

UNIVERSITY OF KWAZULU-NATAL

THE ATTITUDE TOWARDS AND PERCEPTION OF RECYCLING IN CATO
CREST,

DURBAN

BY

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DECLARATION

I Fikile Khosi Maphanga declare that

- (i) The research reported in this dissertation except where otherwise indicated, is my original research.
- (ii) This dissertation has not been submitted for any degree or examination at any other university.
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ABSTRACT

Attitude towards and Perception of Recycling in Cato Crest, Durban

Cato Crest is an area falling under the eThekweni Municipality, located in KwaZulu-Natal. The area has a population which constantly increases every year, since the area is located approximately 2km from the Central Business District (CBD). Waste generation and the shortage of disposal sites in the city has resulted in the eThekweni Council engaging in waste management activities, including the recycling of solid waste. Recycling is meant to save the environment by minimizing the waste that goes to the landfill. However, it has also created hope for job opportunities, which in turn resulted in many illegal dumping sites and filthy environments in Cato Crest, when people realized that recycling does not pay so much. The need for the research is based on the question: Does the Cato Crest community understand the goals and objectives of recycling? Currently the city is faced with large amounts of waste that is generated and which ends up in landfills. This has led to a shortage of landfill space. The existing landfills are reaching full capacity, which is earlier than was planned for them to reach maximum capacity. It costs millions of rand for government to put infrastructure in place for making landfills. The study aims to understand the attitude towards and perception of recycling in Cato Crest and this will assist in identifying whether or not eThekweni Municipality's approach to recycling is in line with the goals and targets of recycling. This will help to evaluate or assess whether the Municipality's approach is capable of meeting its goals or not, which in turn will help to identify the gaps that currently exist in recycling activities. Theoretical areas will focus on recycling and the importance and purpose thereof, the global context of recycling, recycling competences, and the role of government in recycling, and economic and political issues around recycling. The study will comprise a qualitative aspect with a mixed methodology comprising interviews and a focus group. The findings will help to identify ways to minimize illegal dumps in the area and to promote an increase in participation in recycling, as well as to determine methods for improving recycling. The study will provide insight into the contribution that the government and the eThekweni municipality in particular, should make in order to support and improve recycling.

TABLE OF CONTENTS

CONTENT	PAGES/S
PERMISSION TO SUBMIT	ii
DECLARATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
Glossary	x
CHAPTER 1: INTRODUCTION	
1.1 Background to the study	1
1.2 Need for the study	3
1.3 Objectives of the study	3
1.4 Research Approach/Methods	3
1.5 Limitations of the study.	4
1.6 The structure of the research	4
CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction	5
2.2 Defining Recycling	6
2.2.1 Recycling Knowledge.	7
2.2.2 The importance of recycling	8
2.3 Environmental Management	10
2.4 Total Quality Management (TQM)	11
2.5 Supply Chain	12
2.6 Recycling Competencies	15
2.7 Community Involvement in Recycling	16
2.7.1 Community responsibilities for waste management	17

2.7.1.1 Promoting recycling	17
2.7.1.2 Recycling set up	18
2.8 Global context of recycling	19
2.8.1 Globalisation	19
2.8.2 Conference of Parties	20
2.8.3 Kyoto Protocol	20
2.9 The role of Government in implementing and sustaining recycling	22
2.9.1 Swedish case study	22
2.9.2 Vancouver case study	23
2.9.3 Malta case study	24
2.9.4 Government Policies on waste management	24
2.9.4.1 South African Constitution	24
2.9.4.2 Integrated Development Plan	25
2.9.4.3 Polokwane Declaration	26
2.9.4.4 Waste Management bill	28
2.10 Economic and Political issues around recycling	29
2.11 Conclusion	30

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction	31
3.2 Descriptive study	32
3.3 Data Collection.	32
3.3.1 Qualitative Study	32
3.3.1.1 Interviews	34
3.3.1.2 Focus group	37
3.3.1.3 Secondary data	38
3.3.1.4 Triangulation	39
3.3.2 Ethics in data collection	40
3.4 Data Analysis	40
3.5 Validity and Reliability	41
3.6 Summary	41
 CHAPTER 4: DATA PRESENTATION AND ANALYSIS	
4.1 Introduction	42
4.2 Age analysis of Primary collectors	42
4.3 Initiatives	43
4.4 Planning and Motivation for recycling	45
4.5 Self-control and community commitment	50
4.6 Networking	54
4.7 Empowerment	55
4.8 Results of waste tonnages	58
4.9 Summary	59
4.10 Conclusion	60

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction	61
5.2 Study objectives	61
5.3 Major findings	64
5.4 Recommendation for further study	65
BIBLIOGRAPHY	67
List of figures:	
Figure 2.1	12
Figure 4.1: Graphical representation of tonnages for September 2011 before recycling and September 2012 after recycling was in place.	49
List of Appendices	
Appendix 1: List of tables	
Table 1: Tonnages for September 2011.	67
Table 2: Tonnages for September 2012	68
Appendix 2: Interview Questions	69
Appendix 3: Informed Consent Form	72
Appendix 4: Ethical Clearance	75

GLOSSARY

For the purpose of the research, the following terms apply:

- Collector: a person who collects recyclables
- Cop : Conference of Parties
- DSW: Durban Solid Waste
- EMS: Environmental Management System
- IDP: Integrated Development Plan
- NWMS: National Waste Management System
- Primary collector: a person who collects recyclables from source
- Recyclable: an item to be recycled
- Recycler: a person/company that processes recyclables

- Secondary Collector: a person who collects recyclables from primary collectors

Chapter 1: Introduction

1.1 Background

Durban is the city at the heart of the eThekweni Municipality located in the KwaZulu-Natal region of South Africa. The city has an estimated population of 3.1 million which is annually increasing. The City Council is faced with challenges of low economic development and a high rate of unemployment, low levels of literacy and skills development, many developmental initiatives are still unsustainable and access to basic household and community services is far from being optimal this is according to eThekweni Municipality 2010/2011 IDP review (2010).

The City of Durban's vision is to be a municipality that is capable of having a clean and green environment and of producing a wide range of items in the ecosystem for improving service delivery in goods and services. The plans to implement this involve protection, enhancement and retention of the natural resources and of the fertile agricultural land, eThekweni Municipality 2010/2011 IDP review (2010)

Waste generation and the shortage of disposal sites in the city have resulted in the eThekweni Council participating in waste management activities and in particular in recycling of solid waste. This study sought to assess the viability of and challenges involved in recycling in Cato Crest, Durban.

Currently the city generates large amounts of waste that ends up in landfills. This has in turn resulted in a shortage of landfill space. The currently existing landfills are reaching their full capacity earlier than anticipated and it costs millions of rand for the government to put infrastructure in place to create new landfills.

The City has engaged in programmes like recycling to minimise the quantity of waste that is disposed of in the landfills. The eThekweni municipality's terms of reference on this are based on *The Constitution of the Republic South Africa, Act 108, 2006, section 24 of Chapter 2*, Integrated Development plan 2012/13 – 2016/17(IDP) and *on the Polokwane Declaration*.

The Constitution of the Republic of South Africa, Act 108, 1996, Chapter 2 section 24, Law of Human Rights states:

“Everyone has the right

- a. to an environment that is not harmful to their health or well-being; and
- b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
 - i. prevent pollution and ecological degradation;
 - ii. promote conservation; and
 - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.

Cato Crest is one of the areas in which recycling is taking place; an area that has low cost houses and informal houses and is 3km away from the City Centre of Durban, eThekweni Municipality. This has resulted in the area becoming overcrowded since it is close to work opportunities in the city centre. Recycling has been implemented in Cato Crest, but the area still has a remarkable number of illegal dumps.

The study attempted to identify the attitudes towards and perceptions of recycling amongst Cato Crest community members, with the aim of finding ways to minimize the illegal dumps in the area and to promote an increase in participation in recycling. The study was conducted in Central Durban, in an area known as Cato Manor. The area consists of formal and informal houses and businesses, and there are 13 schools in the area which are involved in recycling activities. The population of the area is estimated to be approximately 98 000 people according to the EThekweni Municipality Integrated Development Plan 2010 – 2011 but it is very likely in fact to be greatly in excess of this figure by now. The area is steeped in poverty with low levels of literacy and there are many recycling activities that are taking place in the area.

1.2 Need for the study

Recycling is meant to save the environment by minimizing the waste that goes into the landfill. Recycling of aluminium items can, for example, save 95% of the energy over that needed for the mining of aluminium from scratch and for making new containers. Recycling can also reduce air pollution and water pollution by about 95%. Less dramatic savings in energy, resources and pollution are significant when recycling other metals too (Dobson 1992).

At first, recycling efforts resulted in the hope of job opportunities but when people realized that recycling does not pay that well, this resulted in many illegal dumping sites and filthy environments in Cato Crest. The need for the research is based on the question: Does the Cato Crest community understand the goals and objectives of recycling?

The aim of the study was to explore the concept of what exactly recycling is. Consideration was also given to, the approach that needs to be followed in the implementation programmes for recycling and the benefits of recycling and how this can be highlighted in local recycling endeavours.

The following stakeholders in Cato Crest should benefit from the study: businesses (formal and informal), EThekweni Municipality, schools and the community at large.

1.3 Objectives of the study

- To identify the attitudes towards and perceptions of Cato Crest community members towards recycling.
- To determine improved methods of implementing recycling activities in Cato Crest.
- To determine the gaps, if any, in the EThekweni Municipality waste removal system, that could hinder the success of recycling and the cost saving methods that could assist in increasing recycling output.

1.4 Research approach

The fieldwork was conducted in Cato Crest, Durban. The study was mainly qualitative, and interviews were conducted with 10 recyclers from the community. A focus group was also constituted, which comprised 10 individuals, who were Government officials from eThekweni municipality, Environmental Health, Department of Agriculture and Environmental affairs, all of whom work in Cato Crest.

An additional statistical tonnage data was collected and analysed, to complement the analysis from the interviews and focus group. The data that was analysed was obtained from the records of four weeks consecutive tonnages of waste that went to the Bisasar landfill before recycling was in place in Cato Crest, and this was compared to the record of four weeks consecutive tonnages of waste while recycling was in place.

1.5 Limitations of the study

The study was limited only to recyclers or recyclables collectors in Cato Crest, and not to the whole community who generate these recyclables. This was due to time constraints required to complete the study.

1.6 The structure of the research

The study is structured as follows:

In the literature review of the study in Chapter 2, the idea was to explore the academic knowledge about recycling. An attempt was made to establish how much is known about this concept and how tried and tested methods of recycling could be used in a local context. The research methodology will be declared in Chapter 3. This was obviously useful in mapping the path to be followed when conducting the study. The presentation and analysis of findings in Chapter 4 will cover the research findings. The conclusion and recommendations for further study are presented in Chapter 5.

Chapter 2: Literature Review

2.1 Introduction

The purpose of this literature review was to establish exactly what the concept of 'recycling' amounts to and the approach that needs to be followed in the implementation programmes of recycling. It also sought to establish what the benefits of recycling are and how these can be highlighted in local recycling initiatives.

By identifying whether or not the concept of recycling is well understood by the community, this will assist in establishing the depth of recycling knowledge in the community and this in turn will assist in expanding recycling knowledge and in implementing a progression of recycling activities.

The study also investigated whether or not the eThekweni Municipality's approach to recycling in Cato Crest was in line with the goals and the targets of recycling and whether or not the eThekweni Municipality's approach was capable of meeting its goals. This in turn, it was anticipated, would help to identify the gaps that existed in eThekweni Municipality's approach when compared to the national approach.

Current and recent global natural disasters have sensitized the world communities, including South Africa, to the necessity to conserve the environment. Global warming is a challenge for all communities and raises the need to recycle, as during recycling less is being processed using industrial heat and vapours that impact negatively on global warming.

The following topics were covered in the literature review to cover the broader aspects of recycling concepts. These topics were: defining recycling, recycling knowledge, the importance and purpose of recycling, the global context of recycling, recycling competencies, and mandatory policies that guide/govern eThekweni Municipality in their participation in waste management.

As eThekweni municipality is a government entity, duties of government in implementation and sustaining of recycling was examined economically and politically.

The literature review also covered aspects of Total Quality Management (TQM), since recycling requires a lot of administration. In recycling, there is a movement of recyclable items from the collection to storage to recycle point, and finally to redistribution. The supply chain concept was explored in this literature review so that its contribution could clearly be identified.

2.2 Defining recycling

Recycling is "the separation and collection of materials for processing and remanufacturing into new products, and the use of the products to complete the cycle". (<http://recycling-art.blogspot.com/2009/04/definition-of-recycling.html>).

"Recycling is a process by which materials once used are again transformed into new products. We can always try to reuse them once again rather than discarding as waste" (<http://www.blurtit.com/q935777.html>).

Recycling is defined as "the minimization of waste in such a way that a remarkable reduction of harmful waste that is generated is noticeable. This involves any form of "reducing or recycling activity that will result in the elimination of the total waste and reduction of sizeable amounts of toxic waste" (Williams & Blackman, 2006, p. 218). What is important in this process is "the consistence with the goal of minimizing present and future threats to human health and the environment". (Williams & Blackman, 2006, p. 218).

The traditional definition of recycling as noted by the Environmental Protection Agency (EPA) implies "...a body that is responsible for, reuse or reclaims waste after it has been generated, either on-site or off-site in a particular process" (Williams & Blackman, 2006, p. 220).

Recycling is a process whereby previously used materials are collected and used again in order to convert them into a new product. These products are reused rather than being discarded or thrown away as waste.

2.2.1 Recycling Knowledge

Recycling knowledge and attitude is important as it gives a clearer position of the current situation. It identifies the strategic position which will determine a new strategic direction and consequently strategic implementation. It is important to have the correct knowledge as wrong information can be misleading. In the case of recycling for both attitude and knowledge it is also important to have correct information that will result in informed knowledge.

In any company, strategic attitudes towards recycling can depend on the managers' environmental awareness committee. In such cases, it is important for managers to define objectives that are ethical. Whilst many managers would not agree, it could be argued that it is more important for the company to minimize their impact on the natural environment than to improve its economic performance (Kok & Siero, 1985; Goldenhar & Connell, 1993; Taylor & Todd, 1995; Kalafatis et al., 1999).

