement outside the government systems, outreach and communication and formal environmental coordination mechanisms within Local Government (Sedibeng Growth and Development Strategy 2007-2012).

3.3. WASTE MINIMIZATION COMMITTEES AT EMFULENI LOCAL MUNICIPALITY

Waste minimization committees ensure that the project of waste minimization is sustained to benefit Local Municipality, community and private sector.

3.3.1 Political Steering Committees

The committee is comprised of GDACE, Director of Stakeholder Participation Sector, Manager, Mayor Office, Public Participation in Speaker's Officers, Coordinator international relations in Mayor's Office and MMC. The committee ensures that there is

full support of the waste minimization strategy, community is reached and that information is disseminated to the community through proper communication strategy.

3.3.2 Technical Steering Committee

The committee is comprised of the Chief Executive Officer, Buyisa-e-Bag, superintendent landfill site management, Manager and assistant managers, Waste and Landfill Management. Their role is to promote awareness, keep record of recycled waste, support the recyclers, write reports and negotiate prices with buyers.

3.3.3 The Local Recyclers

The committee is comprised of Landfill recyclers of Boitsepi and Palm springs landfill site, township groups, conference venues, CBDs, and Buyers like Collect-a-Can, Enviro-Glass, Mamashe and DJ Afpapier. The role of the committee is to ensure that project groups hold meetings to identify their problems and communication with municipality management is maintained for further assistance. The committees empower the recyclers and help municipal employees to concentrate on their core functions of waste removal and disposal (Solid Waste Service Delivery Report 2008).

3.3.4 Alignment of strategies to Sedibeng strategic objectives

The waste operation Plans for 2009 and service delivery budget implementation plans were approved by council and projects related to waste minimization are the following:

- Establishment of mini-refuse dumps in the townships

Community participation is critical to be able to construct the mini-dumps. The Gauteng Department of Agriculture must approve the areas for mini-dumps in terms of the National Environment Management Act 1998 (Act 107 of 1998). The aim of the

established mini-dumps is to encourage recycling at source to save the landfill space and improve environment management.

- Establishment of more buy-back centres

Buy back centres are multi functional structures where community brings reclaimed waste to exchange for cash. Beneficiaries learn entrepreneurial practices and job creation for the unemployed. Management of buyback centres is not a core function of the waste department. The community is therefore trained to run a buy back centre.

- Establish cooperatives for waste minimization project

Waste reclaiming and minimization are concepts which are not fully supported by communities that still believed that Emfuleni Local Municipality should remove refuse and clean illegal dumps. Cooperatives will be able to manage their financial affairs. Few areas in the region have groups that are recycling. These groups are assisted by the municipality by transporting their waste to the buyers. These groups are found in areas such as Palm Springs landfill site. The groups are formalised and organised. They have identity cards to control reclaiming on the site. The municipality truck assists these reclaimers to sell their waste.

- Boitsepi Landfill site

All reclaiming groups on this site are not formalised and they increase daily. It is however appreciated by the municipality that before compaction of the waste volumes on the landfill, most waste is reclaimed.

- Township reclaiming

Townships actively involved are Rustervaal, Tshepiso, Sharpeville, Bophelong, Sebokeng (Zones 3, 6, 7, 12, 13, 14), Evaton West, Eaton Side, Boitumelo, Hostel 5,

Wayside Park, Beverly Hills, Vaal University of Technology. Recycling: Small Farm, Sebokeng (Zone 10, 11, 16), Polokong, Vereeniging. The groups have organised themselves in such a manner that the programme is followed whereby waste is collected on certain days. Buy back initiatives are business recovery recycling initiatives that make recycling accessible to communities and collectors for collection and recycling of plastics and other packaging intervals. Buy back centres contribute towards job creation in the plastic recycling sector whilst contributing towards making plastic recycling officially viable and sustainable. Buyisa-e-Bag, Section 21 Company ensures that there is a direct way of stimulating the recycling industry for providing access for the informal sector to the recycling company. At Emfuleni Local Municipality the Buyisa-e-Bag initiative has been supported such that Evaton and Bophelong have been earmarked for the development of buy-back centres. The programme is augmented by the Evaton Renewal Programme which is a government initiative sponsored by the Gauteng Department of Housing.

- To create formal and informal job opportunities

This objective requires active involvement and participation of the local municipality as land is critical for the establishment of centres. Local entrepreneurs are required to make the process very efficient and user-friendly for prompt and efficient recovery performance.

- To promote collection re-use and recycling of plastic waste and other materials

Target areas are elite and high densely populated townships. Elite areas are very busy to participate in waste minimization activities. The Vanderbijlpark Rotary Club initiated waste minimization project in SW-5 in Vanderbijlpark whereby residents were separating waste in two different refuse bags. A black plastic bag was used for municipality collection services and a blue plastic bag for recyclable material from households. The residents at SW-5 were discouraged by the price increase of blue plastic bags at

supermarkets; they therefore abandoned the purchase of blue plastic bags. Currently the residents use any type of plastic bags (Vanderbijlpark Rotary Club: 2006).

- To address litter and waste problems for a clean habitable environment

This objective can be achieved through implementation of Solid Waste Management By-laws available at Emfuleni Local Municipality. The Gauteng department of Agriculture, Conservation and Environment (GDACE) has an anti-litter campaign namely, 'Cleaner Gauteng by 2010 and beyond'. This programme is implemented by Gauteng Metros, Districts and Local Municipality. The aim of the campaign is to promote awareness and education on public participation and waste minimization to improve environmental management.

- To create partnerships with local entrepreneurs, local municipalities, recycling industries, provincial and local governments

The objective supports Sedibeng District Municipality Growth and Development Strategy, provincial clean and green campaign Bontle-Ke-Botho and National Environment: Waste Management Bill, 2007.

- To ensure sustainability by capacity building including education and training of participants

Knowledge and communication management is important if the project managers expect the community to be part of the project. Communication strategy must be clearly communicated to the stakeholders. The speaker's office of Emfuleni Local Municipality is charged with responsibilities to ensure maximum stakeholder communication. Private companies and landfill site managers have training programmes for the community development especially in the field of waste minimization. Below the 'SDBIPS' and Sedibeng Strategic Objectives are tabled:

Department: Waste and Landfill management Service Delivery Budget Implementation Plans 08/09
 Table 3.1 Waste Management Programme: Waste Minimization Project

Local Government Agenda Key Performance area	Emfuleni Local Municipality Strategic Objective	Cluster Strategic Objective	IDP alignment	Ward	Project	Measurable Objective	Key Performance indicator	Annual Target		Quarter 1 July – September 08	Quarter 2 October – December 08	Quarter 3 January – March 09	Quarter 4 April – June 09
								Rand	Planned				
Municipal transformation and organisational development	Good governance and institutional capacity	Waste Minimization	WM – 38	All Wards	Establishment of transfer stations	Establish transfer and collection stations	Number of transfer stations established	Rand	Planned				
									Achieved				
								Unit	Planned 3			1	2
									Achieved				
			WM – 13	All Wards	Establishment of recycling centre	Establish recycling centre	Number of recycling centres established	Rand	Planned				
									Achieved				
								Unit	Planned 2			1	1
									Achieved				
			WM – 27&28	All wards	Establishment of chipping and composting facility	Erect Chipping and composting facility	Chipping and composting facility established and operational	Rand	Planned 5million				Multi year project
									Achieved				
								Unit	Planned				
									Achieved				
					Total Funding			R5000 000					

Extracted from SDBIPs of Solid Waste Department 08/09 Emfuleni Local Municipality

Table 3.2 Sedibeng Waste Management Plan

Objective	Targets	Projects	Responsibilities	Funding	Time Frames
The quality of life of citizens in the Sedibeng region is enhanced through improved waste management practices and the creation of waste management related jobs.	Reduce waste generation by 50% and waste disposal by 25% by 2012 (Form Polokwane declaration)	Support development of a series of revised integrated waste management plan for local municipalities in the region through the development of the following: <ul style="list-style-type: none"> - Waste minimization action plan - Recycling and reuse pilot projects to look at for example used tires - waste information management system - industrial waste exchange - development of air space management strategy for the region. 	Sedibeng District Municipality and local municipalities will be lead agents. Department of Environmental Affairs and Tourism, Gauteng Department of Agriculture Conservation and Environment will support the project.	Funding will be from Central Energy Fund and DANIDA programmes.	Draft integrated waste management plans to be completed by end of 2009

Extracted from Sedibeng District Municipality Development and Growth Strategy – Environment Plan of Action (EPoA October 2007)

