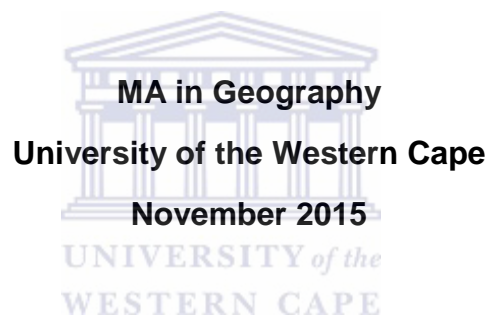


**When necessity begets ingenuity: A study of informal waste recycling at
Stellenbosch and Bellville, Cape Town**

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Table of Contents

| | |
|---|----|
| List Of Photographs | 3 |
| List Of Figures..... | 3 |
| List Of Boxes..... | 4 |
| List of Tables..... | 4 |
| Abbreviations | 5 |
| Acknowledgements | 6 |
| Abstract | 7 |
| | |
| Chapter 1: Background | 8 |
| 1.1 Introduction | 8 |
| 1.2 Research Statement | 14 |
| 1.3 Justification For The Study..... | 16 |
| 1.4 Study Area | 21 |
| 1.5 Current Solid Waste Management In Cape Town..... | 28 |
| 1.5.1 Overview Of Stellenbosch Landfill Site | 29 |
| 1.5.2 Overview Of Bellville South Landfill Site..... | 30 |
| 1.6 Research Aim And Objectives | 31 |
| 1.7 Thesis Structure..... | 32 |
| 1.8 Summary..... | 32 |
| | |
| Chapter 2: Literature Review | 33 |
| 2.1 Introduction | 33 |
| 2.2 Informal Recyclers: Who Are They And What Do They Do? | 34 |
| 2.3 Formal And Informal Sector Recycling | 36 |
| 2.4 Conceptualizing Informal And Formal Recycling | 37 |
| 2.5 Context Of Informal Waste Pickers | 39 |
| 2.6 Interaction Between Formal And Informal Recycling Networks | 44 |
| 2.7 Linkages Between The Recycling Industry And Municipal Landfills | 47 |
| 2.8 Summary..... | 49 |
| | |
| Chapter 3: Research Methodology | 50 |
| 3.1 Introduction | 50 |
| 3.2 Research Design..... | 51 |
| 3.3 Data Collection..... | 52 |
| 3.4 Interview Guideline | 54 |

| | |
|--|------------|
| 3.5 Data Analysis | 54 |
| 3.6 Ethical Statement..... | 56 |
| 3.7 Challenges And Recommendations For Fieldwork..... | 56 |
| 3.8 Summary..... | 57 |
| | |
| Chapter 4: Data Analysis And Discussion Of Findings..... | 58 |
| 4.1 Introduction | 58 |
| 4.2 Demographic And Social Profile Of The Waste Pickers At Landfills | 58 |
| 4.2.1 Gender | 58 |
| 4.2.2 Race | 59 |
| 4.2.3 Age And Marital Status..... | 60 |
| 4.2.4 Level Of Education..... | 62 |
| 4.2.5 Income Patterns | 63 |
| 4.2.6 Items Collected | 68 |
| 4.3 Interactions Between Formal And Informal Recycling Networks | 71 |
| 4.3.1 Interaction Between Waste Pickers And Local Municipalities..... | 71 |
| 4.3.2 Interaction Between Waste Pickers And Middlemen (Dealers)..... | 76 |
| 4.3.3 Interaction Between Middleman/Dealer And Manufacturing Companies | 77 |
| 4.4 Linkages Between The Recycling Industry And Municipal Disposal Sites.. | 82 |
| 4.5 Waste Pickers Have Developed Livelihoods Based On Resource Recovery Activities At Landfill Sites..... | 87 |
| 4.6 Summary..... | 89 |
| | |
| Chapter 5: Conclusions..... | 90 |
| 5.1 Introduction | 90 |
| 5.2 Threats To The Livelihoods Of Informal Workers – Evidence From The Ground..... | 93 |
| References | 96 |
| Appendixes | 106 |
| Appendix 1: Questionnaire Administered To Waste Pickers | 106 |
| Appendix 2: Questionnaire Administered To Formal Recyclers/Dealers..... | 116 |
| Appendix 3: Questionnaire Administered To Stellenbosch Municipality | 121 |
| Appendix 4: Questionnaire Administered To City Of Cape Town..... | 124 |
| Appendix 5: Identification Of Recovered Plastics..... | 127 |
| Appendix 6: Information Sheet | 128 |