Although it is highly unlikely but in some instances it happens, a company may consider a reduction of their negative impact on the natural environment as a strategy for achieving a competitive advantage. A competitive advantage could be achieved by being seen to promote environmental awareness because nowadays more and more consumers use this information when they make a buying decision, <http://www.environment-green.com/>.

The classic recycling theory requires that a recycler will have processed a large amount of knowledge of the environment and about why to recycle and how. It assumes not only that recyclers are collecting knowledge about recycling but also that this has resulted in a positive attitude toward recycling (Kok & Siero, 1985; Goldenhar & Connell, 1993; Taylor & Todd, 1995; Kalafatis et al., 1999).

According to Thierry et al. (as cited in Beamon, 1999) recycling is the process of collecting used components or materials from the different sites then separating them when there is a need and disassembling them into grouping categories of like

materials and processing these into recycled products, components, and/or materials.

The identity and functionality of the original materials are lost (Thierry, et al., 1995).

The success of recycling depends on:

- The availability of recycled material; and
- The little or no contamination of the recycled materials.

According to Guide et al. (as cited in Kit Fai Pun et al. 2006, p. 35) “The cleaner production is a process where recycling and remanufacturing work parallel with each other. Recycling requires the disposed waste product, the separation of materials according to their group or class and then these materials to be processed”.

Lin et al. (as cited in Kit Fai Pun et al., 2006, p. 41) states that “recycling needs a design which focuses less on the component and more on overall product design”.

The knowledge of recycling further differentiates between recycling, re-manufacturing and re-use. “Remanufacturing replaces the worn, broken or obsolete parts from a discarded product, with the aim of returning the product to new or better than new condition” (Beamon, 1999, p. 216). The design for re-manufacturing does not refer to repairs but places an emphasis on the design aspect itself of a new product. Re-working of equipment and components should be recorded in inventory documents for either external or internal use.

Re-use method is the processes of collecting previously used materials and using them again. In this case the total value of the material is reduced from its initial or original value, and for this material no additional processing is needed (Pun, et al. 2006).

Tucker (2001) argued that “knowledge of recycling only is highly important as part of total environmental concern” (p. 222). He added that “lack of knowledge and understanding of the environment inhibits the recycling process and this results in poor recycling production”.

2.2.2 The importance of recycling

Recycling is the process of converting recovered materials into useful products to preserve on the use of resources, energy and space used in the landfills (<http://www.environment-green.com/>).

“Recycling metal and glass can be continued indefinitely as a process, but paper or plastic can be recycled only a few times before losing their quality and the residue will need to be dumped. Combining present levels of consumption with limitless recycling is more characteristic of a technocratic vision than of an ecological one. Recycling itself uses resources, expends energy, and creates thermal pollution. The bottom line is it is just an industry activity like all others. “Recycling is both useful and necessary, but it is an illusion to imagine that it provides any basic answers” (Dobson, 1992, p. 73).

According to Anderson & Brodin (2005, p. 77) “Recycling has many implications on a system level, as new flows are generated, which in turn adds to the existing structures. New roles are crystallised; those of performing recycling and managing the material flows induced by recycling”.

Conclusion

In conclusion from the above different definitions of recycling, it concluded that recycling is a method of processing waste material which results from reduced waste material in the environment and also fewer vapours are released to the environment. In Cato Crest the concern would be the number of individuals that care about or even know about the environmental compliance has to be questioned in order to establish the recycling knowledge, as this information will assist Cato Crest community in sustaining recycling programs/projects.

2.3 Environmental Management System

An Environmental Management System (EMS) involves the management of an organization's environmental programmes; The EMS can vary from one organization to another. The EMS consists of a range of Environmental Management Accounting (EMA) technique which provides financial information. Recycling as part of an EMS is important for an organization as it involves managing different costs. For example it could be the costs of buying recyclable containers or the costs associated with transportation of recyclables. "Environmental costs are the costs that an organisation incurs to prevent, monitor and report environmental impacts. They can also include the "costs an organisation incurs when it does not comply with environmental regulations" (Brewer & Garrison, 2011, p.834).

Successful environmental management results in the maintenance of the following costs:

- "Conventional costs can be found in the accounting systems of most organisations, these include the costs of purchasing equipment and plants that will prevent environmental impacts.
- Societal costs, or the cost of estimating the impacts, and the specialised environmental knowledge that might be needed to do so.
- Hidden costs associated with monitoring and reporting all environmental harm, for example market resistance" (Brewer & Garrison, 2011 p.834), and
- "Cost of reducing disposal, as waste disposal centres are expensive and this cost increases on a daily basis" (Cattanach et al.,1995 (as cited in Brewer & Garrison, 2011 p.834).

According to Pun (2006, p. 23) "proper planning for environmental management is important because it involves identification of environmental strategies and business plans and establishes the incorporation of both".

Environmental management practices use compliance that talks to the needs of quality management and it is responsible for corrective management suggestions. According to ISO (1996, 2000) EMS is an important component of management that involves all organisational activities. An EMS alleviates environmental challenges of the organisation and facilitates the improvement of environmental performance.

Conclusion

For Cato Crest communities a detail EMS knowledge would be relevant at a later stage as currently this EMS information does not have a direct impact to local recyclers, for further growth and government involvement EMS will be more relevant.

2.4 Total Quality Management (TQM)

Recycling is a process that requires different stages of handling. Along the way there are resources that are required, some in the form of capital, skills and location, to strategies around the plan to generate more tonnages which might require any or all of these resources, therefore an advanced knowledge of TQM might be helpful.

TQM is an organizational effort directed toward the continuous improvement of quality. There are four key elements according to Pycraft (2000) that are considered in this definition:

- “1. Quality must be an organization-wide concern:
2. TQM is a process that cannot be completed through the implementation of a single stage. It is an on-going effort, in the process of gaining experience, knowledge and in acquiring a suitable approach to the implementation of a particular activity.
3. TQM focuses the on continuous improvement, and
4. Quality by definition refers to relative value for money in the eyes of the customer”.

TQM practice, according to Pycraft (2000) involves:

- Customer focus;-
- Empowerment of employees that involves shifting decision-making authority and responsibility to the level below in the organization. It represents a shift from a higher level of authority and control to a more middle or lower organizational structure with fewer levels of management. A greater empowerment of employees is a natural response to an increasingly elite workforce and in an advancing information

system that makes it easier to coordinate and manage activities without supervision. This facilitates the involvement of every person in the organisation;-

- Data-based decision- making refers to the method where tools and techniques are used in combination with the relevant information in the problem-solving process to create improvements;-
- Getting things done 'right the first time' means for example spending time in designing a quality item rather than inspecting it;-
- The system development and the procedures which sustains a quality and improvements;-
- The creation of continuous process of improvement in the system; and-
- Inspection of all costs that are related to quality.

All these TQM practises are important as they might give direction to recycling and it can easily assist in identifying the bottle necks in the process areas that need improvement.

Conclusion

The TQM can be featured into Cato Crest primary collector's content, only if they can have reliable secondary collectors as they will adjust themselves to TQM principles.

2.5 Supply Chain

The supply chain is important in recycling because recycling involves collecting and sorting of recyclables from various sources, then moving them to the location where they will be stored till a target tonnage is reached, then moving them further to where they will be sold then processed for recycling.

Figure 2.1 below presents a diagram of recycling process in a supply chain context.

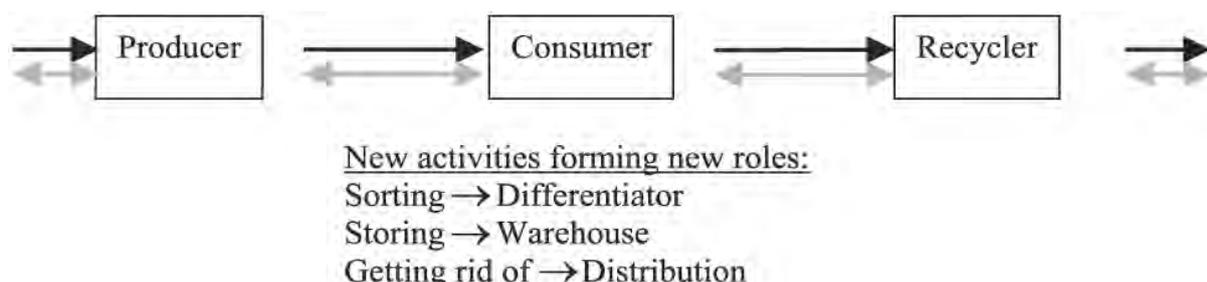


Figure 2.1 The Recycling process. Chopra & Meindl (2001, p. 95)

According to Chopra & Meindl (2001, p.115) “the transport to collection site involves time and additional costs. It is up to the collector how to minimise or to reduce these costs”. That is why it is important to have a proper plan.

According to Chopra & Meindl (2001, p. 95) “recycling introduces new material flows and new relationships, thus reshaping the role and the position of the end-customer”. Storage of recyclables involves a safe and secure warehouse, as unsecure and untidy storage area can result in contamination and recyclables can attract insects.

The supply chain should have the capacity to meet, directly or indirectly customer requests. The supply chain does not only involve the manufacturer and suppliers, but also the movement of suppliers from warehouses, retailers and customers themselves. “The supply chain functions include new product development, marketing, operations, distribution, and finance and customer service but are not limited to these activities” (Chopra & Meindl 2001, p. 147).

The above findings suggest the need to develop a supply chain/logistics plan that will address all related transport issues. These transport issues will also strengthen the consumer-customer relationship if it is to be successful. The plan will detail the collection of recyclables and transportation to the collection site. This will clarify the role of both the consumer and the customer as stakeholders in this process. For this reason the consumer- customer relationship is of importance.

According to Guiltinan & Nwokeye (as cited in Jahre, 1995, p. 39) “the most used method for kerbside schemes is to send recyclables direct from collection point to the processing point. However this is a challenge because the success of this exercise will depend on the amount of recyclables collected because the transportation must be cost-effective”.

According to Jahre (1995, p. 39) “volumes of recyclables are not high enough to be cost effective to transport. Efficient transport does not exist at present. In fact there

are very few instances involving collection from households and transfer directly to processing site”.

The objective of every supply chain in any system or organization is to maximize the overall productivity generated. “The value that the supply chain produces is the difference between what the value of final product to the customer and the effort the supply chain supply in meeting the customer’s request” (Chopra & Meindl, 2001, p. 147). The maximum tonnage of recyclables collected is proportional to its financial worth; this has a positive effect on the customer. In this case it could be a secondary collector or recycler.

According to Beamon (1999) the traditional supply chain is defined as a co-operation process where raw materials are produced and converted into final products, then transported and delivered to customers. This involves either reducing or expanding the supply chain’s level of integration by eliminating stages or adding stages, respectively. According to Lamming & Hampson (as cited in Beamon, 1999) “the ultimate objective of extending the traditional supply chain is to allow consideration of the total immediate and eventual environmental effects of all processes (known as product and process stewardship, respectively)”. The stewardship concept is based on “recognition of environmental effects of the organization” (Lamming & Hampson, as cited in Beamon, 1999, p. 53). The complete integrated, supply chain includes all of the items of the traditional supply chain and expands the one direction chain to develop a semi-closed loop. The semi-closed loop contains product and packaging recycling, re-use, and/or remanufacturing processes.

According to Jahre (1995, p. 39) “recycling consists mainly of two parts – making recyclables available for reprocessing (the collection system) and the process by which materials are made into substitutes for primary materials (reprocessing)”. The concern was with the collection process; the materials flow from recycler back to the point where materials are available for reprocessing. This according to Jahre (1995) is called the “logistics part of recycling”.

Jahre (1995, p. 39) further suggests that “successful recycling requires that recyclables must be in good quality like primary material. The price of the material is

(or should be) partly determined by the cost of collection activities. The quality is largely influenced by the way collection activities, e.g. sorting, are performed". For recycling to be part of the value chain system it is the important to maximize collection of quality material. Quality material and 'enough volume of recycling resources is important for processing companies to scale up the whole recycling industry' (Walls, as cited in Ordoobadi, 2009, p. 831).

Conclusion

In conclusion, the supply chain knowledge is important for Cato Crest primary collectors as it talks to many issues that are part of a successful recycling. These issues are moving recyclables from collection point to storage point and moving recyclables from storing now to where they will be sold and this form part of TQM which was previously discussed in this literature review.

2.6 Recycling competences

In Cato Crest it is important to look at recycling competences, these competences will assist in evaluating the availability of resources in this case the availability of enough recyclables to be collected and to make preferences of what recyclable to collect over the other as in recycling in order to score high one need to collect more tonnages of recyclables. The competence analysis will further look into availability of storing containers, transport to move recyclables. This is because the availability of balanced resources will result to the sustainability of recycling project.

In this section, competences are abilities and capabilities that can contribute to the success and efficiency of recycling. Competences are defined by availability of resources such as space, time and the human skill. An unavailability of any of these might jeopardise the success of recycling.

According to Ordoobadi (2009, p. 831) "core competencies refer to performances that distinguish a company from its close competitors". Many researchers have used different methods to identify a process/activity as a core competency.

There are factors that challenge the abilities and capabilities for successful recycling and these factors are situational. It is important to understanding what hinders individuals from recycling, and this is a positive step towards increasing participation and maximization of recycling. Aceti (cited in Ordoobadi, 2009, p. 835) claims "that

those persons with a stronger perception of recycling as inconvenient recycled less or did not recycle". He concluded that the primary collectors experienced the following:

- Shortage of time to recycle;
- The unavailability of storage space for recyclables and shortage of drop-off sites;
- Untidiness which results in pests; and
- Difficulty in transporting recyclables to storage and processing site.

Many other researchers have studied the cost of effort and time involved in recycling and confirmed that these factors are critical and important and they can change the recycling behaviour of people (Neale & Vitartas, 2009; Vining & Ebreo, 1990). In these situations, the awareness, promotion of availability of resources and simplifying of the recycling process is important (Barr & Shaw, 2006).

Aceti (2002) argued that people are stimulated to participate in recycling by pressure from family and friends, and these pressures are brought about by knowing that family, and close friends participate in recycling. However, Vining & Ebreo (1990) highlight the fact that pressure and the social influence take part when visibility of the behaviour is high.