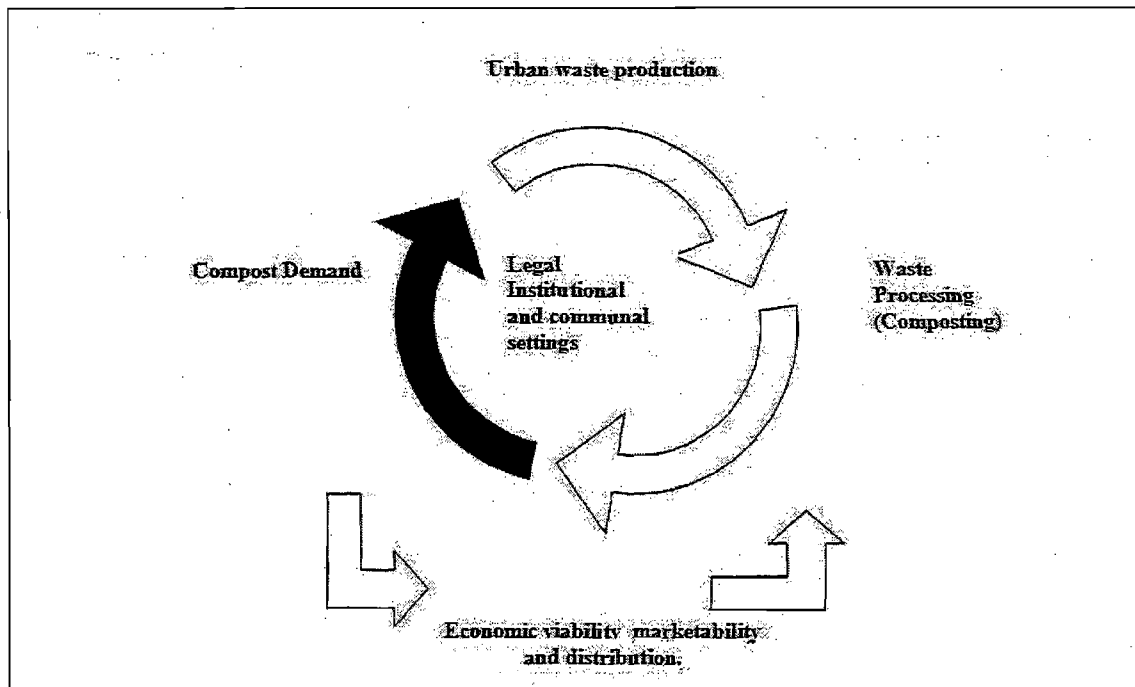
Sedibeng District and Emfuleni Local Municipality have common understanding of the need to improve the environment and human settlement. It is acknowledged that population increase due to rural – urban drift is the main obstacle in the attainment of the measurable objectives. According to Sujauddin, Huda and Hoque (2008: 1688) one of the directly related consequences of population growth is the increase in waste generation. The authors mention that in Chittagong City of Bangladesh migration created an unplanned urbanization and slum development leading to the city producing a lot of unmanageable quantities of solid waste. This became a concern for the Bangladesh government because solid waste degrades the urban environment and places a serious treat to the natural resources with consequent holding back of equitable sustainable development (Sujauddin *et al* 2008: 1688).

City corporations were tried but also failed to manage solid waste in highly densely populated areas because of lack of financial support and willingness to pay (WTP). This is experienced at Emfuleni Local Municipality as Mittal Steel and other companies have drawn people from rural areas to seek employment in the region. The municipality cannot cope with the growing demand owing to insufficient manpower and material. This results in unhygienic and filthy living conditions in business districts and townships.

The aim of Emfuleni Local Municipality in promoting waste minimization is to create entrepreneurs and job opportunities. In establishing composting facility, farmers will pay for compost as a resource to improve food productivity in their land in the region. Danso, Dreschel, Fialor and Giordano (2006: 1400) identified urban and peri-urban farmers who specialise in high value crops for urban consumption and export. Chemicals were not used as they contaminate the land and organics from composting were most favoured in food production. These authors identified a composting loop that determines demand for the use of composting in farming areas. This can be applied in any local government setting and community participation project. Sedibeng District and Emfuleni Local Municipalities are positive in the waste minimization strategies that composting facilities will benefit Kamaland/ Indali Agricultural project and other emerging local farmers. Tree- trunks will no longer be deposited on landfill sites to reduce airspace which is

much needed for other types of waste. Establishment of composting and chipping facility is underway and budget has been included in the 08/ 09 Integrated Development Plans (IDPs). Re- use and composting loop is presented below:

Figure 3.1 Composting Loop



Extracted from Danso *et al* (2006:1401)

Current buy-back centres are not properly co-ordinated. The reason is that funding is commonly not available to sustain the project. This discourages community to sustain the facility and therefore sell directly to Vanderbilpark and Vereeniging buyers.

3.4 Extent of waste minimization at Emfuleni Local Municipality

A comprehensive Environmental Management System – ISO 14001 has average figures of weekly recycling in areas and these are presented monthly in progress reports:

Coke Bottles = 234m3

Plastic = 135m3

Milk Bottles = 223m3

Poly Prop = 19m3
Card box = 330m3
Scrap = 20m3

The figures reflect that 6524kg of material converted to tonnes is equivalent to six tonnes of waste which is not deposited to landfill. This number has to be increased in order to achieve Polokwane Declaration targets mentioned above (Landfill Report August 08).

Plastic recycling has become as important as managing waste because of increasing cost of plastic disposal as it has poor biodegradability and its disposal on landfill site is becoming undesirable (Samiaton and Garforth 2007: 1891).

Emfuleni recycling groups respond to the high unemployment levels, poverty and deficiencies in municipality waste management system. DreamAfrica Trust erected two Mini- Recycling Facilities (MRFs) to assist Bophelong Extension 1. residents to reduce illegal dumping as well as sustaining environment management. Twelve community members were trained by Waste Department on separation of cans; bottle; plastic and cardboard. Municipality offers assistance by transporting separated waste to the buyers to cut cost of private transport owners. This encourages reclaimers to be active in waste minimization and see recycling as poverty alleviating project.

The significance of this project is that it provides some insights into public participation issues regarding waste minimization at Emfuleni Local Municipality. Community members are encouraged to collect recyclables and deliver them to the mini- recycling facilities. When sorting of waste is completed, unwanted waste is stored in the skip bins for collection by municipal skip truck and deposited on local landfill site.

This project is in line with Jozini Integrated Waste Management Project in KwaZulu-Natal. Awareness campaigns were conducted to encourage the Jozini community to recycle and separate waste at source. In order to fully participate in waste minimization significant support was given to community. Twenty people were trained to perform waste sorting; make craft out of waste material; composting and business skills (Mbanjwa 2005: 29).

There are international municipalities like Eindhoven in Netherlands and Section 21 companies for instance Buyisa – e –Bag that are interested to assist Emfuleni Local Municipality to recycle at source. The challenge one faces is availability of land to establish buy- back or recycling centres for waste sorting. Intensive education and training is important to empower informal collectors and other interested groups in hotels and conference centres to be champions of entrepreneurial, sorting, financial and life skills (Mbanjwa 2005: 30).

All projects have risks that are related to the nature of implementation and evaluation of the project. The analysis of the success and failure of public participation in waste minimization strategies is identified as part of the project and if possible the risks can be minimised. Below is a table showing the probability of the risk occurring and the impact the risk has on the project.

Table 3.3 Certain Risks Associated with Waste Minimization Strategy

Risk Event	Probability			Impact		
	Low	Medium	High	Low	Medium	High
Lack of Community Participation	√					√
Slump in the market in sales of Waste material		√			√	
Lack of transport for recyclers	√			√		
Absence of coordinators		√			√	

Extracted from the presentation of the Head of Internal Audit on 12 May 2008:

Emfuleni Local Municipality

Lack of community participation: the probability will be low because workshops have been conducted. Impact would be high because resources would have been wasted as a result of the community not being involved in the waste minimization process.

Slump in the market in the sales of waste material: the probability would be medium because there will be other companies that buy the recycled material though it may be far from them. The impact will also be medium because there would be an effort that is exerted by the groups.

Lack of transport: probability will be low because people use other means such as wheelbarrows and trolleys, instead of waiting for trucks. The impact is also low because groups use their own discretion.

Absence of coordinators: the probability is medium because there would be no proper coordination of the project. The impact is medium because people will have no information and support from the groups and the municipality.

National Waste Summit that was held at Polokwane in September 2001 highlighted the need for urgent action to reduce, reuse or recycle waste so as to minimize environmental effects. The outcome of the summit was the signing of the Polokwane Declaration. The main goal of the declaration was to stabilise correct waste generation reduce waste disposal by 50% by 2012 and attain zero waste disposal by 2022. This will only be achieved if all local municipalities commit themselves to waste minimization recycling, reuse and diversion of general waste from landfill sites (South Africa Environmental Outlook 2007:254).

3.5. CONCLUSION

Waste minimization is a critical component of Integrated Waste Management Plan of a Municipality and is included in Service Delivery Budget Implementation Plans as a requirement in Integrated Development Plans of Emfuleni Local Municipality. Waste minimization needs community participation and the community must be empowered to ensure that they know what is meant by composting, recycling, re-use and reduction of waste. Sedibeng District Municipality designed Integrated Waste Management Plans to guide its local municipalities in terms of inter governmental relations.

Emfuleni Local Municipality waste minimization strategies are in line with Sedibeng strategic objectives. Roles and responsibilities of the three spheres of government including Sedibeng District Municipality have impact in the waste minimization strategies of Emfuleni Local Municipality in that processes and procedures must be well co-ordinated and be within legal and policy framework. It is recognised that waste minimization is not the core function of the municipality therefore community participation is extremely important so that the goals of waste minimization can be accomplished.

Though there are informal recycling groups at Emfuleni area of jurisdiction, the groups are not sufficient enough to have impact on reduced volumes of waste deposited on landfill sites in order to meet Polokwane Declaration deadlines.

Chapter four will describe empirical study of community participation in waste minimization at Emfuleni Local Municipality.

CHAPTER FOUR

EMPIRICAL STUDY OF COMMUNITY PARTICIPATION IN WASTE MINIMIZATION AT EMFULENI LOCAL MUNICIPALITY

4.1 INTRODUCTION

This chapter analyses the survey conducted to solicit the response of waste officials and the community at Emfuleni Local Municipality regarding waste minimization projects. The aim is to analyse the responses in terms of waste minimization and willingness to participate in the project. Fifty randomly selected households, current recyclers in townships and landfill sites, private companies who are buyers of waste material, Emfuleni Local Municipality and provincial officials were interviewed. Open and close ended questions were prepared. The study used two types of questionnaires, one prepared for officials and one for the community. A similar structure of the questionnaire designed for officials was developed by Lukin and Sharp (2004:55).

4.2 RESEARCH METHODOLOGY

This research examines the extent of public participation and willingness to participate in waste minimization activities. Some quantitative and qualitative research methods were employed in order to enable the researcher to obtain the data to complete the study. Questionnaires were used for structured and unstructured interviews. This type of research was applied to obtain the necessary information.

4.2.1 Quantitative Method

Quantitative method deals with numbers for instance the number of people prepared to participate in waste minimization projects, those who are already engaged in waste

minimization to sustain the project and the number of residents that are prepared to separate waste at source (Mzini 2006: 64). According to Brynard and Hanekom (2006: 37) quantitative methods include techniques such as observation and questionnaires and by counting and measuring objects or people participating, data is produced. Quantitative method was applied in the study in order to measure the reaction of many people to the limited set of questions thereby facilitating comparison and statistical aggregation of the data.

4.2.2 Qualitative Method

Mzini (2006: 64) maintains that qualitative methods concentrate on verbal responses and the approaches are not limited because they do not have the formality. The advantage of the method is that data are obtained in words and therefore first hand information is gathered. The method enables the researcher to obtain adequate data because the language will be relevant to the group and the targeted area. Both the group and the researcher are engaged in two way interaction (Mzini 2006: 63). Brynard and Hanekom (2006: 37) distinguish between qualitative and quantitative research methods. The qualitative method assigns no numbers or counts to the observation while quantitative method compels standardised measures to be used so that the perspective and experience of the people could be placed in categories which are predetermined and to which numbers are allocated. Qualitative method enables the researcher to know the people personally, to see them as they are and to experience their daily struggles when confronted with real life situations. Further, the researcher interprets and describes the action of the people. In community participation study, key informants such as recyclers, assistant managers in waste management and house holders will be interviewed in their areas to obtain information.

In the qualitative research process, the group of people and their way of life are clearly identified. Henning, van Rensburg and Smit (2004: 42) mention that the aim of identifying group of people is to capture typical activities and tools, ways of communication and meaning making. In the study waste officials, current recyclers,

private companies in waste minimization and householders have been identified as participants in waste minimization study. During data capturing, on site gathering is employed. Henning *et al* (2004: 42) maintain that in successful field surveys carried out through ethnographic studies, data may be collected in a few days but the ethnographer needs to spend sufficient time in setting where participants carry out their daily tasks and have a conversation in order to be able to eventually render a valuable description. The researcher visited areas where recycling takes place, offices of Waste officials and identified fifty households so that the information gathered is representative of the population. Henning *et al* (2004: 46) distinguish between traditional qualitative and quantitative study. Traditional qualitative approaches may provide insight into the nature of categories of people whereas quantitative research allows generalized claims to be made about the relations between categories.

Marshall and Rossman (2006: 13) describe qualitative methods as entailing seven sequences as follows:

- The assumption of qualitative approaches such as the characteristics of the community
- The logic of selecting a site, a sample, the participants or any combination of these
- The choice of overall design and data collection method such as questionnaires and interviews
- An acknowledgement of intensive aspects of field work such as choosing the households in an area
- A consideration of ethical issues as entailed in confidentiality and private information
- The resource needs such as the community needs to have waste minimisation facilities
- Attention to the trustworthiness of the overall design that can be replicated by other researchers

In the study, sampling and participants have been determined and during interview confidentiality and anonymity of the respondents were pledged.

4.3 RESEARCH INSTRUMENT

Reliability and validity of data measuring instruments are crucial to scientific research.

4.3.1 Reliability

Reliability is the consistency or “repeatability” of a measurement. It is concerned with the accuracy of the actual measuring instrument or procedure (Throchim 2006: 1). Cresswell (1994: 159) maintains that in research, no study is original therefore the study has a chance of being replicated in another setting. Babbie (2007: 143) defines reliability as the quality of measurement method that suggests that the same data would have been collected each time in repeated observations of the same phenomenon. It is a matter of whether a particular technique applied repeatedly to the same object yields the same results. These definitions of reliability imply that the researcher should have a thorough choice of data collecting instrument so that if one reader decides to follow up on the published research and use the same instrument, results produced should be more or less the same long after it was administered in the previous study. One method to ascertain reliability in getting information from people is to use measures that have proved their reliability in previous research (Babbie 2007:145). Arksey and Knight (1999: 53) commended reliability and point out that it is mainly about trying to reduce interview bias in order to trust that the findings are neither the product of research instrument nor the interviewer’s manipulative techniques and improvisation. The researcher ensured that all informants were asked the same question and were given similar clarification.

4.3.2 Validity

Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. The researcher is concerned with

both internal and external validity. In external validity, this implies the extent to which the results of a study are generalisable. Internal validity refers to the study design, the care taken to conduct measurements and decision concerning what was and was not measured. It also involves what is taken into consideration on alternative explanations for a casual relation explored (Throchim 2006: 1). According to Brynard and Hanekom (2006: 47) validity is the ability of an instrument to achieve or measure what it is supposed to achieve or measure. It also guides researchers as to what data collection procedures and methods are employed in the research study.

4.4 DATA COLLECTION INSTRUMENT

Data collection is a time consuming activity which must be done so as to broaden the people's understanding on community participation and waste minimization and to add new knowledge to existing knowledge. Mzini (2006: 65) refers to data collection instrument as an integral part of all research studies because it constitutes the basic information of a research. Mzini preferred to use interviews through questionnaires so as to obtain the primary data, the questionnaires were prepared to collect own data.

4.4.1 Interviews and questionnaires

Interviews are particularly useful for getting the story behind a participant's experience. The interviewer can pursue in-depth information around the topic. Interviews may be useful as a follow-up to certain respondents to questionnaires for instance to further investigate their responses (McNamara 1999: 1). Interviews are completed by the interviewer based on what the respondent says, they are a far more personal form of research than questionnaires where the interviewer works directly with the respondent. In this way the interviewer has an ample opportunity to ask follow-up questions. Though they are time consuming they are resource intensive. The interviewer is considered as part of the measuring instrument. Informal conversational interview was conducted in order to remain as open and adaptable as possible. General interview guide approach was applied in order that same general areas of information are reflected from each

interviewee and still allow a degree of freedom and adaptability in obtaining the information from the interviewee. The interviewee is given an opportunity to express him/herself and questions are repeated when there is no clarity.

Standardised open ended interview implies that same open ended questions are asked to all interviewees so as to facilitate faster interviews that can be more easily analyzed and compared, for example the current recyclers in their sorting areas. Closed, fixed response interviews refer to a process where all interviewees are asked the same question and asked to choose answers from among the same set of alternatives, for example people may not be interested in waste minimization but may be interested to participate in the future. The interviewer needs to be trained in interviewing processes, organize and rehearse the interviewing (Valenzuela and Shrivastava 2007: 7).

At recycling centres, joint interviews were conducted to determine group willingness to sustain the project. This approach tends to be used in work primarily of a qualitative nature. Arksey and Knights (1999: 76) identify several advantages of joint interviews:

- Joint interviews may establish rapport and atmosphere of confidence more easily
- Can obtain two versions rather than one which may or may not produce a coherent account. The distinct forms of information and knowledge are likely to corroborate and supplement each other. Inconsistencies between perspectives are likely to be missed if one partner is left out of the study and his or her views are inferred from the other's data. For instance, not everybody will need a trolley to start waste minimization or reduction activity.
- The story that emerges may be more complete as interviewees fill each others' gaps and memory lapses.
- The information obtained may be more trustworthy as bias in one account may counter-balance that in the other.
- Researchers may gain insights into the interactions and nature of relationship through verbal and non-verbal modes of communication for instance, it may be possible to witness how groups work together as a collective, negotiate, agree on

issues and influence each other as well as manage disagreements and areas of tension.

Arksey and Knights (1999: 76) also identified disadvantages directly related to joint interviews as follows:

- There is a risk of stirring up antagonism and conflict of interest. For instance, the one that collects is better than the rest of the group.
- Groups may withhold information from the interviewer because they may not trust the level of confidentiality
- Interviewees may not concentrate as well when two people are present

Good questionnaires include clear and concise instruction on how to complete the questionnaire. The researcher should use a simple and direct language, short sentences and well understood basic vocabulary. The researcher should avoid ambiguity which may require clarity and there may be no chance to clarify (Statpac Inc 2008: 1). Ethical issues in qualitative approach must make potential participants aware of various forms of information. Bailey (2007: 17) identified eleven forms of information as follows:

- Participants must know that they are participating in research
- They must know the purpose of the research
- They must know the procedures used during the research
- The risk and benefits of the research includes successful communication with respondents
- Their rights to stop research at anytime and researcher to consider these rights
- Voluntary nature of the research participation because other participants may expect payment, which is not an issue at this moment
- The procedure used to protect confidentiality so as to protect the integrity of the respondent
- The group's right to have all questions answered at anytime because respondents must make a meaningful contribution to the study
- Other information relevant to participants and the information should be disseminated to avoid suspicion
- They must know what is required of them if they consent to participate

- If they withdraw there will be no foreseeable consequences

The researcher committed herself to consider these issues when conducting questionnaires to waste officials, community and private sector waste participants.

4.4.2 Sampling

Mzini (2006: 65) defines sampling as a technical accounting device to rationalize the collection of information and to choose in an appropriate way the restricted set of persons from which the actual information will be drawn. Sample population was chosen for the purpose of the study and to save on cost and time spent on the field survey and traveling. The empirical study was conducted within the area of Emfuleni Local Municipality. Systematic sampling is sometimes called interval sampling because there is a gap between each selection. Fifty householders were interviewed and every fifth house had an opportunity to be included in the study. The study also included judgmental sampling because recyclers and waste management officials were readily available to respond on their current involvement in waste minimization, how it can be improved and sustained (Australian Bureau of Statistics 2004: 1).

Bophelong streets are comprised of odd and even household numbers. Due to time limitation of the study and sample size of fifty households, the procedure to be followed was a simple sampling when a fifth unit of analysis was selected. In the household, age and sex demographic quota were solicited. Teens under the age of seventeen were not interviewed as they may not be so much involved in the household waste sorting exercise, as they are involved in school work and because adults are custodians of groceries at home. Good sampling reduces the chances of the researcher picking the wrong people or unit of analysis for the study. In addition, good sampling reduces error and maximizes validity (Balnaves and Caputi 2001: 92).