Hopper & McCarl (1991) discovered the information strategies that prompt the community into adopting a community recycling programme. They further examined the impact attitudes and norms have on recycling behaviour. The results showed that there are two methods that have a greater impact than others on recycling behaviour.

Conclusion

The geographic location of Cato Crest near Durban Central Business District (CBD), overcrowding and presence of schools put Cato Crest to an advantage because the secondary collectors will travel less distance to collect and deliver recyclables to the desired location.

2.7 Community involvement in recycling

The participation of community in complying to waste management laws by either separating waste at a source in order to separate the recyclables from material that will be disposed to eliminate contamination of recyclables or any other contribution to recycling program plays an important role to growth and sustainability of recycling program.

In other countries like Canada, many communities have introduced the Pay-As-You-Throw (PAYT) programme. PAYT is a programme where communities are charged according to the amount of garbage they generate. This is measured on per-bin basis.

The United States Environmental Protection Agency (2009) believes that PAYT is a working tool for communities that generate more waste. This programme assists these communities to cope with increasing waste management costs because it creates a direct economic reward for the community to recycle more so that they will produce less waste and pay less disposal costs. One can argue that the effectiveness of this system can be called into question, as in some countries the motivation will be to create more illegal dumps and waste containers will have less or no waste in them.

“In Brazil as an example of community involvement in recycling, communities living in São Paulo were supported in their waste disposal strategies by government but in Rosanna states the streets and shopping malls have colour-coded recyclables collection bins” this is according to La Grega et al. (as cited in Architect William McDonough).

2.7.1 Community responsibility for waste management

2.7.1.1 Promoting recycling

Society can promote recycling in many ways, promoting technology development or in providing, economic incentives when government subsidises businesses that use secondary materials rather than virgin ones. Government can support waste reduction and recycling education in schools, sponsor television, radio and

newspaper advertisements promoting recycling and they can emphasise the role of citizens in sorting trash from recyclables or buying products with recycled content. Recycling only slows the linear flow of materials. According to La Grega et al. (as cited in Architect William McDonough)

The recycling publicity touches on the issue of finances as successful recycling might need funding to be sustainable. Relating to communications, there are important changes and innovation-based environmental strategies for successful implementation of communication activities. The media is an important tool that can target a group for environment-related communication activities. It is important to have user-friendly tools through which to communicate and to achieve environmental results with external stakeholders.

2.7.1.2 Recycling set up

La Grega et al. (2001) recommend that the following should be taken into consideration when setting up a recycling project. The planning & organization, assessment, feasibility analysis and implementation.

In planning and organization it is important to have the commitment from management; an assessment programme which will cover all recycling goals; and a task team for programme assessment.

For the assessment phase one needs to institute collection procedures for the later processing of data; state and prioritize targets; form an assessment committee; analyse and review data and inspect site reports; explore and generate alternations or options; screen, filter and select aspects that require further research and study, and present an assessment report on selected items.

The feasibility analysis phase involves the technical analysis; economic assessment; setting up criteria for implementation; and a final report,

Implementation involves the execution of projects and the obtaining of funding; requires the establishment implementation procedures; and demands the definition of evaluation criteria for performance.

Successfully implemented waste minimization projects involve good operating practices and waste minimization assessments. In order to do this, a team of qualified individuals needs to be assembled. Practical short-term and long-term goals, resources and budgets need to be established together with assessment targets. The identification and selection of options to minimize waste must be contained in project plan. Periodically there will be a need to monitor the programme's effectiveness.

For an environmental audit, the pertinent documents will need to be assembled. Environmental impact reviews will need to be conducted involving onsite inspections. A follow up report on findings will also be required.

2.8 The global context of recycling

Recycling is a worldwide concept and countries have dealt with recycling at different levels using different approaches at different times.

2.8.1 Globalization

Globalization is the set of general and specific activities of economic, political and social systems across countries that collaboratively work together across nations, cultures, or geographical regions so that these nations become increasingly interdependent and similar (Jones & George 2008).

Jones & George (2008) further determine four principal forms of capital that flow between countries:

1. The flow of people around the world through immigration, migration and emigration, the outcome here is to share either skill or experience; this is called human capital;
2. Financial capital is the flow of cash capital across world markets through overseas investment, credit, lending and aid;
3. Resource capital is the flow of natural resources and semi-finished materials between countries; and

4. Political capital is the flow of power and influence around the world to protect a country's or a world region or political bloc's access to the other forms of capital.

2.8.2 Conference of Parties (CoP)

The Conference of Parties is the meeting of parties in the United Nations to discuss matters relating to the Climate Change convention framework, reduction of waste and recycling, and how members can assist in the fight against global warming. The 17th meeting was held in South Africa during November/December 2012.

2.8.3 Kyoto Protocol

The Kyoto Protocol is a global agreement linked to Climate Change for the United Nations. This is another level where nations discuss and share expertise on matters of climate change and investigate how recycling can be one of the solutions.

The objectives of the Kyoto Protocol are to achieve sustainability of greenhouse gas production in the atmosphere that will assist reducing the interference to the climate system already experienced. The objectives are to be achieved within a specified time frame in order for the ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner (Tickell & Rowe 2009).

Waste minimization in the ecosystem is an important factor in order to sustain an environment for economic wealth. According to Chen et al. (2009) it was suggested that, financing of recycling companies and the collection of recyclables should depend on governmental budget rather than on revenues received from recycled items and materials. For all recycling companies and manufactures, there are no economic rewards in the existing recycling scheme and there is a provision for recycling changes and new designs are to be implemented.

The increased recycling rates of used materials, in the long run results in the handling costs becoming lower, and this result in the higher added value. It is highly recommended to maximize the value added portion in order to support, economic

efficiency and sustainability (Widmer et al., 2005), therefore creative design for green products will have a real impact on adding value to the recycling activities, providing economic and environmental benefits. Green products are products that are environmentally friendly. From the number of benefits from the high level of recyclability, there is a demanding need for governments to design the recycling management programme in order to make the recycling industry become a recognised and profitable business that meets the growing demand for recyclable material.

2.9 The role of government in implementing and sustaining recycling

The public organizations are required to research and develop new strategies aimed at increasing the environmental awareness programmes. There is a need for reasonable financial input from Government to create and implement innovative environmental solutions.

According to Haider (2011, p. 832) “within the official ranks of the municipality, awareness exists of the need to address environmental issues at some level”. This is not least expressed by the intention to change practices through providing information which in turn contributes to creating an environmentally aware citizenry, very much in line with what Hobson (2002) calls a “rationalization of lifestyles”.

2.9.1 A Swedish case study

According to Fraj & Martinez (2006, p. 79) “the government play a role as an environment regulator. The government sets various laws and policies for recycling requirements. Secondly, the government supports research and development programmes and secure funds for this activity. Thirdly government provide the monetary incentive for contractors that comply with the requirements of this activity”.

According to Corvellec & Hultman (2012) municipalities are the custodians of environmental policies.

In Sweden from 1994, the number of active landfills was reduced from 300 to 80; this was due to effort made by the government to encourage the reduction of waste that goes to the landfills (Sverige, 2010). Swedish waste management has resulted to less land filling.

The second governance alternative, considering waste as a resource, is not a new principle. Previous studies have shown that there has always been a person able to collect then sort materials in order to receive or generate income from what other people consider as worthless (O'Brien, 2008; Strasser, 1999). Exploring the value in waste is also a way for Swedish municipal waste management to serve their goal of

minimizing landfills. Recycling should be considered as an alternative to the extraction of primary resources (Monier et al., 2010).

2.9.2 A Vancouver case study

Vancouver is a city in Canada from which eThekweni Municipality can learn much from what they have done to achieve success in their waste management and recycling programmes. Vancouver has a Sustainable waste management plan. The target in the plan is substantially to reduce the waste generated by 2020. Currently 55% is recycled according to *The Integrated Solid Waste and Resources Management Plan* (ISWRMP).

Solid waste management involves into:

- Creating less waste and recycling everything possible.
- Securing the environment.
- Developing new technologies which will easily recover and recycle materials.

<http://www.metrovancouver.org/services/solidwaste/planning/Pages/default.aspx>

2.9.3 A Malta case study

The aim in Malta was to establish recycling behaviour and the purpose was to explore factors of recycling behaviour in order to determine predictors of recycling involvement.

According to Bezzina, et al. (2011) the findings of the study in Malta showed that there were factors that determined recycling behaviour in the Maltese.

These were:

- Individual attitude towards recycling;
- Skill requirements, awareness and knowledge;
- Societal influence and motivation.

The behaviour studies in Malta might be relevant to eThekweni Municipality as to use as an example to conduct research on attitude of people towards recycling.

2.9.4 Local government policies on waste management

The eThekweni municipality's terms of reference on waste management are based on *The Constitution of the Republic of South Africa, Act 108, 2006, section 24 of chapter 2, Integrated Development plan 2012/13 – 2016/17 (IDP) and the Polokwane declaration and The South African Waste Management Bill.*

The above mentioned documents will be interrogated further to define the current position in turn this will clearly determine what needs to be done in the future.

2.9.4.1 The Constitution of the Republic of South African Act 108, 1996

The *Constitution of the Republic of South African* is the highest law in the land. It is our bill of rights but it also states that caring and saving the environment is mandatory on every citizen.

(<http://www.info.gov.za/documents/constitution/1996/96cons2.htm#24>)

The Chapter 2 section 24 from Bill of Human Right states that:

“Everyone has the right

- a. to an environment that is not harmful to their health or well-being; and
- b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
 - i. prevent pollution and ecological degradation;
 - ii. promote conservation; and
 - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.

2.9.4.2 The eThekweni Municipality 2012/13 – 2016/17 Integrated Development Plan (IDP)

The IDP is an on-going programme of the work started by the democratic government to ensure that the eThekweni community fully participates in the governance of their municipalities. At the sphere of government closest to the people, municipalities have a crucial and leading responsibility to achieve delivery of free basic services, building sustainable human settlements and viable communities, improving all public services, building infrastructure, creating job opportunities and fighting poverty. The eThekweni municipality has an eight-point plan which is the guide to what needs to be achieved by the city within a stipulated period.

The eight point plan involves:

- 1. The sustainability of the natural and built environment;
- 2. Economic development and creation of jobs;
- 3. The improved quality of living environments;
- 4. A safe, healthy and secure environment;
- 5. The empowerment of citizens;
- 6. Programme designed to celebrate our cultural diversity;
- 7. Good governance; and
- 8. Financial sustainability and viability.

The eThekweni Municipality define points 3 and 4, (the quality living environments and safe healthy and secure environment) as its ecological priorities. The municipality aims to ensure decreasing costs of services. The above 8-point plan is budgeted for the years 2012 – 2017.

2.9.4.3 *Polokwane declaration*

The *Polokwane declaration* was the outcome of the waste summit that was held from 26 -28 September 2001 in Polokwane, Northern Province of South Africa, where the representatives were from government – national, provincial and local levels, as well as other representatives from civil society and the business community.

The aim of the summit was to develop a waste management plan that would contribute to a measurable improvement and sustainable development in the quality of life of the people of South Africa by involving all South Africans in the effective reduction of waste. The summit recognised that waste management is a priority for all South Africans, and that there was a need for immediate action to reduce, reuse, and recycle waste in order to protect the environment.

The goal of the summit was to reduce waste generation and disposal by fifty percent and twenty five percent respectively by 2012 and to implement a plan for no waste by 2022 by governing a commitment to the principles of waste minimization, reuse, and recycling in order to sustain commitment to the *Integrated Pollution and Waste Management Policy, the National Waste Management Strategy*.

The parties committed themselves and their representatives signed the declaration which states that government, business and civil society will work together toward the achievement of the goal for the reduction of waste generation. The parties committed themselves to the following actions: The prioritization of waste management, the implementation of the National Waste Management Strategy (NWMS), the promulgation of a legislative and regulatory framework to promote waste minimization and recycling, the provision of collection and disposal resources, setting the 2012 target for achieving defined reduction objectives, the distribution of information on the status quo of reduction minimization programmes in the country,

the design and implementation of a waste audit plan, the development of economic tools to support waste management programmes, the provision of public and educational programmes that will encourage participation in the waste minimization programme, the training and development of inter-departmental abilities, the implementation of a waste education and monitoring programme, the development of systems that could determine the physical and financial responsibility for waste, and to achieve the effective management of waste disposal facilities, thereby avoiding the need to expand existing facilities, development of empowerment opportunities, for small and medium enterprise.

The above actions that needed to be taken were considered to be important and they were interdependent. In execution they follow the listed sequence, the first action being the prioritizing of waste management, the last being promoting employment and economic empowerment.

The following participants were present and were the stakeholders the *Polokwane Declaration*: South African government representatives (national, provincial and local), Civil society, and the business community.

National, provincial and local government were to perform what is stated below: Research and development of a legislative and regulatory framework by June 2002; to develop the National Waste Management System (NWMS), to encourage the relationship between inter-governmental structures, to support the economic resources to develop NWMS; to organize a stakeholder's forum from different sectors, to encourage and implement sustainable poverty alleviation programmes; to promote the founding of a National Waste Fund; to establish a suitable monitoring system for waste management; and to organize a communication strategy involving awareness campaigns.

Civil society's duty according to *Polokwane Declaration* was to provide the community empowerment programmes, empower skills development, channel administrative services that give positive results to environmental waste management, institute strict regulatory processes in the management of disposal sites, promote and support the concept of waste minimization and participate in and

promote of health and safety enhancing recycling programmes, interact with government and stakeholders on all issues; and engage active mobilization of Public-Private-Partnerships to implement waste management programmes.

The business community involvement according to *Polokwane Declaration* was to engage with other stakeholders from government and civil society develop and commit to a programme for sustainable partnerships, regulate the standardization of the relevant legislation; set targets for waste minimization programmes; improve the collaborative relationship between society, government and businesses in the waste management enterprise; develop friendly and safe environmental products; improve networking and sharing of information; become involved in implementing strategies that promise responsibility for handling of products; improve sustainable private and public relationship in order to improve waste management services; and Encourage and promote recycling activities which are sustainable and expand opportunities in the recycling industry by thirty percent by 2012.