Field surveys were conducted in the community of Bophelong Extension 13. Similar approach employed by McCaston (200: 2) was undertaken. McCasten cites various tools to be used in description of research findings and these were also considered:

- **Open-ended questionnaires**

The questionnaires were standardised so that the information gathered is consistent. Two types of questionnaires were prepared for officials and the community (**Annexure B and C**)

- **Interviews**

Interviews were conducted to fifty households in Bophelong Extension 13; officials; private waste buyers and current recyclers.

- **Sampling procedure**

Every fifth house was interviewed; nine officials in waste management and twenty current recyclers were interviewed in their groupings (where they are working) at Emfuleni Local Municipality. Fourteen groups in different areas volunteered to be part of the study. Small sample was used for the study on public participation in order to report on the findings.

- **Process and procedure**

The researcher requested to interview the head of the family, a mother or father, or an adult in the house. Total number of occupants in the house was taken into consideration. The size of the family will determine the extent of consumption and waste generation. Waste officials interviewed as target group are capable of facilitating public participation. Current recyclers would encourage those who are not involved in recycling to be part of the project, their existence would mean peer education especially amongst women. Buyers are supporters of waste minimization and therefore contribute to sustainable project implementation.

4.4.3 Community Profile of Bophelong

Bophelong has 17 extensions that geographically divide the area. Bophelong extension 13 is one of the areas where research was conducted. A map was used and Bophelong

Extension 13 is characterized by a triangular presentation on an aerial view. It is bound by Mandela Road in the East forming the base of the triangle. Louis Rus Road in the Northern side and defunct airport land on the West. On the Southern area of extension 13, there is a huge storm water drain which extends towards the airfield in a slanting fashion, causing Extension 13 land to taper sharply and form the apex of the triangle.

The community is seriously affected by the heavy rains and storms. Water drenches the roads and floods the houses as the area is in a low lying land geographically. Refuse removal services are affected because streets are graveled and the area has clay soil. The community occupied the houses in 1998 when ten thousand RDP houses were handed over to the then Western Vaal Metropolitan Local Municipality by the developer. Householders are mainly young couples, single parents and a few old citizens who stay with grandchildren as mothers go to work. The community in the area lives in poverty as most of the people are not working according to the conversation finding which is not related to the study at hand.

4.5 CONDUCTING INTERVIEWS USING QUESTIONNAIRES

Three types of interviews were conducted to householders, recycling groups and municipality officials.

4.5.1 Interviews conducted to householders

Fifty householders were visited during Saturdays, the day that was ideal as the families were at home occupied with household and garden chores. Questionnaires and interviews were directed to a mother or father or an adult person in the household.

Family Profile

38 percent in the household were three or less in number, whilst 62 percent were four to seven in number.

Question B1. Participants were asked what kind of minimization activities they were engaged in. Those involved in recycling activities constituted 44 percent; 42 percent not engaged in recycling activities; 2 percent were involved in other waste minimization activities; 14 percent had no responses on any involvement.

Question B2. Participants were asked on the ways in which they currently participated in waste minimization. Those who said they do not participate in B1, gave different reasons in B2 such as they did not have time, they woke up early and come back from work late in the evening, and lack of knowledge.

Question B3 Members were asked if they have waste collection services by the Municipality.

All respondents said that they have refuse collection services

Question B4 and B5. Householders were asked on factors that would stimulate their participation and the kind of services that would suit them best.

98 percent of the respondents said that they would support all waste minimization activities listed. Only 1 householder said that he will not be able to support the municipality.

Question B6. The question was asked if the householders would form part of waste minimization project if they were given adequate information.

All respondents said that they would participate and form part of the project if given enough information.

Question B7. The householders were asked on the kind of support they would like from the Municipality such as financial support, waste minimization education and awareness, capacity building programmes, putting infrastructure that aids waste minimization and establishing composting and chipping facilities. All respondents said that they would like to have all that is listed.

Question B8 wanted to know if householders would support municipality if they were provided with money to initiate community based projects. All of them agreed to support the municipality.

Question B9. The householders were asked on constraints that prevent them from participating and supporting waste minimization. These are: lack of money, lack of awareness about waste issues, lack of infrastructure to put their recycled waste, lack of support from municipality and lack of time. All the respondents said that all that is listed are constraints.

4.5.2 Interviews conducted to recycling groups

Same questionnaires as householders were conducted to recycling groups. Fourteen groups were involved in the study. Smallest group had four members in their group. The biggest group had 214 members.

- **Question B2.** Two groups were not involved in any activity listed but recycled at the landfill site. One group was involved in all waste minimization activities. Three groups put the papers out as part of waste collection programme. There were seven groups that were involved in four activities except for organic waste.
- **Question B3.** All of the groups agreed that there are collection services that are rendered by the Municipality.
- **Question B4.** All the groups agreed that they would be involved in waste minimization except making compost.
- **Question B5.** When asked on the kind of service that would suit them best, eleven groups said that their current method works best; that is recycling at source. Eight groups said that all the methods would suit them best. Three groups said that two services would suit them best, namely, putting waste into plastic bags and someone

collects it on their sidewalk and would also prefer putting their waste into plastic bags and put it in the waste container in the street.

- **Question B6.** Groups said 'yes' to all of the responses
- **Question B7.** None of the groups indicated that they would like financial support from the municipality. All the groups indicated, however that they would like to have education and awareness on waste minimization. Seven groups indicated that they were not sure about capacity building programme, infrastructure and composting facilities as support needed in order to participate in waste initiatives. Five groups indicated that they would like to have capacity building programmes and infrastructure but they were not sure of the establishment of composting and chipping facility. Only one group indicated that they would like types of support listed except for financial support.
- **Question B8.** All groups agreed and indicated 'yes' to the question
- **Question B9.** There were different responses. One of the constraints and challenges indicated by the group was that prices drop regularly instead of rising up. Thirteen groups indicated lack of information was a constraint, while six groups indicated that lack of infrastructure to put recycled waste was a constraint

4.5.3 Questionnaire for Waste Management Officials and Provincial Stakeholder Engagement Unit

The purpose of the questionnaire to the officials was to establish their ability to engage the community in waste management issues including waste minimization. Questions A1 to A4 required the respondents to rank each response, starting from 1 to the highest number depending on the question. The formula that was used to obtain a result was the following:

The number of respondents (N) was multiplied by the highest number of the ranking (1⁵) for each question (from A1 to A4). The product was then used as a denominator. The numerator was the sum (Σ) of each ranked response (x) by the nine officials.

$$\text{So; } \Sigma x / (N * 1^5)$$

The results were converted into a percentage as this would simplify the analysis of data.

$$\text{So; } \Sigma x / (N * 1^5) / 0.01$$

The closer the result to a 100 percent, the least important it was and farther away from 100 percent, the more important was the factor (“**Annexure D**”).

- **Question A1.** Officials were asked to rank stimulating participative initiatives, where 1 was ranked as most important and 7 the least important. This was done in order to obtain the significance of the response to the question. In other words, how important are some of the factors in stimulating public participation, for instance individual influential members; ruling party policy; standards; departmental projects; public community demand; local government network and central government. It was found that the ruling party policy was the least important (69.84%) whereas departmental projects were found to be most important (19.05%).
- **Question A2.** In response to the purpose of waste minimization; statutory requirement was least important (44.4%) and increasing awareness was most important with 18.5%.
- **Question A3.** Problems in implementing public participation initiatives were identified and least important was lack of officer support which was 94.4% and most important was lack of councilor support with 25.93%.
- **Question A4.** Main benefits of community participation were listed and the least important was better policy making (71%) and most important was improvement in service delivery (35.56%)
- **Question A5.** Negative effects of public participation on the work of municipality were identified. Four out of nine respondents believed that public participation raised public expectations which authorities cannot fulfill. The other four respondents did not identify this factor as influencing work of municipality negatively. One respondent was uncertain. Five respondents said that public participation slows the progress,

whereas six agreed that public participation places an additional burden on officials. Five respondents believed that views of dominant group may be captured and they are not representatives of the remainder of the community. Two respondents were uncertain and two did not agree that dominant groups can influence public participation. Six respondents believed that public participation influences disagreements and conflicts; and three people did not agree. Five people agreed that public participation leads to consultation overload and four people did not agree.

- **Question A6.** Overall impact of public participation on final decision making was evaluated. Seven officials believed that it was fairly influential, one said that it was **not** influential at all, and one believed that it was occasionally influential.
- **Question A7.** Participants were asked about circumstances where they would avoid public participation. Four respondents said that there are issues whereby they would not involve the community. Four people agreed on confidential issues, one on commercially sensitive issues, three on issues requiring quick decisions, two agreed on issues that might raise fears, three on internal management issues and one on activities prescribed by state.
- **Question A8.** The question wanted to know whether or not the Municipality failed to involve social groups. Seven respondents believed that the Municipality did not fail to involve social groups, two listed groups that were not involved namely, young people, ethnic minority, business people, council tenants, private sector tenants, single parents, women and unemployed people.
- **Question A9.** Participants were asked about the schemes which the Municipality is involved in. Seven agreed on schemes such as: Buyisa-e-Bag; Twinning with Eindhoven Municipality; Dream Africa Trust; DJ Afpapier; Vanderbijlpark Rotary Club; Collect-a-Can; Glass Consol; Nampak; Mondi Recycling and Evaton Renewal Programme.
- **Question A10.** Issues left out in the questions were identified by four respondents, these are; Municipality programmes such as Restore Dignity programme; Ward Councillors not involved enough; Evaluation on the strength of public participation programme and targeting women in large numbers.

4.6 CONCLUSION

The interviews and questionnaires designed for the community and recyclers revealed that the community is prepared to be part of the government initiatives in waste minimization. The Emfuleni Local Municipality is required to support the community by way of intensive education and awareness, design waste minimization programmes, establish facilities for reclaimed waste. It was also identified that though people are prepared to be part of waste minimization programmes, they are less interested in composting because they do not know how it is done, therefore the Municipality must develop a recycling and composting plan so that separated organic waste should not be mixed with the rest of the unwanted waste. Questionnaires designed for officials revealed that departmental programmes stimulate public participation. Waste management officials need to work hard to involve the community as they have been aware of the benefits of public participation in waste minimization. In the next chapter, findings, conclusions and recommendations will be discussed.

CHAPTER FIVE

FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

The aim of chapter four was to investigate the level of community participation and willingness of the community to participate in waste minimization in the area of Emfuleni Local Municipality. The empirical research was conducted to determine if community will engage in waste minimization project if given sufficient information and necessary support required to participate in waste minimization. This chapter reviews the previous chapters and will outline the findings, recommendations and conclusion of this study.

5.2 REALIZATION OF THE OBJECTIVES OF THE STUDY

The first objective of the study was to give a theoretical exposition of the concepts, community participation and waste minimization. To accomplish this objective, the theoretical exposition of community participation and waste minimization was provided in Chapter two.

The second objective was to highlight waste minimization strategies at Emfuleni Local Municipality. Chapter three emphasized the importance of community participation in Waste Minimization and promotion of inter-governmental relations with Sedibeng District Municipality, Provincial and National government, to ensure that the community is brought on board from initial stages to be able to participate meaningfully.

Thirdly, the study intended to discover the willingness of the community to participate in waste minimization within the municipality. Chapter four highlighted this, as the community was willing to be part of municipality projects in waste minimization and will play a major role to reduce, recycle and reuse waste.

The fourth objective of the study was to identify ways to encourage the community to be able to participate in waste minimization. In Chapter three, it was discovered that Emfuleni Local and Sedibeng District Municipalities must design waste management plans so as to be able to guide the community in waste minimization strategies. It was also discovered that community needs empowerment on composting and recycling. They must be informed on how to separate waste at source.

The last objective of the study was to determine the needs of the community so that they participate in waste minimization activities. In Chapter four, the priority needs of the community that were identified are as follows: education and awareness on waste minimization and establishment of infrastructure to store reclaimed waste.

5.3 TESTING THE HYPOTHESIS

The aim of this study was also to test the preliminary statement that was made in Chapter one, namely that:

- Effective waste minimization strategy depends on active community participation and partnership, a process the Emfuleni Local Municipality has not fully activated.

Findings from the conducted literature review and empirical research support the stated preliminary statement. Community participation is necessary for sustainable waste minimization strategies to reduce waste generation at source; improve environmental management and save landfill airspace.

5.4 FINDINGS

The research study showed that only 44 percent of the community is involved in waste minimization activities. This is a challenge for the municipality in the sense that the legal framework requires all municipalities to design programmes by which the community is

educated to minimize waste generation. It surfaced that people do not compost garden refuse and tree trimmings because they do not know how it is done.

Emfuleni residents need to be involved and be aware of composting activities as they need to plant vegetables in their yards. The Gauteng Department of Agriculture, Conservation and Environment should take a leading role in educating Emfuleni Local Municipality and disseminate information to the people on food security gardens using composted waste. Though the yards in Bophelong are small, the community can be taught other ways of growing vegetables, such as using drums.

Recycling groups must develop appropriate environmental plans, they must also be taught on how to run finances and recycling projects to ensure project viability. There are programmes at Emfuleni Local Municipality such as restore dignity campaign and vehicles purchased from Bontle-ke-Botho awards to assist recyclers with transport. One cannot suggest that government department is not doing enough to reach Emfuleni Local Municipality residents.

Research participants all indicated that they have a weekly waste collection service but they do not separate waste because they have no time and facilities to dispose their separated waste, this means that the municipality must design user-friendly guidelines so that all members of the family including children must be informed on reuse, recycling and waste reduction. The house members need to separate at source so that waste does not get transported to the landfill site where it will be compacted, in the long term decompose and increase gas emissions. The householders will play a major role in reducing green house gas emissions to the atmosphere. This will also contribute to the South African government's assertion of the Kyoto Protocol on World climate change. The community will be participating in Clean Development Mechanism (CDM) projects because food waste, tree trimmings and garden waste will not be deposited on the landfill site.

Eleven recycling groups indicated that they would rather stick to their current method which is recycling at source. These groups can be used to show other members of the community how to recycle at source and this will be less costly to the municipality in rendering awareness and education campaigns. The waste officials indicated that departmental programmes would stimulate community participation. Waste minimization is part of the Service Delivery Budget Implementation Plans of the waste and landfill department and is included in the Integrated Development Plans of the Municipality. Officials therefore need to go back to the planning table to identify strategies such as environmental awareness and how to extend landfill lifespan, community involvement and promote community participation.

It is evident that there is lack of awareness and education. There is lack of knowledge on how to minimize waste, lack of human resource skills and there are challenges in community participation in waste minimization. There is lack of funding for the community to initiate projects and attend to community meeting. There is lack of infrastructure to take the recycled waste for storage. There are no containers and storages for separation at source and previously disadvantaged areas do not have transfer stations.

5.5 RECOMMENDATIONS

The following recommendations are offered for management action:

- Increase training and capacity building within the Municipality on interpreting *Waste Management Bill 2007* particularly at local level. Education and awareness provided aims at informing the public of what the bill is all about and what the implications are. Programmes and seminars can be presented by expert speakers. The Emfuleni Local Municipality and the Department of Waste and Landfill Management should draw an awareness and education programme for communities, private sector, current recyclers, non-governmental organizations, schools, religious bodies and waste buyers.

- The municipality to run public awareness campaigns on the rights and responsibilities under the *National Environmental Management Act 1998 (Act No107 of 1998)*. Clear regulations and rules based on *NEMA* allow and persuade the community to recycle. Initial informational mailings given to all participants, is mandatory. This can be done through monthly water and lights accounts. The ward committees can be assigned to distinct neighborhoods to encourage separation of organic waste so as to increase the level of participation.
- The community; NGOs and CBOs must agree on a strategic response to the Executive Mayor and communication should be regular and based on communication strategy. A communication plan must be drawn which includes politicians, government officials at Local; Provincial and National level. A well prepared communication plan will ensure that all stakeholders are kept on board.
- The Emfuleni Local Municipality needs to provide technical assistance whether it be tools, transportation or establishment of facility to sustain waste minimization strategies. The community is to be aware that location of a plant should take into account environment; pollution and safety factors such as structural stability.
- Communities should form partnerships with CBOs and assist them to identify their own strengths, weaknesses, opportunities and threats. This will promote sustainable development in the community on issues of waste minimization. Recycling programmes should be commercially promoted by private and public authorities.
- Municipality officials are to liaise with government and local communities and act as mediators to ensure waste minimization takes place in the area to implement policies as a collective within good governance principles
- Officials are to work in collaboration with other government institutions to ensure progress and to avoid duplication for instance Department of Agriculture, Conservation and Environment and Department of Environmental Affairs and

Tourism; thus providing solidarity and networking. The officials can discuss the formulation of networks that will allow continual updating of activities by the various NGOs within the community. Businesses or institutions with commitment to recycle would separate the greatest quantity of clean organic waste with minimal training, for instance hotels and conference centres. Multiple training sessions are recommended for businesses with numerous employees responsible for waste management. Leak-proof dumpsters are recommended for outside storage of organic waste. Leak-proof, rear-loading packer truck is recommended for collection from commercial accounts. More than once a week refuse collection is recommended for hospitals especially in summer.

- The municipality to strive for the establishment of cooperatives seeing that waste minimization is not a core function of waste removal and disposal duties of the municipality. It is a means to reduce generated waste by consumers and prevent recyclable waste ending on landfill sites. The Local Economic Development Department of the Emfuleni Local Municipality needs to be involved in the establishment of cooperatives. This is value adding in the sphere of waste minimization in that the community will see waste recycling as an opportunity to develop entrepreneurial skills.
- The waste minimization committees at Local, Provincial and National level must identify issues to be addressed by both the government and the community so that they set objectives and establish strategies for engagement
- The municipality must make community participation a priority in solid waste management including waste minimization so that there is visible inter-dependence among various factors which are often overlooked when making a decision. In this way, the Municipality will be playing a role in prevention and reduction of waste production. Residential routes with high recycling rates are likely to have the best participation rates for instance Vanderbijlpark Vaal Mall, Emerald Casino and Hotels.

- Waste buyers should be good negotiators with manufactures to ensure that recycled product prices should be low compared to newly imported or produced material to encourage the construction industry in applying recycled products. This will in turn assist waste reclaimers to continually benefit in waste reclaiming activities. The Municipality to make every effort to maintain or decrease solid waste disposal costs for residents or businesses that separate waste.
- The Municipality must ensure sustainable management of land by designing programmes that involve community to maintain and sustain organic matter in the soil at satisfactory level. Soil organic matter has been considered as the elixir of plant life and is an essential determinant of erosion resistance, soil fertility and goes well beyond management of climate change. Recovery of soil organic matter in poor and degraded soil through effective soil and waste management is essential as this will have positive effect on climate change, protect and improve the environment and guarantee sustainability of agricultural system.
- The Municipality must establish a composting facility so that compost products can increase and landfill space is preserved. The community will be encouraged to deposit their garden waste, grass, trees and leaves at the facility. This initiative will promote job creation as local community will be considered to operate the facility. The community should be trained in composting. Every home should have an organic waste collection bin. Food security gardens are promoted and organic waste is composted to promote better crops. Facility operator should be knowledgeable in areas of composting and material handling. A slow-speed shredder is recommended for grinding.
- The Municipality must appoint coordinators of waste minimization projects for Sebokeng, Vereeniging and Vanderbijlpark Depot of Waste and Landfill Management. Information to the community will flow continuously and community will be able to attend to their identified needs.