2.9.4.4 The Waste Management Bill

This is a South African act which was adopted in March 2009 (Act no 59, 2008). The purpose of the act is “to revive the law that is responsible for controlling waste management issues in order to secure sustainability development, to provide a safe healthy environment with reasonable measures for ecological degradation, prevention of pollution and , to provide for institutional arrangements and planning matters” (p.75). The overall objective is to minimize the consumption of natural resources and to achieve integrated waste management reporting and planning.

Previous studies suggest that, in some countries, control measures and financial availability from the government are important to reverse logistics facilitation, however, in other countries like Hong Kong, “the government did not play an important role in promoting activities and no encouragement towards reverse logistics was provided” (Jahre, 1995, p. 39). The above suggests that the non participation of government does not speed up or sustain waste management or recycling activities.

The eThekweni municipality has policies that are in place that could guide them towards an effective recycling plan. The eThekweni municipality can further experiment with what was done and what was successful in other counties.

2.10 Economic and political issues around recycling

According to Pun (2006) a simple idea is sustainable development. This is about working and ensuring better quality life for all, and for future generations. To meet the needs for achievement of sustainable development a concern with achieving economic growth is important because the destroyed environment will eventually result in a stagnant economic growth, retarding the quality of life and making sure that these economic and environmental rewards are not available.

There are different methods that have been used for definitions of sustainable development. The most commonly used globally, is the definition which refers to “meeting the needs of the current generation without compromising the ability of future generations to meet their own needs” (Pun, 2006, p. 101).

There are key broad objectives which underlie sustainable development:

- “Social progress which recognizes the needs of everyone. It is not enough to focus on economic and environmental policies if whole groups in society, or parts of the country, are excluded. We have to reduce the harm to health caused by poverty, poor housing, unemployment and pollution. And our objective must be for everyone to live in a clean and safe environment, although that should not mean adopting policies which would prevent people from being able to afford the basic services they need. Nor should our needs be met by treating others elsewhere in the world unfairly” (Pun, 2006, p. 103).
- “Effective protection of the environment. This means acting to limit global environmental threats, such as climate change; to protect human health and safety from hazards such as poor air quality and toxic chemicals; and to protect things which people need or value, such as wildlife, landscapes, and historic buildings” (Pun, 2006, p. 103).

- “Prudent use of natural resources. This does not mean denying ourselves the use of non-renewable resources like oil and gas, but we do need to make sure that we use them efficiently and that alternatives are developed to replace them in due course. Renewable resources, such as water, should be used in ways that do not endanger the resource or cause serious damage or pollution” (Pun, 2006, p. 104).
- “Sustainable development includes broadly thinking about objectives and about the effects of what we do and also thinking about total costs and rewards in the broader scope, and not separating things out into economic, environmental, and social compartments” (Pun, 2006, p. 104).

2.11 Conclusion

The above literature review showed that recycling is a broad subject and there are many issues that need to be attended too in order to implement a successful recycling project. This information from the literature review was relevant in order to understand the attitude towards and perception of recycling in Cato Crest, and this was to assist in taking an informed decision on what needed to be done in order to improve or sustain recycling in Cato Crest.

Chapter 3: Research Methodology

3.1 Introduction

The purpose of understanding the attitude towards and perception of recycling in Cato Crest communities was to assist in identifying whether or not the eThekweni Municipality's approach to recycling was in line with the goals and the targets of recycling in the opinion of the respondents.

The findings were intended to help to evaluate whether or not the eThekweni Municipality's approach was capable of meeting its goals and this in turn could help to identify what was the attitude of members of the Cato Crest Community towards the concept of recycling.

The fieldwork was conducted in Cato Crest, Durban. The study was mainly qualitative, and interviews were conducted with 10 recyclers from the community and with school educators who fully participate in recycling in their schools.

The research question was structured in such a way that would be assisting in answering the following questions:

- What are the attitudes towards and perceptions of people in Cato Crest regarding recycling?
- What are the motives for Cato Crest people dumping rather than recycling?
- What methods or resources are there in Cato Crest for effective recycling?

A focus group of 10 people was also constituted comprising Government officials from eThekweni municipality and representatives from Environmental Health, the Department of Agriculture and Environmental affairs, non-Governmental organizations and Cato Crest general community members all of whom work in Cato Crest.

The additional primary data was collected, and analysis was done. The data analysed involved a comparison between the records of 4 weeks consecutive

tonnages of waste that went to the Bisasar landfill before recycling was in place in Cato Crest, and 4 weeks consecutive tonnages of waste after recycling was in place.

The focus group results, the literature analysis and secondary data analysis were used to compliment the interview results. The attitudes and perception study of recycling in Cato Crest was more of a descriptive study in nature and with all elements of a qualitative study.

3.2 Descriptive study

A descriptive study is used to analyse traits of variables of interest in a given situation, after clearly describing and understanding the situation. The reason why a descriptive study was chosen for this study was because descriptive studies present data in a meaningful format which assist in:

- “Exploring the traits of a group in a situation that is given;
- Assessing and thinking structurally about dynamics in a given particular state,
- Suggesting ideas for research and development that should be taken further; and
- Help make certain simple decisions” (Sekaran & Bougie, 2009, p. 106).

In Cato Crest the community was involved in recycling by participating in contributing recyclables to the recyclers. To explore this information, it was important to source the information from the primary collectors on what recyclables they collect, when and where they sell these and how far from Cato Crest they sell recyclables, how often they sell and why they choose one recycling company over another.

The findings and analysis of results will be discussed in Chapter 4.

3.3 Data Collection

3.3.1 Qualitative Study

A qualitative study is defined by different writers in different subject contexts. According to Dunn (2010) qualitative research approaches are distinguished by a reliance on verbal reports, descriptions and interpretations of events. Qualitative data

is not numerical nor are they usually subjected to traditional methods of analysis; instead they are examined in their raw form.

According to Sekaran & Bougie (2009) qualitative data is collected and captured as words and the information can be derived from both primary and secondary sources such as the internet, focus group, government publications, individuals and company records.

The “qualitative research is a mixture of rational, explorative and intuitive, where the skills and experience of the researcher plays an important role in the analysis of data; it often focuses on social processes” (Ghauri & Gronhaug, 2002, p. 86). “The skills that are needed to do qualitative research are thinking back and paying attention to details, analysing situations with an open mind, eliminating biases and carefully recognize it, acquiring reliable and relevant information, and having theoretical background, social sensitivity and the ability to keep analytical distance while at the same time utilizing past experience, and having a shrewd sense of observation and interaction” (Ghauri & Gronhaug, 2002, p. 86).

Qualitative research has the following components, according to Ghauri & Gronhaug (2002, p.87) “it contains data that have been captured from interviews and observation, second, the analytical technique that is procedural that is used to conceptualize data in order to explore the technique to conceptualize and analyse the data to arrive at the findings or theories and lastly report, written or verbal”.

There is a difference between qualitative and quantitative enquiry. Strauss & Corbin (as cited in Ghauri & Gronhaug, 2002, p.86) declare that “the qualitative methods direct understanding using the respondent informant’s observations in a natural setting.

“Quantitative research is a category of research that is numerically oriented, no matter what their original form; data used in quantitative research is always converted into numbers for ease of interpretation and statistical analysis” (Dunn 2010, p. 429).

The different definitions above on qualitative study, leads to the conclusion that a qualitative study needs a precise ability to interpret the information and to categorize it accordingly, as the information that is given in words carries the expression of feelings.

The attitudinal and perceptual study of recycling in Cato Crest involved pure qualitative data with the interpretation and conclusions being based on information collected using three sources: the data from interviews and focus group, and collection of secondary data from the DSW data capturing system.

A sample was taken from the population. The advantages of sampling are that:

- It is easy to collect data;
- It saves time, costs and other human resources; and
- It produces more reliable results (depending on the size of the sample and the kind of sampling used).

“The sampling involves the required individuals are selected from the population for the purpose of the study” (Sekaran, 2003, p. 265). Umsha (cited in Sekaran, 2003, p. 265) affirms “that sampling is a process of selecting the required number of elements from the specified population, and that sample is used in understanding of its traits or features would make it possible for us to generalize such properties or characteristics to the population elements”.

In this study probability sampling was used. According to Sekaran (2003, p. 267) “in probability sampling is where elements selected from a population have a fair chance of being selected as sample subjects. The no probability sampling is where the elements do not have a known or established chance of being selected as subjects” Sekaran (2003, p. 267)

3.3.1.1 Interviews

The interview is the session between researcher and an informant. According to Ghauri & Gronhaug, (2002, p.100) “structured interviews refers to where a standard format of interview is used with an emphasis on fixed response categories and

systematic sampling and loading procedures combined with quantitative measures and statistical methods versus unstructured interviews where the respondents are given almost full liberty to discuss reactions, opinions, and behaviour on a particular issue”.

Gillham (2000, p. 10) states: “the success and positive feature of the interview is the rich content and understandable content of the material it turns up”. The advantage of structured interviews lies in the uniformity of the behaviour of interviewers. Other researchers can therefore, replicate the interview in similar conditions. The disadvantage is that this demands a skilled and cautious interviewer.

In this study unstructured interviews were conducted, as the idea was to get rich responses which would assist in determining the current situation and which would assist in determining future actions to improve recycling in Cato Crest.

In the Cato Crest attitudes and perceptions study, qualitative data was collected by conducting interviews with local primary collectors which are members of the community. A primary collector is a person who collects recyclable items like paper, bottles, cans, metal, plastic etc. and sells this to companies who processes these items; companies like Mondi paper, Consol for glass etc, therefore a primary collector is a member of the community.

There are approximately 15 primary collectors in Cato Crest, but the interviews could only be conducted with 10 collectors who were willing to participate. A letter of consent was given to them and after reading it and agreeing to participate in the study; they then signed the letter (see Appendix 2).

The interviews were also conducted with school educators who participated in active recycling in their respective schools. In this case the educators were responsible for collecting information and for implementing recycling in their schools. The school children were primary collectors as they were collecting recyclables from their areas/homes and bringing recyclables to the school. The total tonnage collected was then sold to the secondary recyclers and educators who were responsible for

facilitating this. For this reason, in this study, educators were also treated as primary recyclers and three educators were interviewed.

The interviews were conducted during September and October, during the week and over weekends. The reason for this was that the interviewer was dependent on the availability of a time and convenient venue for the interviewees. This was a challenge as most of the interviewees had time constraints. Given that interviews took about 30 to 40 minutes and in some cases up to 1 hour to conduct, this proved problematic even though interviewees were willing and had agreed to take part in the study. The challenge of conducting such interviews in schools related to the duration of the interview. There was no time available to accommodate the interviews. Permission from the Department of Education had to be obtained and this was approved through principals since interviews in a school situation have to take place during teaching hours and the time table has to be reshuffled to accommodate interviews. Some interviews with educators lasted about 30 minutes whilst some lasted for about sixty minutes.

The interviews that were conducted were one-on-one. The advantages of face-to-face interviews, according to Sekaran (2003, p. 232) are:

- “the researcher can easily familiarise him/herself with the questions as required and can easily clarify non-understanding;
- The responses are substantiated by repeating the questions; and
- the researcher can also pick up body language expressions from the respondent”.

The disadvantages of face-to-face interviews are:

- “The interviews impose geographical constraints on the survey and resources are required if such a survey needs to be internationally or nationally used.” (Sekaran,, 2003, p. 232);
- “The costs of training interviewers to reduce interviewer biases; and
- Respondents might not feel happy about their responses being known when they interact face-to-face with an interviewer” (Sekaran, 2003, p. 232).

The study by Sekaran (2003, p. 229) maintains that “it is important for the interviewee to come up with their true and honest opinion, as this behaviour can bias

the data if the interviewee provides information that they think is what the interviewer expects to hear". Bias can be situational and it can also occur when different interviewers establish different levels of trust with their interviewees.

The interview schedule is in Appendix 1. The first question was on the age of the interviewee followed by what other business they were doing other than recycling. The idea here was to make sure that the respondent gave information and to assess the impression about the situation. The responses were written next to each question, each questionnaire was labelled according to the name of the interviewee. All interviewees were visited at their preferred venue and the challenge was to get the interviewees at a specified time.

3.3.1.2 Focus group

A focus group is where the researcher gets information by collecting together several respondents at the same time and by initiating a discussion on certain topics. The opinions of respondents constitute the information which will be analysed later. In using this method of collecting data, according to Ghauri & Gronhaug, (2002, p. 109), "discussion is influenced by the size of the group, its composition, the personalities of people involved, the roles they are asked to play, the physical and geographical arrangement of the meeting and the chemistry between the interviewer and the group of individuals".

In this study, a group of 9 individuals were interviewed. This focus group comprised members of the Cato Crest Enviro-forum, Government officials from eThekweni Municipality, community members and non-governmental organizations. The Enviro-forum meets on a monthly basis to discuss environmental issues in Cato Crest including assisting in implementation of recycling. Members who participated from this group also signed the consent form.

The normal venue for the Enviro-forum meetings (the Cato Crest community hall) was used to conduct this session. All members that were present signed an attendance register. The targeted number for the focus group was 10 but only 9 members attended the session.

There were no challenges in the session with the focus group as the members were knowledgeable about the subject and they assisted the community in implementing the recycling programme. All members were open to each other as they were composed of a group of individuals that meet on a monthly basis to discuss the issues of common interest; therefore there was no individual that was shy. The information received from this group was written down as there was no recording facility on the day of the interview. Recording all the details did not present a problem as all the members were relaxed and the session lasted for 90 minutes. The content was analysed later.

3.3.1.3 Secondary Data

Secondary data in this study was not gathered through existing sources. “Secondary data can help the researchers to answer investigated questions or to solve some or all of the research problems. Secondary data helps in the establishing of a problem or in creating solid and specific research questions. It further helps in concluding about the relevance of certain research methods or it could even suggest or provide the benchmarking scale and other findings that can be critically analysed later” (Ghauri & Gronhaug, 2002, p.76).

The overall advantage of the use of secondary data is that it saves costs and time. According to Ghauri & Gronhaug, (2002, p.78) “secondary data determine relevant methods to handle a particular research problem; this provides a comparison tool which can be easily interpreted”.

Primary data refers to “the data which is relevant to a particular study and research problem and are more consistent with the research question and research objectives and their disadvantage is, they can take a long time and cost a lot to collect” (Ghauri & Gronhaug, 2002, p 82).

In conclusion, some researchers suggest that one should begin with secondary data and only when it is exhausted, proceed with primary data. For the purpose of this study, the primary data was collected first, in this case interviews and focus group discussions, and then followed by the collection of secondary data.

In Cato Crest domestic waste was collected and sent to Bisaars landfill site in Springfield for disposal. The waste collection and removal from Cato Crest by eThekweni Municipality has been in place for more than 10 years. When waste is disposed of into landfills by municipality trucks, a record of waste that is collected on a particular day is kept. This record assists the municipality in planning for the future waste collection budget. For the above reason there was a need to complement the findings from primary data, that is interviews and from a focus group with figures which were going to validate or invalidate the claims of effectiveness of recycling in Cato Crest.

The record of tonnage of waste disposed in Bisaars landfill before recycling was in place was captured and the record of tonnages of waste after recycling was in place in Cato Crest was also captured. The 4 weeks consecutive tonnages of waste that went into the landfill in September 2011, before recycling was in place and 4 weeks consecutive tonnages record for September 2012 after recycling was in place was compared to determine, whether or not there was a decrease of waste that goes into the landfill from Cato Crest after recycling was in place.

3.3.1.4 Triangulation

Triangulation is the technique that is also often associated with reliability and validity in qualitative research. The idea is to use different methods or sources that lead to the same results (Sekaran & Bougie, 2009, p. 385). According to Ghauri & Gronhaug (2002, p. 181) “triangulation is the combination of strategies used to collect data in a particular study of the same subject”. “Triangulation improves accuracy in judgements and by collecting data through different methods even collecting different kinds of data on the subject matter of study” (Ghauri & Gronhaug, 2002, p. 181) .

In this study the information was collected from three sources. Firstly, through interviews of recyclables collectors, whom on a day-to-day basis were exposed to all situations related to recycling. The second method of collecting information was collected from the focus group and lastly, information was collected from archives of the eThekweni Municipality landfill. All this information from different sources was analysed and assessed for complementary elements which were used to write an informed report.

3.3.2 Ethics in data collection

The university granted the ethical clearance for this study (see Appendix 3). Many ethical issues were addressed when data was collected. The respondents were given an opportunity to read and sign a consent form; the participants were adult recyclers. According to Sekaran, (2003, p. 260) the ethics involves the following points below:

- “securely treating information from the respondent as highly confidential and protecting his or her privacy is one of the crucial responsibilities.
- The researcher should not confuse the subject of the study; the purpose of the study must be clearly explained.
- The self-esteem and respect of the respondent should never be violated.
- Participation in the survey is not compulsory; nobody should be forced if not interested;
- No non-participant observers should be allowed;
- The subjects should be protected all times and they must never be exposed to situations that could threaten them;
- The data that is collected should not be distorted when reporting”.

3.4 Data analysis

Data analysis is the process of streamlining data in order for the data that is collected to bring order, create structure and thoughtful meaning to the bulk of information data collected, for this reason the interpretation plays an important role in research, because it is needed to arrive at understanding this material. According to Saunders et al., (as cited in Ghauri & Gronhaug, 2002, p. 137) “qualitative data analysis is based on interpretations, collected data in the non-standardised data requiring data classification into categories and analysis conducted through the use of conceptualization”.

Thematic analysis, which was used in this study, was a process to be used with qualitative information. According to Boyatzis, (1998, p. 4) thematic analysis “is not classified as qualitative system but it is a method that can be used with all or most

qualitative methods and it accommodates for the translation of qualitative methods into quantitative data”. According to Boyatzis (1998, p. 5) “thematic analysis assists researchers or observers to use a wide variety of types of information in a systematic manner that increases their accuracy or sensitivity in understanding and interpreting observations about events, situations, people and organizations”.

3.5 Validity and reliability

Validity “is a test of how well the instrument that is developed measures the concept it is intended to measure” (Sekaran, 2009, p.157). In the Cato Crest study, the data collected from interviews was validated by the collection of the secondary data. In this case the whole idea was to measure the success of recycling in Cato Crest and this was to be measured by the increase of the volume of recyclables collected from Cato Crest and the decrease of tonnages of waste that goes into the landfill.“ Accuracy of the measurement is crucial so that the model is used to develop a concept or conclusion is indeed accurate in the concept we set out to measure” (Sekaran 2009, p.157). Accuracy is established through different kinds of validity and reliability tests.

3.6 Summary

The above research methodology attempted to give an understanding of what type of investigation was used to understand the attitudes and perceptions of recycling in Cato Crest. A description was given of how all necessary information was collected and the research methodology also highlighted the challenges of data collection.

Chapter 4: Results and discussion

4.1 Introduction

This chapter presents the results and discussion of the study of the attitudes towards and the perception of recycling in Cato Crest.

The presentation of the results and discussion are structured as follows: The age of the primary collectors was analysed to assist in profiling the behaviour of the primary collectors. The following concepts were presented in subsections of this chapter, Initiative, Planning and motivation for recycling, Self-control and community commitment, Networking, Empowerment. Further that a waste tonnage record was also analysed.

4.2 Age analysis of primary collectors

The first question enquired into the age of the respondent irrespective of their gender. The analysis showed that individuals who were involved in recycling were between the ages of 35 and 45 years. It was important to establish the age group of collectors as this was used to assist in analysing the behaviour of this particular age group. The distribution showed to what age group recycling efforts could be spread. The factors hindering the participation of other age groups were also investigated.

This age group of individuals belongs to Generation X (Gen Xers). According to Schermerhorn et al. (2011) they make up to 36% of the workplace. They bring a wealth of experience, dedication and commitment that contributes to productivity, and a sense of professionalism that is of benefit to their younger counterparts. This from the onset gave a clear picture that primary collectors were individuals who used recycling as a source of income, and were people who are dedicated and committed to what they were doing. From this analysis of age, a conclusion was drawn that the age is proportional to the attitude of recyclers, as from the above age analysis it was concluded that the attitude was positive for all people that participated in recycling in Cato Crest, there could be more reasons to this, a further research is recommended on this topic.

The educators who were responsible for promoting and facilitating recycling in respective schools were also interviewed, and the results showed that even in this group of collectors, it was educators who are between the ages 35 and 45 years who are driving recycling. These individuals were not driven by self-interest but by poor and disadvantaged school children and the conditions that their students live under. Most parents of these school children were not working; therefore the income generated from selling recyclables was used for other school projects like financing school tours and other basic needs of the school. The idea of recycling in schools was purely for income generation as only a small percentage of parents managed to pay the school fees for their children.

The position taken by the schools was that which was favoured by the United States Environmental Protection Agency, as explained in the literature review. The concept of PAYT was introduced as an incentive for people to recycle. The United States Environmental Protection Agency (2009) previous studies argued that PAYT is an effective tool for poor communities that are failing to meet with increasing waste management disposal fees as this method resulted to a direct economic reward to householders that participated in recycling because they produced less garbage and a generated high tonnage of recycled waste.

In Cato Crest schools, recycling was used to support extra mural activities like school tours, as mentioned above. This also raised a question as to whether or not recycling was used for the correct reasons or just to raise income rather than to teach school children that they were saving the environment for future benefit.

In the literature review it was explained that, there were three relevant demographic factors that have been considered in studies relating to recycling behaviour. There are three factors that are particular important for the present study age analysis, education and gender of the participants of recycling.

In the Cato Crest study age was relevant. The age analysis was important as it suggested that it would be possible to spread the recycling concepts to the next generation. Those who participated fully in recycling displayed positive attitudes and

could be capable of mentoring the younger generation. This challenges the eThekweni Municipality to preserve this positive attitude and to build on it to achieve its goal of reducing waste that goes to the landfill. From the above position, themes were developed as follows. The work of Boyatzis (1998) was used to identify the themes below.

4.3 Initiative

Regarding initiative, Boyatzis (1998, p.105) explains that the “intent is to accomplish something, and to take this action prior to being asked and forced or provoked into it”. A person presenting initiative skills is clearly identified as the initiator of actions in a particular situation, further this is displayed when a person:

- takes forward action first without being forced by situations or events;
- takes action by seeking information; and
- takes action that is different from anyone else and such action does not pander to the expectations of others’.

In this study, the respondents were asked three different questions:

- Do you have recycling meetings?
- Do you know of any stakeholders that participate in recycling in the area?
- Do you know the role of eThekweni Municipality with regard to recycling?

The idea was to establish whether or not, the participation in recycling was externally driven, and from the responses, this is not the case.

‘I do not know any stakeholders and involvement of eThekweni Municipality’. (R3)

‘...no there is no stakeholders meetings in this area’. (R5)

‘There are no stakeholders or recycling meetings here’. (R7)

Referring to the *Polokwane declaration* as cited in the literature review of this study, the duty of the government at all levels according to this declaration was ‘to develop strong intergovernmental co-ordination and cooperation. In addition, it had to set up multi-stakeholder forum’, this was to happen at a local level and from this finding it was clear that respondents took action themselves without being persuaded or

forced to do so. This was a positive sign which showed that collectors were using their initiative. This was a challenge for these individual collectors as the support that they were supposed to be getting from government officials seemed to be lacking or it was not sufficient and did not meet the required standards.

In this area there were no recycling meetings. The assumption was that if these meetings had been held, they would have empowered primary collectors to sustain their recycling programme.

'There were no recycling meeting'. (R3)

'No recycling meeting'. (R4)

'No meetings in this area'. (R2)

These meetings would have established collectively the problems associated with recycling in the area and this would have attracted more interested parties as meetings should have established skills that collectors might have displayed in business management if they perceive recycling as a business. The partnership, trust and strong relationships that should have been fostered in these meetings could have provided the platform from which to measure the effectiveness of recycling in the area and of using the positive attitudes individuals have on recycling. In all these circumstances, the respondents continued with recycling because they were driven by a personal interest, with little information that they had acquired through presentations and workshops.

4.4 Planning and motivation for recycling

In this theme, “the intention is to identify, plan and organize future activities in order for the intended actions to result in a movement in desired.

This is displayed when a person:

- Sets achievable goals or attainable objectives to be achieved with-in a measurable period;
- Outlines terms of actions; and
- Organizes materials and activities to complete a task or to reach a desired goal” (Boyatzis, 1998, 104).

The respondents were asked the reasons for recycling and what methods they were using to collect recyclables.

'.....I recycle to generate income for my family'. (R3)

'I do recycling to generate the income'. (R2)

'I do recycling to have income and survive'. (R7)

The answer to reasons for recycling got a unanimous response, as for all respondents it was purely for business. This response was complemented by discussion from the focus group. At some stage prior to implementation of recycling, the focus group members engaged one-on-one with collectors to assist them to identify the secondary collectors or recycling companies. From the focus group feedback it was clear that even the government officials drove the recycling in the direction of it being a tool to generate income.

From the study conducted by Meneses &Palacio (2006), those who participated in 'the incentive recycling method' displayed less interest in continuing with recycling and had not developed a positive attitude towards recycling and recycling involvement.

The challenge was that government officials did not have a specific policy which detailed the trainings in a structured way. This was going to entail a step-by-step approach towards establishing what the requirements were and how many modules or basic training sessions a person interested in recycling should undertake in order to implement recycling successfully.

From the findings of this study, based on the responses from primary collectors from Cato Crest, and bearing in mind the findings of Meneses & Palacio (2006), it can be concluded that there is an inverse relationship between reward recycling and interest. If there is reward involvement only in the long run, an interest in recycling will be low. The reason for this is that the more you recycle for the purpose of getting an immediate cash benefit, then there is a possibility of losing interest in recycling because financial rewards are modest so that recycling must not solely be for generating income. Knowledge and understanding was important for effective recycling.

The perception of recycling in Cato Crest was not based on fully understood concepts and purposes of recycling.

From the responses, it was only in schools where they had two reasons to recycle.

‘...to get rid of nuisance paper and to generate income that will assist disadvantaged children’. (R10)

This presented an opportunity for schools to generate income and to reduce school paper that was created as a record of all exam scripts for children and the School’s Act required that exam scripts be kept for a certain period then afterwards be disposed of in a safe environment, therefore this was the opportunity for the schools to protect and maintain the privacy of the children’s marks and to generate extra income, and not to minimise the waste that goes into the landfill or to save the environment for future generations.

The question relating to planning for the collection of recyclables was asked: ‘what methods are you using to collect recyclables’?

‘I walk along the road, and I also go to people’s houses to collect cans and bottles’. (R7)

The response below indicated school educators’ perceptions on what methods they use to collect recyclables.

‘Children collect cans, cardboard and paper from their homes and bring it to the school, the class that collects most recyclables for a week gets a reward’. (R10)

Primary collectors were collecting recyclables from individual’s homes, taverns in the area and from community houses after family functions like parties, funerals, weddings, etc. This involved a series of actions; whether negotiating in order to get recyclables or sometimes collecting recyclables at odd hours.

From the interviews it was established that there were no prior arrangements made by collectors and this resulted in some recyclables being contaminated with other toxic materials. For that reason it was established that collectors could not maximise their collection of recyclables due to some hindering factors like contamination of recyclables.

Recycling was meant to save the environment for future generations. Aceti (2002) argued that individuals were encouraged to recycle because of pressures from family and friends that were already taking part in recycling activities and that, this behaviour increased the likelihood of participation. However, Vining & Ebreo (1990) reminded us that the social influence was high only when the behaviour was visible high.

There were challenges that resulted in respondents not reaching their set goals and targets.

'Recycling worked with tonnages; the higher the tonnage the lesser the expenses and the turnover was better'. (Focus group respondent)

It was mentioned that the reason for some participants giving up recycling was because some secondary collectors were not reliable since in some instances they were not collecting in time.