- Communities should be introduced to the aims and objectives of the waste minimization and be consulted on how they would like to participate if they are beneficiaries of government initiative or any other community based waste management initiative. The advantage of this step is that planning and implementation of government project becomes easier when the community is involved and participates in the projects. At Emfuleni Local Municipality, consultation could be done through the Speaker's Office public participation section, at provincial level through the Stakeholder Engagement Department of Agriculture, Conservation and Environment. Emfuleni Local Municipality makes use of Ward Committees to reach communities. They have the ability to do door-to-door campaigns as they have identity for their portfolio.

- Establish more buy-back, drop-off and mini-recycling centres. These facilities will enhance the waste minimization initiatives.

- Promote maximum community participation through information management. The community should be trained on the required skills if they are expected to participate. Local, Provincial and National government should prepare guidelines to assist the community to implement waste minimization initiatives. This should be a simple user-friendly document. Training content may contain the following:

- **Source separation guides**

The essence of source separation is that waste is separated from the start when one throws it away. Organic waste consists of left-overs, fruit and vegetable peels, coffee filters, teabags, bread snacks, etc. Communities should be given an opportunity to decide which type of container they would like to use for organic waste. Complex accommodation such as North West University, Hostels, town houses, boarding schools and conference centres should have separation initiatives. The municipality black bag should be separate from recyclable usable material. If containers are used they should be labeled "tin", "bottle", "plastic".

○ **Plastic recycling**

The staff and recyclers must be trained on plastic recycling to know the difference between reusable (thermoplast) and unusable plastics (thermostat). Care should be taken to avoid irresponsible disposal of hazardous waste which may contaminate and harm workers' health.

○ **Paper recycling**

Office paper should be printed back to back, and if wasted it should be deposited into a provided container. Confidential material should be shredded. Manual sorting of paper should be done at buy-back centres.

- The Municipality should be able to source funding from its own coffers. The Municipality can liaise with the private sector to provide support to implement different projects such as purchasing of bailer machines and scales.
- The Municipality should sponsor more recycling trucks to assist community to transport recyclable waste to buyers. This will encourage the community to participate in waste minimization projects.

5.6 CONCLUSION

The aim of this chapter was to outline the findings, recommendation and conclusions of this study. Findings of the research were given in qualitative nature in order to bring about a clear picture on the knowledge and attitudes of participants towards waste minimization. It was evident from the findings drawn that very few people are participating in waste minimisation and the number of participants must be improved and elevated if waste minimisation is an issue in terms of legislation. The waste officials need to be aware that involving the community is a criterion in good governance. It was noted that proper channels of communication must be followed by all officials and support must be given to the community for meaningful participation in waste minimization activities.

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Annexure A

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Notice is given of intention to carry out the Scoping and Environmental Impact Assessment procedure in terms of Section 24(5) of the National Environmental Management Act, (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, (R385 and R387 of 2006). The proposed activity involves:

Proponent: The Central Energy Fund (Pty) Ltd (CEF).
Proposed Activity: Extraction and utilisation of landfill gas (LFG), and the use of the recovered gas to produce electricity from 17 landfill sites situated in the City of Cape Town, Emfuleni Local Municipality, and the City of Tshwane Metropolitan Municipality (see list overleaf).

The project objectives are to improve energy efficiency, and reduce greenhouse gas (GHG) emissions to the atmosphere. It is anticipated that the activities will collectively generate up to 24 megawatts of electricity (subject to feasibility studies), which will offset emissions from coal fired generation plants and provide a further reduction of GHGs.

To receive further information on the project in the form of a Background Information Document, and to participate in the environmental impact assessment process, please submit your details and interest in the project to the contact person given overleaf within 14 days of this publication.

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Annexure A

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To receive further information on the project in the form of a Background Information Document, and to participate in the environmental impact assessment process, please submit your details and interest in the project to the contact person given overleaf within 14 days of this publication.

Project Locations

Region	Landfill Name (Suburb)
Cape Town	Belville (Belville South)
	Brackenfell (Brackenfell)
	Coastal Park (Muizenberg)
	Faure (Blue Downs)
	Swartklip (Khayelitsha)
	Vissershok (Morning Star)
Emfuleni	Zuurfontein (Vanderbijlpark)
	Boitshope (Vanderbijlpark)
	Waldrift (Vanderbijlpark)
Tshwane	Derdepoort (???)
	Garankuwa (???)
	Garstkloof (???)
	Hatherley (???)
	Kwaggasrand (???)
	Onderstepoort (???)
	Soshanguve (???)
	Valhala - (???)



Public Participation Contact Details:

Janna Bedford-Owen
 Tel: (011) 361 1380
 Fax: (011) 361 1381
 Email: national@wspgroup.co.za
 PO Box 5384, Rivonia, 2128, Gauteng



Annexure A



NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Notice is given of intention to carry out the Scoping and Environmental Impact Assessment (EIA) procedure in terms of Section 24(5) of the National Environmental Management Act, (Act No. 107 of 1998), as amended, and the EIA Regulations (R385 and R387 of 2006) for the following proposed activity:

Proponent: The Central Energy Fund (Pty) Ltd. (CEF).
Activity: Extraction and utilisation of landfill gas (LFG), and the use of the recovered gas to produce electricity from 17 landfill sites situated in the City of Cape Town, Emfuleni Local Municipality, and the City of Tshwane Metropolitan Municipality.

Project Overview

The proposed activities are in line with the South African Government's 2002 accession of the Kyoto Protocol on World Climate Change, and its provision for the implementation of Clean Development Mechanism (CDM) projects. The project objectives are to improve energy efficiency, and reduce greenhouse gas (GHG) emissions to the atmosphere. It is anticipated that the activities will collectively generate up to 24 megawatts of electricity (subject to feasibility studies), which will offset emissions from coal fired generation plants and provide a further reduction of GHGs.

Activity Locations

Cape Town: Belville (Belville South)
Brackenfell (Brackenfell)
Coastal Park (Muizenberg)
Faure (Blue Downs)
Swartklip (Khayelitsha)
Vissershok (Morning Star)

Emfuleni: Zuurfontein (Vanderbijlpark)
Boitshepe Vanderbijlpark)
Waldrift (Vanderbijlpark)

Tshwane: Derdepoort (???)
Garankuwa (???)
Garstkloof (???)
Hatherley (???)
Kwaggasrand (???)
Onderstepoort (???)
Soshanguve (???)
Valhala - (???)

Details of Public Participation Process:

CEF has appointed WSP Environment & Energy as the independent environmental assessment practitioner, to undertake the EIA process and associated public participation. To receive further information on the project in the form of a Background Information Document, and to participate in the EIA process, please submit your details to the contact person given below within 14 days of this publication.

Public Participation Contact Details:
Janna Bedford-Owen
Tel: (011) 361 1200

Annexure A

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

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To receive further information on the project in the form of a Background Information Document, and to participate in the environmental impact assessment process, please submit your details and interest in the project to the contact person given overleaf within 14 days of this publication.

Project Locations

Region	Landfill Name (Suburb)
Cape Town	Belville (Belville South)
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Emfuleni	Zuurfontein (Vanderbijlpark)
	Boitshepe (Vanderbijlpark)
	Waldrift
	(Vanderbijlpark)



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Annexure B

2. QUESTIONNAIRE STRUCTURE.

2.1 Questionnaire designed for officials in the employment of Emfuleni Local Municipality, Provincial Stakeholder Engagement Unit and Private Sector.

While it is understood that it is difficult to generalize across a broad range of initiatives, here the researcher is interested in the purpose and impact of Emfuleni Local Municipality general approach to public participation in waste minimization. Public participation is an initiative which seeks to involve general public members in the activities of Emfuleni Local Municipality Waste Management. Information requested below will be treated with confidentiality.

Name (Optional).....

Occupation.....

Position Held.....

Years of Waste Management experience.....

Section A

A1. How important are the following in stimulating participation initiative in waste minimization in the municipality? Please circle the chosen response.

(Please rank the following where 1 is the most important and 7 the least).

Individual members	1	2	3	4	5	6	7
Ruling Party Policy	1	2	3	4	5	6	7
Standards	1	2	3	4	5	6	7
Departmental Projects	1	2	3	4	5	6	7
Public/Community Demand	1	2	3	4	5	6	7
Local Government Network	1	2	3	4	5	6	7
Central Government	1	2	3	4	5	6	7

Other Comments

A2. What are the main purposes of public participation in waste minimization in Local Municipality?

(Please rank the following where 1 is the most important and 6 the least).

To meet statutory requirements	1	2	3	4	5	6
To decide between particular options	1	2	3	4	5	6
To develop 'best value' initiative	1	2	3	4	5	6
To gain information on citizen views	1	2	3	4	5	6
To increase citizen awareness	1	2	3	4	5	6
To develop/empower local communities	1	2	3	4	5	6

Other Comments

A3. What are the main problems in implementing participation initiatives in waste minimization?

(Please rank the following where 1 is the most important and 6 the least).

Lack of Councillor support	1	2	3	4	5	6
Lack of officer support	1	2	3	4	5	6
Lack of public interest	1	2	3	4	5	6
Lack of resources	1	2	3	4	5	6
Lack of time	1	2	3	4	5	6
Lack of facilitating legislation	1	2	3	4	5	6

Other Comments

A4. What are the main benefits that citizen participation initiatives in waste minimization have brought to Emfuleni Local Municipality.

(Please rank the following where 1 is the most important and 5 the least).