'The secondary collectors were not reliable'. (R5)

'...recyclers were dishonest, they did not give a good pay'. (R2)

'The various recyclers did not give a competitive pay'. (Focus group respondent)

The above responses spoke to the issue of improper planning, since responses from the focus group emphasised that recycling works with tonnages, and the primary collectors responded by blaming secondary collectors for not being reliable. This showed that the primary collectors did not talk to their customers, in this case the secondary collectors. A proper plan was important as part of the value chain system. From the above discussion on planning and motivation for recycling, it is clear that respondents had a set of goals and planned activities to achieve the targets and the

motivation for recycling – to make money – was the same. To improve recycling in Cato Crest most of the planning needs to be designed and an in-depth knowledge of the purpose of recycling is important so that motivation for recycling will not only be based on making money but also on saving the environment for future generations.

4.5 Self-control and community commitment

According to Boyatzis (1998, p. 105) “the intent is to control personal desires, greed for the benefit of the organization, group or family goals. This is displayed when a person:

- Remains calm in the stressful settings
- Explicitly inhibit aggressive outbursts or impulsive behavior that may hurt others
- Explicitly denies a personal impulse need and desire”.

The respondents were asked how long they have been collecting recyclables and what enables or inhibit them to recycle.

‘I have been recycling for 3 months and the truck is coming every Thursday to collect recyclables, after a week sometimes I get R12 or more’. (R 1)

‘I have been collecting for four months; since I started the truck has not yet come to pick my bottles... I am planning to send my bottles to Consol in Gauteng, I am waiting to get application forms; my friend promised to bring the forms from Consol so that I will sell direct to them’. (R4)

Primary collectors interviewed were in recycling for a period of three to six months. Some were no longer in the programme. The schools had survived in recycling for a period of 1 year. The reason for this might be the mass numbers involved in recycling as most schools interviewed had enrolment ranging from 500 to 1000 learners per school and children participated in recycling. The respondents were asked about factors that inhibit them in continuing with recycling:

'... there was a lot effort that was put in and this resulted in high expectations and the return was inversely proportional to effort and expectation, that resulted in some respondents dumping the recycling'. (Focus group respondent)

'I have not received anything since I started four months ago, but I need money now to continue with my project, if I don't get money I will dump this thing.' (R4)

The above responses made it clear that from the beginning, recycling was promoted for the wrong reasons; therefore, it was perceived incorrectly and this contradicted the attitude which was positive. In general, significant actions must be followed by positive rewards. In Cato Crest, the rewards were under-calculated. This was not surprising as a lot of steps, factors and processes were omitted and recycling was perceived as just a way of deriving income.

If collectors had not been working in isolation and if full support had been forthcoming from the government, recyclables collectors would have known the costs or rewards associated with selling recyclables and more groups would have participated. In addition, the primary collectors would have known upfront the process to be followed in order to sell direct to recyclers like Mondi for paper and Consol for bottles.

This posed another challenge to eThekweni Municipality as most recyclable collectors only survived for a short period. This meant that there was no sustainability in the recycling efforts in Cato Crest even if there was a positive attitude towards recycling. The challenge here was for eThekweni Municipality to develop and implement a for zero waste plan as per the *Polokwane declaration* to assist the community to sustain recycling. From the declaration, government was given a specific role. Point 3 of the declaration states that government is charged with the task of developing and implementing a Legislative and Regulatory Framework to promote waste prevention, minimization, re-use and recycling.

Another challenge, already mentioned, was the geographic location of Cato Crest in close proximity to the eThekweni central business district (CBD). Many people from around the country when migrating to Durban would head for Cato Crest as there

would be modest or no transport costs to travel each working day to the central business district which was the focus for migration. The area was mainly dominated by informal houses which made the cost of living in this area very low. These factors caused a dramatic rise in the population of the area.

The challenge for the municipality was the rapid increase in waste that was deposited in the Bisaars landfill site in Springfield. This is supported by the tonnages statistics recorded from the Bisaars landfill site which were explored and analysed earlier in this study. This was going to continue to be the challenge for the municipality as its vision was to maintain a clean, healthy and green municipality capable of delivering a variety of ecosystem goods and services in natural environment. From the perspective of reducing waste that went into the landfill and increasing the greening of the city, there were no resources that were provided by the municipality to assist the Cato Crest community who wanted to participate in recycling without any financial gains. It was suggested that recycling equipment should have been placed for such uncontrollable growth in numbers in this area because it had a direct impact on waste generated and disposed of into landfills.

The perception that recycling was for a money-making business, was contradicted by the *Polokwane Declaration* that was signed by the municipality in 2007 as it was going to work on reducing the waste that goes into the landfill by a stipulated date. Nothing remarkable was done by eThekweni Municipality in Cato Crest from the date that the declaration was signed to 2012. The *Polokwane Declaration* clearly states that recycling requires participation of different stakeholders and it outlines what role each stakeholder was expected to play in minimising of waste generation.

The reasons why recycling in Cato Crest seems not to be working, even though the attitude to recycling was positive, are complex. This result was different from what has been suggested in the literature review. As already mentioned Aceti (2002) claimed that those individuals with knowledge and a strong positive perception of recycling recycled less or did not continue with recycling recycle due to lack of space and time. This statement is tricky as it raised the question of how much knowledge and understanding was required to implement effective recycling. In the Cato Crest community, lack of time to recycle, space, and moving recyclables were not the

reasons, and this showed that if perception could change and knowledge of recycling could clearly be explained and correct procedures followed, Cato Crest would not have the barriers that were encountered by collectors.

The data analysis showed that with the exception of school educators, all collectors had no other source of income other than recycling. This reinforces the fact that recycling was perceived as an income-generating tool by primary collectors in Cato Crest.

The analysis above from interview responses showed that the perception of recycling in this community was distorted. A halo effect was involved. "A halo effect uses one attribute to develop an overall impression of a person or situation" (Schermerhorn et al., 2011, p. 91). In this case factors influencing this community were lack of jobs, lack of education and poverty. As a result there was a lack of self-control as information was twisted and whatever decision was taken was not based on reality. Surviving the test of time for these respondents was expected to be a challenge.

The responses posed a challenge to the eThekweni Municipality to increase the knowledge of officials that were involved in environmental issues in particular recycling, because as from responses given by government officials, the individuals of the focus group also perceived recycling as a tool to generate income. The Department of Education needs to introduce a recycling programme as part of their own projects and should not rely on other departments. The Department of Education must source and use its own skills to sustain recycling in schools.

From all responses it was clear that the *Polokwane Declaration* or any other form of Waste Management and Minimisation bill/act was not being properly implemented.

In summary, there were many factors that contributed to self-control and community commitment. In this case, the intervention proved not to be as effective as it was expected to be and this resulted in some respondents not sticking to their plan. The factors in this case did not only affect the respondents but also the eThekweni Municipality in achieving its goal.

4.6 Networking

Networking is characterised by the “intention is to build relationships, that are either one-on-one relations, an alliance, or a complex set of relationships among a group of individuals” (Boyatzis, 1998, p.106). A person setting up a network would:

- Build a relationship with anybody that might be useful in the present or in the future to goal accomplishments;
- Sustain personal or work-related relationships; and
- Establish informal relationships to get things done.

The respondents were asked where they sold their recyclables and how they transported these recyclables.

‘The truck from reclamation comes every Thursday to collect and pay us’. (R5)

The responses gave a picture of the relations at the level of customer- supply relationship and customer-customer relationship. The primary collectors sold their recyclables to secondary collectors such as Reclamation, Environ-serve and others. From the literature review it was established that the objective of every supply chain was to maximize the overall productivity generated. Chopra and Meindi (2001, p. 147) argue that the “supply chain does not only fulfil customer requests but also other customer’s related activities like warehousing, retailing ,transportation and customers themselves”.

Networking in recycling is important as it assists in maximising the tonnages and improving the working customer relations. This would also assist collectors in their collecting from local residences after functions. Networking could minimise the collection of contaminated recyclables, as the community will learn not to put or mix their waste/ recyclables in a refuse bag and could address the problem of the unreliability of secondary collectors.

4.7 Empowerment

Empowerment involves “The intention is to motivate individuals or a group of people to develop their abilities or improve their performance toward an objective” (Boyatzis, 1998, p. 107).

Empowerment in this instance is demonstrated when someone:

- “Provides performance feedback that is to be used for improving efficiency in performance;
- Shares gained information, knowledge, tools and information that will help to get job done with improved abilities;
- Allows others to discuss performance challenges with the clear aim of improving their performance; and
- Explicitly tells another that he/she can accomplish an objective and provides encouragements” (Boyatzis, 1998, p. 107).

From this theme, the following sub-themes could be established:

4.7.1 Knowledge and awareness of recycling in the area

The common element in this enquiry was to assess the depth and knowledge of recycling to pursue success and sustainability.

The following question was asked in addition to those previously listed: What is the difference between the drop-off centre and the buy-back centre?

‘... no I don’t know the difference between the two’. (R7)

‘There are no such facilities in areas where there are low cost and informal houses, this information is irrelevant to the community of Cato Crest’ (Focus group respondent)

Most primary collectors sold their recyclables to secondary collectors which happened to be Reclamation, Mondi and Enviro-serve. Due to the area being close to the Central Business District (CBD) there were no close recycling centres

therefore in Cato Crest collectors were solely relying on somebody else to pick up their recyclables.

This arrangement of secondary collectors to come and pick up recyclables in Cato Crest had a cost implication which was charged to primary collectors by secondary collectors as these secondary collectors themselves did not have facilities to process recyclables. The secondary collectors were going to sell to recyclers some of which were based in Johannesburg, far North of KZN and even to China. This posed conflict when one compares the effort involved in the collection of materials to the effort involved in selling the recyclables. This was considered to be inequitable.

From the analysis, less recycling knowledge and awareness about recycling was detected amongst collectors. For eThekweni municipality to reduce waste that goes into the landfill from Cato Crest, assisting with the collection of recyclables from Cato Crest is important.

As far as the response to recycling meetings being held in the area is concerned, all participants responded that there were no recycling meetings. This means that there was no sharing of knowledge.

'No, nobody has invited me to any recycling meeting, who attends those meetings'? (R7)

This was another challenge for eThekweni Municipality. On the one hand it was concerned about the present landfill site reaching its capacity prematurely, yet on the other hand the Council does not seem interested in promoting the positive attitude portrayed by people of Cato Crest towards recycling that could reduce the waste that goes into the landfill.

When asked about the role of eThekweni Municipality in recycling, a participant responded:

'I don't know the role of municipality in recycling, they only collect rubbish'. (R7)

The response was based only on what Cleansing and Solid waste were doing in the area. This amounted to waste collection and waste education. Whilst the response showed that there was an expectation that DSW would be a custodian of recycling, this was also a responsibility of different government departments to assist communities to recycle. Government should work at all levels but locally it should be the responsibility of the municipality involved to source all the help that is required by communities. In the case of the eThekweni municipality and for Cato Crest, recycling points should have been established and funding should have been earmarked to roll out recycling in the area.

Tucker (2001, p. 221) argued that knowledge about recycling such as established, general knowledge, feedback and performance is more important than “general environmental concern”. He adds that “lack of knowledge or acknowledgement of it, generally retards recycling and leads to poor performances in recycling activities” Tucker (2001, p. 216). What is happening in Cato Crest is that individuals only do recycling to make money. The depth of knowledge and awareness of recycling is minimal as most primary collectors were not aware of other options where they could sell recyclables. It was not generally appreciated that it is only when recycling involves huge tonnages that good money can be made.

4.7.2 Continuous improvement

Continuous improvement is an element of total quality management as it was discussed in the literature review. When respondents were asked, what could be done to improve the recycling, they suggested that the price of recyclables should be regulated so that the recyclers or secondary collectors would need to register under Competition SA so that they could have a competitive advantage in prices.

‘Government must assist us with resources, the secondary collectors are [de]frauding us’. (R4)

Full participation of the community was suggested and recycling equipment in the form of igloos/glass bins. Recycling containers should be placed in Cato Crest to

assist those individuals who are not interested in money-making but interested in waste management and recycling.

4.8 Results of waste tonnages collected from Bisasar landfill from Cato Crest

In this study it was important to collect the records of tonnages of waste from a reliable source, which was eThekweni Municipality, DSW as they use the latest technology to capture the audited information records. A tonnage record of waste from Cato Crest was analysed. Table 1 shows waste tonnages collected in Cato Crest for the month of September 2011 before recycling was in place. Table 2 shows waste collected from Cato Crest when recycling was in place. For the past year there was one waste truck responsible for picking up waste from Cato Crest to take this to Bisasar landfill. The idea was to validate what was discussed with the focus group and from what transpired in the interview about the effectiveness of recycling in Cato Crest.

The comparative results for Table 1 and Table 2 are presented in Figure 1 below.

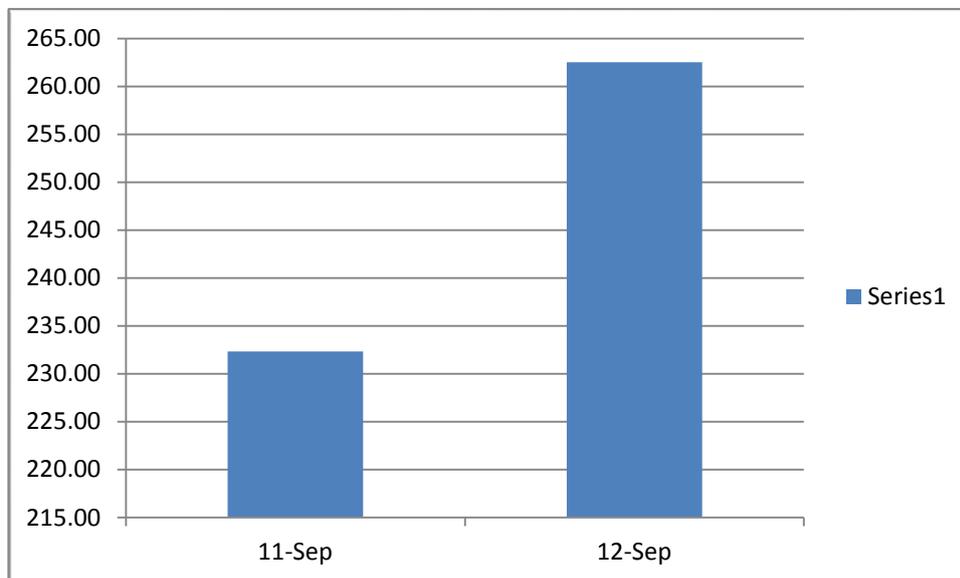


Figure 1: Tonnages of solid waste from Cato Crest, for the period of September 2011 and September 2012

The above results show that, there was an increase in the tonnages of waste that went into Bisasar landfill from Cato Crest from year 2011, when recycling was not in place compared with year 2012 when recycling was in place. The results showed that recycling was not working in Cato Crest and that more needed to be done to reduce waste destined for the landfill. The challenge for the eThekweni Municipality is to determine the real cause for this increase as some of the reasons could be the factors mentioned in the discussion.

4.9 Summary

From the discussion above it can be concluded that recycling is not to be treated in isolation. There were targets to be followed and from the responses it is clear that the first 14 action points suggested in the *Polokwane Declaration* were ignored and that the whole recycling concept was driven to suit point 15 which is: 'to promote economic empowerment, employment opportunities and income generation, in particular in small, medium and micro-enterprise, through increases product re-use and material recycling'.

There is no record of a waste audit having been done and there is no record of waste management strategies that were implemented. This was because individual collectors were driven by income generation rather than by the need to meet the waste summit goals or by the need to preserve the environment.

Each stakeholder group from the summit was given a task taken from those listed as government tasks as detailed in the literature review.

The argument in this case might be that the government in its pre-planning for recycling to be effective in Cato Crest should have ensured that there were strong inter-governmental and cooperative structures in place to support recycling in Cato Crest. Where in all of this does the National Waste Fund feature?

4.10 Conclusion

The discussion of the results above showed that recycling in Cato Crest has a potential to be successful as the attitude towards recycling was positive. A sample of opinions expressed by individual members of the community collectors group showed that primary collectors were keen to recycle no matter what the situation was and that their main challenge was insufficient support from other stakeholders i.e. government, business community, etc. All stakeholders need to play their part for the successful implementation of recycling in Cato Crest as per the *Polokwane Declaration* signed in 2001.

The secondary collectors need to play a reliable role in collecting all recyclables in time as transportation of recyclables was a major problem. The sound support from eThekweni Municipality is important. The information collected from the portal of eThekweni Municipality was analysed and this showed an increase in waste tonnages that are being generated from Cato Crest and this showed that recycling in Cato Crest was not successful as there was an increase in waste tonnages that was disposed of into Bisasar landfill. There was no decrease in waste due to some of the waste being taken for recycling. Figure 1 presented a summary of the status of recycling in Cato Manor.

Chapter 5: Conclusion and recommendations

5.1 Introduction

This chapter summarises the findings established when seeking to understand the attitude towards and perception of recycling in Cato Crest, Durban. The findings can assist the Cato Crest collectors to maximise their recyclables tonnages by collecting recyclables that are not contaminated and also by increasing the participation in recycling after the gaps have been identified of what causes people not to recycle and in turn maximise their turn-over. The findings should also assist the eThekweni Municipality to approach its goal of reducing the waste that goes into their landfill more realistically.

5.2 Study objectives

The objectives of the study were as follows:

- To identify the attitudes towards and perceptions of Cato Crest community members towards recycling.
- To determine improved methods of implementing recycling activities in Cato Crest.
- To determine the gaps, if any, in the EThekweni Municipality waste removal system, that could hinder the success of recycling and the cost saving methods that could assist in increasing recycling output.

5.2.1 Attitudes and perceptions with regards to recycling

The first objective was to identify the attitudes towards and perception of Cato Crest residents towards recycling. The findings suggested that the attitude of the Cato Crest community was positive towards the concept of recycling. There was participation of schools in the recycling effort and the attitude remained positive despite the lack of a storage depot for recyclables, and lack of support from government in terms of funding.

Most participants were participating in recycling in the hope of making money, which was not a bad idea but it tended to shut the door on a full understanding of the purpose of and requirements for recycling.

The lack of a strong inter-governmental structure to assist in recycling, the lack of recycling facilities, and lack of knowledge from participants on what role the government should be in assisting the communities in recycling, has led to recycling being perceived solely as a way to generate income. This attitude has not led to continuous improvement and sustainability of recycling in the area, which does not have a centre through which to seek advice and support.

In summary, the motive for recycling in Cato Crest is to generate income and this has resulted in the need for improving recycling activities.

5.2.2 Improved methods for implementing recycling activities

The second objective was to determine improved methods for implementing recycling activities in Cato Crest.

Improving recycling activities in Cato Crest will involve the participation of all stakeholders, government, business and civil society in the establishment of a waste minimisation policy in the area using the positive attitude for recycling that would assist in implementing the improved methods of recycling in the area.

There is a need for the formation of a recycling committee. There is no municipal recycling committee and the existing Environ-committee is not dealing only with recycling matters; it looks after all environmental issues. The issue of recycling requires a committee that can focus on all aspects of recycling without their attention being diverted.

The findings in the Malta case study, as discussed in the literature review, underscored the determinants of recycling behaviour which can be used to increase participation. It appears from the Cato Crest findings that one of the causes for the

individuals giving up on recycling was because in some cases the secondary collectors were not reliable.

5.2.3 Gaps in the eThekwini waste removal system

The third objective was to determine limitations, if any, in the eThekwini Municipality's waste removal system.

The eThekwini Municipality needs to form a strong inter-departmental forum, on which each member should have a specific brief on what to contribute to support the community of Cato Crest in their efforts to minimise their waste and to sustain this minimization in order to work towards achieving zero waste by 2022 as per the *Polokwane declaration*.

Recycling containers should be placed in Cato Crest to encourage the full participation of the community. When these recycling containers have been placed, eThekwini Municipality should have a specific plan on when the recycling bins should be emptied and should assign a reliable collector to pick up this recyclable material. The formation of a recycling committee will assist as it will involve government officials, inspectors to monitor the development and sustainability of recycling activities.

The Council should establish a waste management fund for Cato Crest recycling activities and it should form cooperatives that will be working in recycling activities. One of the many challenges for the eThekwini Municipality is that there is no control of the number of people migrating to this area. There is an urgent need to keep statistics of people in that area because the continuous increase of people in the area results in uncontrollable waste generation.

In summary, when all these specified issues are addressed, eThekwini Municipality and the Cato Crest community may be able to minimise the existing illegal dumps by recycling as waste is generated.

5.3 Recommendations for improving recycling in Cato Crest

5.3.1. An Integrated Waste Management plan which focuses on eThekweni Municipality, with attainable targets is recommended.

5.3.2. The positive attitude of the community should be used by stakeholders of waste management to build a sustainable waste management plan and to develop recycling programmes in Cato Crest. The formation of a recycling committee to focus only on matters relating to recycling is recommended.

5.3.3. The involvement of all stakeholders is recommended as per the *Polokwane declaration*. This might assist the sustainability of waste management in Cato Crest provided waste management can be prioritized according to what each stakeholder should do. The *Polokwane declaration* cannot be left in the hands of the local government to implement a waste minimisation programme including recycling because it only details how committees should be formed. Standard training manuals are recommended to be developed for Cato Crest which will detail compliance requirements in cases where an individual or a group wants to start recycling in the area and this training compliance manual must be in line with the bylaws of the eThekweni Municipality.

5.3.4. The affiliation of secondary collectors is recommended. This can be effective when the recycling committee/ body is in place, as this committee can look after the interests of recycling in the area, including assessing the availability of resources of secondary collectors to pick up recyclables from primary collectors – for example, the availability of trucks for collection of recyclables in the area and how often they will pick recyclable material up from Cato Crest.

5.3.5 It is recommended that church and youth groups be formed into teams of primary collectors. These groups should have a common goal which is to benefit the community through promoting recycling in Cato Crest as a group effort.

5.3.6. It is recommended that eThekweni Municipality determine the strategic points where recycling bins should be placed to assist the community who want to recycle

without getting a cash benefit but who wish to contribute towards minimizing waste and saving the environment for future generations.

5.3.7. It is recommended that schools in Cato Crest form recycling committees which will be composed of all stakeholders of the school, parents, educators and school children. This committee should look into all recycling activities of the school, including fundraising from local businesses. In this case, the fundraising would be for the collection of recyclables that businesses considered as waste. These recyclables should be delivered by businesses to schools to maximise tonnages. Alternatively the secondary collectors could collect on behalf of the school from that particular business or company.

5.3.8. It is recommended that eThekweni Municipality bear in mind that Cato Crest is under-developed and is fast expanding. The eThekweni Municipality is involved in building low cost housing in the area, therefore recycling should not only concentrate on residents but also on construction companies operating in the area. The present housing plan in Cato Crest was scheduled to be completed by the year 2017. The eThekweni Municipality can adapt studies from other countries to formulate a plan.

The plan should entail the following:

- Reduce size and design storage space in complex buildings;
- Provide collection points for day storage, occupant access and vehicle loading access; and
- Govern the minimum standards for in-suite recycling storage.

5.4 Recommendations for further research

Another study must look in the following areas:

- Waste analysis of Cato Crest, to determine how much of each kind of waste is generated in the area. This will assist in putting the correct waste management plan in place for Cato Crest. The analysis will determine how much organic waste is involved and how much solid waste is generated. A relevant waste analysis will assist in determining what to recycle most in the area. This will show whether or not composting should be undertaken rather than recycling.

- A recommendation for a recycling tonnage monitoring system which determines the quantity of recyclables collected in Cato Crest would help in the measurement of the effectiveness of the programme and would assist in determining an improved recycling plan.

In summary a great deal needs to be considered for effective waste minimization in Cato Crest.

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Appendix 1: Waste Tonnage Record from Cato Crest to Bisasar Landfill site

Table 1: Sourced from DSW archives

[1] BISASAR ROAD LANDFILL SITE													
DURBAN SOLID WASTE													
14/Nov/2012 Wed 12:40:34 PAGE # 1													
TRANSACTION ENQUIRY													
SITE	SLIP	DATE	TIME	AT	ACCOUNT	VEHICLE	PROD	GROSS	TARE	NET	VOLUME	TOTAL	TRADE N
BLF	245930	04/Sep/2012	Tue	10:13	S	SOLID WASTE ZKK607GPZ	943	16,020	8,740	7,280	0	0.00	PRASHANT
BLF	245985	04/Sep/2012	Tue	13:13	S	SOLID WASTE ZKK607GPZ	943	11,300	8,740	2,560	0	0.00	PRASHANT
BLF	246940	05/Sep/2012	Wed	10:22	S	SOLID WASTE ZKK607GPZ	943	16,060	8,740	7,320	0	0.00	PRASHANT
BLF	247100	06/Sep/2012	Thu	10:18	S	SOLID WASTE ZKK607GPZ	943	16,940	8,740	8,200	0	0.00	PRASHANT
BLF	247288	06/Sep/2012	Thu	13:41	S	SOLID WASTE ZKK607GPZ	943	12,100	8,740	3,360	0	0.00	PRASHANT
BLF	247901	07/Sep/2012	Fri	09:23	S	SOLID WASTE ZKK607GPZ	943	14,680	8,740	5,940	0	0.00	PRASHANT
BLF	247843	07/Sep/2012	Fri	13:35	S	SOLID WASTE ZKK607GPZ	943	15,620	8,740	6,880	0	0.00	PRASHANT
BLF	248941	10/Sep/2012	Mon	10:08	S	SOLID WASTE ZKK607GPZ	943	16,040	8,740	7,300	0	0.00	PRASHANT
BLF	249317	10/Sep/2012	Mon	12:51	S	SOLID WASTE ZKK607GPZ	943	16,200	8,740	7,460	0	0.00	PRASHANT
BLF	249461	10/Sep/2012	Mon	14:06	S	SOLID WASTE ZKK607GPZ	943	17,500	8,740	8,760	0	0.00	PRASHANT
BLF	249959	11/Sep/2012	Tue	09:58	S	SOLID WASTE ZKK607GPZ	943	15,620	8,740	6,880	0	0.00	PRASHANT
BLF	250169	11/Sep/2012	Tue	11:55	S	SOLID WASTE ZKK607GPZ	943	14,160	8,740	5,420	0	0.00	PRASHANT
BLF	250562	11/Sep/2012	Tue	15:01	S	SOLID WASTE ZKK607GPZ	943	15,540	8,740	6,800	0	0.00	PRASHANT
BLF	251154	12/Sep/2012	Wed	10:58	S	SOLID WASTE ZKK607GPZ	943	16,260	8,740	7,520	0	0.00	PRASHANT
BLF	251545	12/Sep/2012	Wed	14:03	S	SOLID WASTE ZKK607GPZ	943	16,040	8,740	7,300	0	0.00	PRASHANT
BLF	251982	13/Sep/2012	Thu	09:07	S	SOLID WASTE ZKK607GPZ	943	15,940	8,740	7,200	0	0.00	PRASHANT
BLF	252357	13/Sep/2012	Thu	11:47	S	SOLID WASTE ZKK607GPZ	943	15,200	8,740	6,460	0	0.00	PRASHANT
BLF	252783	13/Sep/2012	Thu	15:36	S	SOLID WASTE ZKK607GPZ	943	15,600	8,740	6,860	0	0.00	PRASHANT
BLF	253092	14/Sep/2012	Fri	09:36	S	SOLID WASTE ZKK607GPZ	943	14,940	8,740	6,200	0	0.00	PRASHANT
BLF	253920	14/Sep/2012	Fri	13:24	S	SOLID WASTE ZKK607GPZ	943	13,080	8,740	4,340	0	0.00	PRASHANT
BLF	254804	17/Sep/2012	Mon	10:24	S	SOLID WASTE ZKK607GPZ	943	16,740	8,740	8,000	0	0.00	PRASHANT
BLF	254855	17/Sep/2012	Mon	13:18	S	SOLID WASTE ZKK607GPZ	943	12,620	8,740	3,880	0	0.00	PRASHANT
BLF	255550	18/Sep/2012	Tue	10:27	S	SOLID WASTE ZKK607GPZ	943	16,960	8,740	7,820	0	0.00	PRASHANT
BLF	256036	18/Sep/2012	Tue	14:02	S	SOLID WASTE ZKK607GPZ	943	13,980	8,740	5,240	0	0.00	PRASHANT
BLF	256612	19/Sep/2012	Wed	10:04	S	SOLID WASTE ZKK607GPZ	943	15,820	8,740	7,080	0	0.00	PRASHANT
BLF	257131	19/Sep/2012	Wed	13:55	S	SOLID WASTE ZKK607GPZ	943	15,220	8,740	6,480	0	0.00	PRASHANT
BLF	257621	20/Sep/2012	Thu	09:28	S	SOLID WASTE ZKK607GPZ	943	16,140	8,740	7,400	0	0.00	PRASHANT
BLF	258008	20/Sep/2012	Thu	12:25	S	SOLID WASTE ZKK607GPZ	943	15,380	8,740	6,640	0	0.00	PRASHANT
BLF	258283	20/Sep/2012	Thu	14:47	S	SOLID WASTE ZKK607GPZ	943	13,860	8,740	5,120	0	0.00	PRASHANT
BLF	258682	21/Sep/2012	Fri	09:22	S	SOLID WASTE ZKK607GPZ	943	14,380	8,740	5,640	0	0.00	PRASHANT
BLF	259141	21/Sep/2012	Fri	13:14	S	SOLID WASTE ZKK607GPZ	943	14,280	8,740	5,540	0	0.00	PRASHANT
BLF	260328	24/Sep/2012	Mon	10:19	S	SOLID WASTE ZKK607GPZ	943	15,940	8,740	7,200	0	0.00	PRASHANT
BLF	260452	24/Sep/2012	Mon	12:35	S	SOLID WASTE ZKK607GPZ	943	11,660	8,740	2,920	0	0.00	PRASHANT
BLF	260883	25/Sep/2012	Tue	10:21	S	SOLID WASTE ZKK607GPZ	943	15,620	8,740	6,880	0	0.00	PRASHANT
BLF	261307	25/Sep/2012	Tue	13:52	S	SOLID WASTE ZKK607GPZ	943	13,220	8,740	4,480	0	0.00	PRASHANT
BLF	261841	26/Sep/2012	Wed	09:40	S	SOLID WASTE ZKK607GPZ	943	16,340	8,740	7,600	0	0.00	PRASHANT
BLF	262383	26/Sep/2012	Wed	14:18	S	SOLID WASTE ZKK607GPZ	943	14,780	8,740	6,040	0	0.00	PRASHANT
BLF	262828	27/Sep/2012	Thu	09:42	S	SOLID WASTE ZKK607GPZ	943	16,500	8,740	7,760	0	0.00	PRASHANT
BLF	263159	27/Sep/2012	Thu	12:09	S	SOLID WASTE ZKK607GPZ	943	15,340	8,740	6,600	0	0.00	PRASHANT
BLF	263447	27/Sep/2012	Thu	14:44	S	SOLID WASTE ZKK607GPZ	943	12,100	8,740	3,360	0	0.00	PRASHANT
BLF	263782	28/Sep/2012	Fri	09:21	S	SOLID WASTE ZKK607GPZ	943	14,320	8,740	5,580	0	0.00	PRASHANT
BLF	264188	28/Sep/2012	Fri	12:48	S	SOLID WASTE ZKK607GPZ	943	12,960	8,740	4,220	0	0.00	PRASHANT
SUB-TOTAL										262,520	0	0.00	
TOTAL										262,520	0	0.00	