Better Policy Making	1	2	3	4	5
Better Decision Making on specific points	1	2	3	4	5
Improvements in service delivery	1	2	3	4	5
Greater citizen awareness	1	2	3	4	5
Community Development	1	2	3	4	5

Other Comments

A5. Did participation initiatives in waste minimization have any negative effects on the work of the municipality? (Please circle the relevant response).

Raise Public expectation which the authorities cannot meet	Yes	No	Uncertain
Slowing down the decision process	Yes	No	Uncertain
Placing additional burden on officials and members	Yes	No	Uncertain
Capturing views of dominant groups that may not be the representative of wider community	Yes	No	Uncertain
Promote disagreement and conflict			

among different sections of the
community

Yes No Uncertain

Lead to consultation overload

Yes No Uncertain

Other Comments

A6. How would you describe the overall impact of participation initiative on final decision making in your municipality? (Please tick one)

- Not influential at all
- Occasionally influential
- Fairly influential
- Often Influential

A7. Are there particular circumstances where you would choose not to involve the community in waste minimization?

YES NO Not Sure

If 'yes' please indicate the issues in which you would choose not to involve the public from the following list. (Please tick all those that apply).

- Internal Management issues
- Confidential issues
- Commercially sensitive issues
- Activities prescribed by statute
- Issues requiring a quick decision
- Issues that might raise unnecessary fears

Other Comments

A8. Has your Municipality tried and failed to involve any social groups in waste minimization?

YES NO Not Sure

If 'yes' please indicate from the list below which groups the municipality did not involve effectively in waste minimization. (Please tick all the applicable response)

- Young people under the age of 24
- Citizens from the ethnic minority
- Local Business people
- Council tenants
- Private sector tenants
- Single Parents
- Women
- People with disability
- Unemployed people

Other Comments

A9. Is your Municipality working on schemes to enhance public participation in waste minimization in collaboration with other local agencies?

YES NO

If 'yes' please state below the organizations with which your municipality has collaborated on schemes to enhance public participation.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

A10. Are there any other features of your Local Municipality's overall approach to public participation which have not been addressed in this section but which you would like to emphasize?

Annexure C

2.2 Questionnaire designed for the community

The purpose of the questionnaire is to establish willingness of the community to participate in waste minimization strategies.

Section B

Name (Optional).....
Suburb/ Township.....
Town/ City.....
Number of people in your household.

B1. What kind of waste minimization activities are you engaged in within your municipality or province or community? (Please tick)

- Recycling Initiatives
- Policy development
- Other (list them below)
- 1.
- 2.
- 3.

B2. How are you currently participating in waste minimization activities? Please tick the relevant answer

- Do you sort your waste and take it to the provided drop point? YES NO Will Do
- Do you put your paper out as part of the collection Programme? YES NO Will Do
- Do you take your glass jars and bottles to a bottle bank? YES NO Will Do
- Do you take plastic to a plastic collection cage? YES NO Will Do
- Do you take your organic waste to a composting site? YES NO Will Do
- Do you make your own compost from organic waste? YES NO Will Do

If 'no' in any of the above please support reasons why no below

What do you do with your cut grass and trees from your garden?

B3. Do you have any collection service at present?

YES NO

If 'no' what do you do with the waste? Please tick 'yes' or 'no' from the list of options below.

Do you dump your waste outside your house? YES NO

Do you burry your waste in a hole near your house? YES NO

Do you burn your waste and burry in a hole in the ground near your house? YES NO

Do you take your waste to another area other than outside you house? If 'yes' please state where YES NO

B4. Would the following stimulate your willingness to participate in waste minimization initiatives?

Sorting waste and putting it in separate bags to be collected on certain days. YES NO Not Sure

Taking class bottles to a bottle bank YES NO Not Sure

Taking plastic to a plastic collection cage YES NO Not sure

Making compost from organic waste YES NO Not Sure

Collecting waste and selling it to buyback centres YES NO Not Sure

B5. What type of service would suit you best?

Put my waste into plastic bags or bins and someone takes it from outside my house YES NO Not Sure

Put my waste into plastic bags or bins and take it to a waste container in the street YES NO Not Sure

Keep my current method of dealing with my waste. If 'yes' please state your method below. YES NO Not Sure

B6. If you do have information about waste minimization would you form part of the project?

YES NO Not Sure

B7. What kind of support would you like from your municipality in order to continue to support and participate in waste minimization initiatives?

Financial Support YES NO Not Sure

Waste Minimization Education and awareness YES NO Not Sure

Capacity building programmes YES NO Not Sure

Putting infrastructure that aids in minimizing waste YES NO Not Sure

Establishing composting and chipping facilities YES NO Not Sure

B8. Would you support the municipality if it were to provide money to initiate community based projects?

YES NO Not Sure

B9. What are the constraints that could prevent you from participating and supporting waste minimization activities?

Lack of money to start waste minimization initiatives YES NO Not Sure

Lack of awareness about waste issues YES NO Not Sure

Lack of infrastructure to put our waste YES NO Not Sure

Lack of support from the municipality YES NO Not Sure

Lack of time YES NO Not Sure

Other constraints

Annexure D

	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Respondent 9	Sum	Percentage
SECTION A											
A1										63	
Individual members	6	4	1	3	5	3	3	3	3	31	49.21%
Ruling Party Policy	6	5	5	6	3	6	6	1	6	44	69.84%
Standards	4	3	1	2	2	2	2	1	2	19	30.16%
Departmental Projects	1	1	1	1	2	1	1	3	1	12	19.05%
Public/Community Demand	2	4	2	6	2	7	6	1	6	36	57.14%
Local Government Network	2	4	2	4	1	4	4	1	4	26	41.27%
Central Government	3	4	4	5	1	5	5	1	5	33	52.38%
										0	0.00%
A2										54	
To meet statutory requirements	5	2	1	4	4	2	2	2	2	24	44.44%
To decide between particular options	3	3	1	3	3	3	3	2	3	24	44.44%
To develop 'best value' initiative	2	1	1	4	3	3	3	1	3	21	38.89%
To gain information on citizen views	1	3	2	1	2	1	1	1	1	13	24.07%
To increase citizen awareness	1	1	1	1	2	1	1	1	1	10	18.52%
To develop/empower local communities	2	1	1	2	2	2	2	1	2	15	27.78%
										0	0.00%
										0	0.00%
A3										0	0.00%
Lack of Councillor support	1	1	1	1	1	1	1	6	1	14	25.93%
Lack of officer support	6	5	6	6	4	6	6	6	6	51	94.44%
Lack of public interest	2	4	1	5	1	2	2	1	2	20	37.04%
Lack of resources	5	6	1	2	2	4	4	4	4	32	59.26%
Lack of time	5	6	2	3	4	5	5	6	5	41	75.93%
Lack of facilitating legislation	2	3	2	4	2	6	6	1	6	32	59.26%
										0	0.00%
A4										45	
Better Policy Making	4	3	2	5	2	5	5	1	5	32	71.11%
Better Decision Making on specific points	3	2	2	4	3	4	4	2	4	28	62.22%

Improvements in service delivery	1	1	2	1	4	1	1	4	1	16	35.56%
Greater citizen awareness		3	3	2	3	2	2	1	2	18	40.00%
Community Development		1	2	3	3	3	3	1	3	19	42.22%

A5

	No	Uncertain	No	Yes	No	Yes	Yes	No	Yes	Yes	no
Raise Public expectation which the authorities cannot meet	No	Uncertain	No	Yes	No	Yes	Yes	No	Yes		4 4
Slowing down the decision process	Yes	No	No	Yes	No	Yes	Yes	No	Yes		5 4
Placing additional burden on officials and members	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes		6 3
Capturing views of dominant groups that may not be the representative of wider community	Yes	No	Uncertain	Yes	Uncertain	Yes	Yes	No	Yes		5 2
Promote disagreement and conflict among different sections of the community	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes		6 3
Lead to consultation overload	Yes	No	No	Yes	No	Yes	Yes	No	Yes		5 4

A6

	Sum										
Not influential at all			X								1
Occasionally influential		X									1
Fairly influential	X			X	X	X	X	X	X		7
Often Influential											

A7

	Yes	No	yes	yes	no	No	No	Yes	No	Yes	No
confidential issues	ticked		ticked	ticked				ticked			4 5
commercially sensitive issues			ticked								1
issues requiring a quick decision	ticked		ticked	ticked							3
issues that might raise unnecessary fears	ticked			ticked							2
activities prescribed by state			ticked								1
Internal Management Issues	ticked		ticked	ticked							3

A8

	No	No	Yes	yes	no	No	No	No	No
ethnic minority			ticked	ticked					
local business people			ticked	ticked					

council tenants	ticked	ticked
private sector tenants	ticked	ticked
unemployed people	ticked	
young people under 24		
single parents		
Women		
disabled people		
single parents		

A9

	Eindhoven Twining Projects, Buyisa e Bag, DJ Afval Papier, Mondi Recycling, Collect a Can, Nmpak Tissue					
Yes, Buyisa e bag, Africa Dream, Nampak		Evaton regeneration, Buyisa e Bag, Rotary Vanderbijlpark, Schools	Dream Africa, Buyisa e Bag, Collect a can, DJ Afval Papier, Consol	Dream Africa, Buyisa e Bag, Collect a can, DJ Afval Papier, Consol	Upa's projects	Buyisa e Bag, Dream Africa, Collect a Can, Consol, DJ Afval Papier

A10

			Evaluation on how strong the public participation project taken on been understood and target women in large numbers		
Community awareness, restore dignity and clean up campaigns	No	Ward councillors are not involved enough			Need to evaluate the public participation project taken

Annexure E

EXECUTIVE SUMMARY OF INTEGRATED WASTE MANAGEMENT PLAN

The Emfuleni Local Municipality appointed KV3 Engineers to assist with the compilation of an Integrated Waste Management Plan (IWMP) for the Waste Management Division of the Emfuleni Local Municipality. As a requirement of the National Waste Management Strategy (NWMS) and the IDP Process all Municipalities are faced with the obligation to compile such a plan by end 2004 but at present many municipalities are still in the process of compiling an IWMP.