Table 2: Sourced from DSW archives

14/Nov/2012 Wed 14:55:35 PAGE # 1

[0] ALL SITES
DURBAN SOLID WASTE

TRANSACTION ENQUIRY

SITE	SLIP	DATE	TIME	AT	ACCOUNT	VEHICLE	PROD	GROSS	TARE	NET	VOLUME	TOTAL	TRADE NAME		
BLF	941964	01/Sep/2011	Thu	09	48	5	SOLID WASTE	ZKK607GPZ	942	16,300	8,740	7,640	0	0.00	DURBAN SOLID WASTE
BLF	942295	01/Sep/2011	Thu	12	15	5	SOLID WASTE	ZKK607GPZ	943	15,040	8,740	6,300	0	0.00	DURBAN SOLID WASTE
BLF	942620	01/Sep/2011	Thu	14	55	5	SOLID WASTE	ZKK607GPZ	943	12,580	8,740	3,840	0	0.00	DURBAN SOLID WASTE
BLF	943028	02/Sep/2011	Fri	09	12	5	SOLID WASTE	ZKK607GPZ	943	14,440	8,740	5,700	0	0.00	DURBAN SOLID WASTE
BLF	943564	02/Sep/2011	Fri	11	10	5	SOLID WASTE	ZKK607GPZ	943	14,200	8,740	5,460	0	0.00	DURBAN SOLID WASTE
BLF	945345	05/Sep/2011	Mon	11	19	5	SOLID WASTE	ZKK607GPZ	943	15,100	8,740	6,360	0	0.00	DURBAN SOLID WASTE
BLF	945646	05/Sep/2011	Mon	11	51	5	SOLID WASTE	ZKK607GPZ	943	11,420	8,740	2,680	0	0.00	DURBAN SOLID WASTE
BLF	948530	08/Sep/2011	Thu	12	16	5	SOLID WASTE	ZKK607GPZ	943	16,500	8,740	7,760	0	0.00	DURBAN SOLID WASTE
BLF	948942	08/Sep/2011	Thu	15	18	5	SOLID WASTE	ZKK607GPZ	943	15,260	8,740	6,520	0	0.00	DURBAN SOLID WASTE
BLF	949173	09/Sep/2011	Fri	09	55	5	SOLID WASTE	ZKK607GPZ	943	15,100	8,740	6,360	0	0.00	DURBAN SOLID WASTE
BLF	949590	09/Sep/2011	Fri	11	12	5	SOLID WASTE	ZKK607GPZ	943	10,340	8,740	1,600	0	0.00	DURBAN SOLID WASTE
BLF	953391	14/Sep/2011	Wed	11	01	5	SOLID WASTE	ZKK607GPZ	943	16,840	8,740	8,100	0	0.00	DURBAN SOLID WASTE
BLF	953621	14/Sep/2011	Wed	11	16	5	SOLID WASTE	ZKK607GPZ	943	11,340	8,740	2,600	0	0.00	DURBAN SOLID WASTE
BLF	954240	15/Sep/2011	Thu	10	17	5	SOLID WASTE	ZKK607GPZ	943	17,000	8,740	8,260	0	0.00	DURBAN SOLID WASTE
BLF	954566	15/Sep/2011	Thu	12	48	5	SOLID WASTE	ZKK607GPZ	943	16,360	8,740	7,620	0	0.00	DURBAN SOLID WASTE
BLF	954811	15/Sep/2011	Thu	13	07	5	SOLID WASTE	ZKK607GPZ	943	13,100	8,740	4,360	0	0.00	DURBAN SOLID WASTE
BLF	955189	16/Sep/2011	Fri	09	58	5	SOLID WASTE	ZKK607GPZ	943	15,460	8,740	6,720	0	0.00	DURBAN SOLID WASTE
BLF	955535	16/Sep/2011	Fri	12	10	5	SOLID WASTE	ZKK607GPZ	943	13,200	8,740	4,460	0	0.00	DURBAN SOLID WASTE
BLF	958151	20/Sep/2011	Tue	10	16	5	SOLID WASTE	ZKK607GPZ	943	16,160	8,740	7,420	0	0.00	DURBAN SOLID WASTE
BLF	958719	20/Sep/2011	Tue	14	59	5	SOLID WASTE	ZKK607GPZ	943	15,680	8,740	6,940	0	0.00	DURBAN SOLID WASTE
BLF	959112	21/Sep/2011	Wed	09	25	5	SOLID WASTE	ZKK607GPZ	943	16,740	8,740	8,000	0	0.00	DURBAN SOLID WASTE
BLF	959604	21/Sep/2011	Wed	11	10	5	SOLID WASTE	ZKK607GPZ	943	15,700	8,740	6,960	0	0.00	DURBAN SOLID WASTE
BLF	960002	22/Sep/2011	Thu	09	47	5	SOLID WASTE	ZKK607GPZ	943	16,720	8,740	7,980	0	0.00	DURBAN SOLID WASTE
BLF	960506	22/Sep/2011	Thu	11	03	5	SOLID WASTE	ZKK607GPZ	943	15,580	8,740	6,840	0	0.00	DURBAN SOLID WASTE
BLF	960814	22/Sep/2011	Thu	14	16	5	SOLID WASTE	ZKK607GPZ	943	10,740	8,740	2,000	0	0.00	DURBAN SOLID WASTE
BLF	961337	23/Sep/2011	Fri	10	12	5	SOLID WASTE	ZKK607GPZ	943	15,400	8,740	6,660	0	0.00	DURBAN SOLID WASTE
BLF	961650	23/Sep/2011	Fri	11	06	5	SOLID WASTE	ZKK607GPZ	943	12,400	8,740	3,660	0	0.00	DURBAN SOLID WASTE
BLF	962932	26/Sep/2011	Mon	10	33	5	SOLID WASTE	ZKK607GPZ	943	16,280	8,740	7,540	0	0.00	DURBAN SOLID WASTE
BLF	963422	26/Sep/2011	Mon	14	45	5	SOLID WASTE	ZKK607GPZ	943	14,040	8,740	5,300	0	0.00	DURBAN SOLID WASTE
BLF	963852	27/Sep/2011	Tue	09	58	5	SOLID WASTE	ZKK607GPZ	943	15,960	8,740	7,220	0	0.00	DURBAN SOLID WASTE
BLF	964338	27/Sep/2011	Tue	14	14	5	SOLID WASTE	ZKK607GPZ	943	16,080	8,740	7,340	0	0.00	DURBAN SOLID WASTE
BLF	964754	28/Sep/2011	Wed	09	44	5	SOLID WASTE	ZKK607GPZ	943	16,960	8,740	8,220	0	0.00	DURBAN SOLID WASTE
BLF	965181	28/Sep/2011	Wed	11	10	5	SOLID WASTE	ZKK607GPZ	943	13,720	8,740	4,980	0	0.00	DURBAN SOLID WASTE
BLF	965731	29/Sep/2011	Thu	09	48	5	SOLID WASTE	ZKK607GPZ	943	16,580	8,740	7,840	0	0.00	DURBAN SOLID WASTE
BLF	966106	29/Sep/2011	Thu	12	30	5	SOLID WASTE	ZKK607GPZ	943	16,260	8,740	7,520	0	0.00	DURBAN SOLID WASTE
BLF	966472	29/Sep/2011	Thu	15	10	5	SOLID WASTE	ZKK607GPZ	943	15,400	8,740	6,660	0	0.00	DURBAN SOLID WASTE
BLF	966829	30/Sep/2011	Fri	09	44	5	SOLID WASTE	ZKK607GPZ	943	14,800	8,740	6,060	0	0.00	DURBAN SOLID WASTE
BLF	967262	30/Sep/2011	Fri	11	15	5	SOLID WASTE	ZKK607GPZ	943	13,380	8,740	4,640	0	0.00	DURBAN SOLID WASTE
SUB-TOTAL											232,320	0	0.00		
TOTAL											232,320	0	0.00		

Appendix 2: Interview Questions

Interview / Focus Group Schedule

1. What is your age range?

25 - 35 35 - 45 45 - 55 55 +

- Other than recycling, what do you do?
- Why do you recycle / what are your reasons?
- How long have you been collecting recyclables?
- Where do you sell your recyclables?
- How do you transport your recyclables to where you sell them?
- Do you know the difference between the drop-off centre and buy-back centre?
Please elaborate.
- What methods are you using to collect recyclables?
- Do you know how many recycling centres are in your area?
- Do you know what the role of the EThekweni Municipality is in recycling?
Please elaborate.
- Do you know of any stakeholders or government officials in your area that you can contact in case you need assistance or more information? If yes, please name the departments.
- Do you have recycling meetings in your area? If yes, how often do you meet, and if not, what are the reasons for not having a meeting?
- What are the factors that enable or inhibit you in recycling?
- Do you have any suggestions on ways to improve recycling in your area?

Appendix 3: Informed Consent Form

UNIVERSITY OF KWAZULU-NATAL

GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project

Researcher: Ms Fikile Khosi Maphanga - 073 498 6394

Supervisor: Ms Cecile Gerwel – 031 260 8318

Research Office: Ms P Ximba – 031 260 3587

Dear Respondent

I, Fikile Khosi Maphanga am an MBA student in the Graduate School of Business and Leadership, of the University of KwaZulu Natal. You are invited to participate in a research project entitled, Attitudes towards and perception of recycling in Cato Crest, Durban. The aim of this study is to establish how recycling is understood and what methods can be used to improve recycling participation.

Through your participation I hope to understand what the Cato Crest community understands about recycling. The results of the study are intended to contribute to improving methods of recycling. Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequences. There will be no monetary gain from participating in this interview/focus group. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about participating in this study, you may contact me or my supervisor at the numbers listed above. The interview / focus group should last approximately 45 minutes. I hope you will take the time to participate.

Sincerely

Researcher's signature _____ Date _____

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project

Researcher: Ms Fikile Khosi Maphanga - 073 498 6394

Supervisor: Ms Cecile Gerwel – 031 260 8318

Research Office: Ms P Ximba – 031 260 3587

CONSENT

I..... hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

.....

Appendix 4: Ethical Clearance



6 September 2012

Ms Fikile Khosi Maphanga 210524801
Graduate School of Business & Leadership
Westville Campus

Dear Ms Maphanga

Protocol reference number: HSS/0822/012M
Project title: Attitude and perception of recycling in Cato Crest, Durban

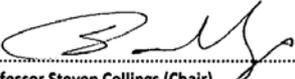
EXPEDITED APPROVAL

I wish to inform you that your application has been granted Full Approval through an expedited review process.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


.....
Professor Steven Collings (Chair)

/px

cc Supervisor Cecile Gerwel
cc Academic leader Dr S Bodhanya
cc School Admin. Ms Wendy Clarke

.....
Professor S Collings (Chair)
Humanities & Social Sc Research Ethics Committee
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban, 4000, South Africa
Telephone: +27 (0)31 260 3587/8350 Facsimile: +27 (0)31 260 4609 Email: ximbop@ukzn.ac.za / snymanm@ukzn.ac.za
Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

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