The process consisted of two phases, the first being an assessment of the status quo and a needs analysis and the second being future planning and the finalisation of an Integrated Waste Management Plan. This Status Quo investigation was completed during October 2008 and consisted of an assessment of the current status of waste collection systems and existing disposal sites, service delivery capacity and a needs analysis for each of these aspects.

The second phase comprised the compilation of the IWMP. Seven (7) focus areas have been identified to be addressed for the compilation of the IWMP for the Emfuleni Local Municipality. Based on the Gaps and Needs identified, Goals and Objectives have been identified for each of the categories or focus areas.

The Objectives and Goals identified were included in the IWMP phase, with alternatives for obtaining these considered and evaluated on a high level thereafter. Based on the preferred options selected for implementation a programme was developed and cost estimates compiled to facilitate inclusion of the plan into the IDP.

The seven focus areas with the goals and objectives identified are as follows:

1. DISPOSAL INFRASTRUCTURE

The Emfuleni Municipal Area has five solid waste landfill sites, Boitshepe, Waldrift, Zuurfontein, Palm Springs and Vaal Oewer.

The **Zuurfontein landfill** has been closed during August 2005 and received a closure permit from the Department of Environmental Affairs and Tourism on 1 April 2008. The Zuurfontein landfill has been properly rehabilitated and should be maintained and monitored according to the closure permit conditions for the site.

The Boitshepe-, Vaaloeuw and Waldrift landfills are not permitted yet in terms of Section 20 of the Environment Conservation Amendment Act, 2003, Act 50 of 2003), but the permitting process for these sites is currently ongoing. The Palm Springs landfill is also not permitted in terms of the abovementioned legislation. The Municipality should initiate the permitting process by appointing a service provider to assist with the required investigations and permitting of the site. The Palm Springs and Vaal Oewer landfill sites are being operated by the Municipality, whereas the Boitshepe and Waldrift landfill sites are currently being operated by Enviro-Fill.

The landfill sites are reasonably well managed and operated. The Municipality has outsourced the operation of the **Boitshepe and Waldrift** landfills and should ensure the continuous operation of the sites in accordance with the Minimum Requirements. The Municipality should implement the recommended actions from external audits done on the landfills. The Municipality should timeously review the contracts of the site operators (currently Enviro-Fill). The landfills should be progressively rehabilitated until the closure of the entire site.

The **Palm Springs** landfill should be upgraded by fencing the site and establishing a guard house with ablution facilities at the entrance to the site. The Municipality should continue to operate the site in accordance with the Minimum Requirements for Waste Disposal by Landfill. The **Vaaloeuw landfill** should be upgraded by establishing a guard house with ablution facilities and be operated in accordance with the Minimum Requirements for Waste Disposal by Landfill (by formalising the scavenging activities on site, regularly compacting and covering the waste, controlling access to the site and recording incoming waste volumes).

The **Kwaggastroom, Sharpeville and Borrow Pits, Zone 16 and Zone 20 landfill sites** are no longer in use by the Municipality but have not been completely rehabilitated yet. The landfills are not permitted and should be authorised for closure in terms of the Environment Conservation Amendment Act, 2003 (Act 50 of 2003). A Closure Permit Application report for each landfill should be compiled which contains all the

information from the required investigations (stipulated in the Minimum Requirements documentation) which need to be performed. The permit application reports should be submitted to DEAT for issuing. The landfills should then be properly closed and rehabilitated in accordance with the Minimum Requirements for Closure and Rehabilitation and/or the closure and rehabilitation plans submitted as part of the permit application reports and/or the permit conditions for the sites once the permits have been issued by DEAT. The Emfuleni Municipality has four transfer stations namely the **Arcon Park, Roshasia, Sonland Park and Springbok Ave transfer stations**. The transfer stations are not permitted in terms of Section 20 (1) of the Environment Conservation Amendment Act (Act 50 of 2003) at the Department of Environmental Affairs and Tourism (DEAT). The Municipality intends to appoint consultants to deal with the permitting of the transfer stations during the 2008/2009 financial year. Permit application reports for the transfer stations should be compiled and should conform to the Minimum Requirements for the Authorisation of Waste Management Facilities other than Landfills, Appendix 5 of the document Minimum Requirements for Waste Disposal by Landfill, Draft Third Edition, 2005, and be submitted to DEAT. All the transfer station sites are being properly managed. All the sites with exception to Arcon Park utilises a system whereby the waste is dumped on the ground and is then collected using a FEL and tipper trucks. At Arcon Park the municipality uses skips that are collected on a regular basis using REL's. There is no problem with accumulated waste and litter, causing odours, rats and flies. All the sites are fenced and have access control by means of security personnel. All the sites also have a guard house and ablution facilities. The Municipality should continue to properly operate the transfer stations in accordance with the Minimum Requirements and/or in accordance with an operational plan which need to be compiled for each transfer station as part of the permit application report for the transfer station. The Roshasia, Sonland Park and Springbok Ave transfer stations should be upgraded to a ramp and skip system at the transfer stations to prevent the double handling of waste.

The Municipality is currently in the process to identify and permit a **new regional landfill site**.

Consultants were appointed to assist with the process, and are currently in the site selection phase of the study. The Municipality should ensure the proper implementation of the project programme.

A need has been identified for the **establishment of a transfer station or mini dump to service the Vanderbijlpark / Boipatong & Sharpeville area**. The Municipality should appoint a service provider to ensure that the site selection, authorisation procedure and establishment (construction) of the new transfer station site be done in accordance with the document Minimum Requirements for Waste Disposal by Landfill, 2nd edition, as published by DWAF in 1989.

2. WASTE COLLECTION INFRASTRUCTURE

Most of the vehicles in the Emfuleni waste management fleet are fairly new and the vehicles that are older are due for replacement within the next financial years. The municipality has implemented an impressive vehicle replacement system and currently does not have a shortage of vehicles for waste removal or equipment on the landfill sites.

The Municipality should continue to manage and implement the vehicle replacement plan as well as the implementation of a savings plan to ensure that future planning for the replacement of the vehicles is done at the appropriate time.

3. INSTITUTIONAL CAPACITY AND HUMAN RESOURCES

The Emfuleni Municipality at the current moment has a shortage of personnel at the disposal facilities. A gate guard to control access, a site supervisor/operator to operate or manage the site and litter pickers should at least be appointed at each of the disposal facilities. It is also essential that the municipal workers are properly trained for their specific tasks. Additional General Workers and drivers (as required) will have to be appointed to ensure a proper waste collection service once services are extended to unserved or newly developed areas.

4. FINANCIAL RESOURCES

The payment of services in certain areas of the Municipality is low due to various reasons. A pre-paid system should be investigated to be implemented where non-payment of fees is present.

5. DISSEMINATION OF INFORMATION / COMMUNICATION

A Waste Information System needs to be developed to ensure effective waste management. This information will also enable the Municipality to contribute to the quarterly waste management workshops with the other Municipalities in the District Municipality. The aim of these workshops will be to build capacity within them as well as guide Municipalities with less experience. The communities within the municipal area should also be made aware of proper waste management techniques and the service the Municipality renders. The establishment of a communication channel with all waste generators in the municipal area would benefit all.

6. MANAGEMENT OF ILLEGAL ACTIVITIES

The Municipality has a problem with illegal dumping within the municipal area. To improve the current situation, the Municipality can introduce a neighbourhood watch system that will aim to prevent illegal dumping within their specific area. The Municipality can also deploy skips at strategic locations across the towns and settlements to minimise illegal dumping.

The Municipality has embarked on clean-up campaigns to clear illegal dumping areas. The Municipality should continue with follow-up clean-ups and illegally dumped waste should all be cleared and the waste taken to a properly established waste disposal site. Skips should be placed in "illegally dumping hot spot areas", as well as notice boards to try and prevent further illegal dumping in these areas once cleaned.

The Municipality should also embark on the development of a Medical Waste Stream Management Strategy to ensure the safe handling and disposal of medical waste and to ensure compliance with SANS 0228.

7. WASTE MINIMIZATION

Recycling is being done at the Palm Springs (formalised) and the Boitshepe (not formalised) landfill sites. The Municipality is making an effort to control reclaiming at the disposal sites by formalising it and working together with the community to limit the amount of people coming onto the disposal sites as well as the time that they are allowed on the sites. This has worked well to a certain extent but it is an ongoing process that will require constant management in the future financial years.

Recycling is also done in the townships with 1000 registered community based environmental recyclers within the Emfuleni jurisdiction. The Municipality is assisting the recyclers by collecting the recyclables at the communities' recycling points and transferring it to the buyers (Mama She's, DJ Afval Papier, H&M Recycling, Remade, National Recyclers, Richard Recycling, Consol and other small recycling companies). The Council is sponsoring the diesel and maintenance of the trucks and should continue to do so in the future.

The recycling done at Evaton recycling transfer station should be put into operations again and the Municipality and Buyisa-e-Bag should investigate the feasibility to extend this initiative once the Evaton project has proved to be feasible and cost effective. The Municipality should monitor the project and continuously assist with the training, project management etc of the project.

The feasibility of establishing a composting facility/ies at the existing and/or proposed new larger disposal sites in the municipal area should be investigated. The distribution of recycle containers throughout the towns and settlements will further encourage recycling activities. The implementation of an incentive scheme for in-house waste minimization for businesses should also be investigated.

The above recommendations together with the recommendations in Section 10 should ensure that the short term waste management requirements in the region are met. Once the Waste Information System is implemented, this Plan should be re-evaluated and if need be adjusted. Long term planning can then be done in a more responsible manner. This will ensure that sound waste management is practised in the region.