List Of Photographs

| | |
|--|----|
| Photo 1a: Recyclable plastic collected by waste pickers at DVLS..... | 68 |
| Photo 1b: Recyclable metal collected by waste pickers at the DVLS..... | 68 |
| Photo 2a: Recyclable plastic collected at BSLS..... | 68 |
| Photo 2b: Recyclable metal and plastic collected at BSLS..... | 68 |

List Of Figures

| | |
|--|----|
| Figure 1: The integrated sustainable waste management model..... | 18 |
| Figure 2: Shows a map of Stellenbosch Municipality including the wards..... | 22 |
| Figure 3: Shows a map of Bellville South including the sub-places..... | 25 |
| Figure 4: The location of DVLS and BSL..... | 27 |
| Figure 5: Conceptualization of formal-Informal elements in a waste recycling industry..... | 38 |
| Figure 6: Informal recycling system in developing countries..... | 41 |
| Figure 7: The position of informal waste pickers in the broader waste management system..... | 42 |
| Figure 8: The waste cycle..... | 43 |
| Figure 9: Interaction and material flow within the Stellenbosch municipality..... | 45 |
| Figure 10: Interaction and material flow within the Bellville Municipality..... | 46 |
| Figure 11: Proposed future scenario of the interaction between informal and formal recycling..... | 47 |
| Figure 12: Gender distribution of waste pickers on DVLS and BSLS..... | 59 |
| Figure 13: Race distribution of waste pickers on DVLS and BSLS..... | 60 |
| Figure 14: Age distribution of waste pickers on DVLS and BSLS..... | 61 |
| Figure 15: Marital Status of waste pickers on DVLS and BSLS..... | 61 |

| | |
|---|----|
| Figure 16: Level of Education of waste pickers on DVLS and BSLS..... | 62 |
| Figure 17: Average income earned per day by waste pickers..... | 64 |
| Figure 18: Waste collected by waste pickers at the DVLS..... | 70 |
| Figure 19: Waste collected by waste pickers at the BSLS..... | 71 |
| Figure 20: Interaction between informal and formal recycling processes..... | 80 |
| Figure 21: Informal recycling value chain..... | 82 |
| Figure 22: Informal-Formal Recycling Supply Chain..... | 84 |

List Of Boxes

| | |
|---|----|
| Box 1: Interview with Marina and her grandchild regarding the prices of recycled items..... | 69 |
| Box 2: Interview with John and Ouma regarding their interaction with the municipality..... | 72 |
| Box 3: Interview with Saliem Haider (Head of Waste Department at Stellenbosch Municipality)..... | 73 |
| Box 4: Interview with Marie and Kobus regarding informal recycling..... | 74 |
| Box 5: Interview with Mr. Nelson (BSLS Manager) regarding his interaction with the waste pickers..... | 75 |
| Box 6: Interview with Sharon (dealer) regarding her interaction with TAS Plastic (a plastic manufacturing company in Blackheath)..... | 77 |
| Box 7: Interview with Majoda regarding his interaction with manufacturing company... | 78 |
| Box 8: Interview with Mr. Roedolf (owner of TAS Plastic) regarding the interaction between him and the dealers..... | 81 |

List of Tables

| | |
|---|----|
| Table 1: Landfill size classes..... | 31 |
| Table 2: Amounts that waste pickers receive and trader for different types of waste.... | 66 |

Abbreviations

| | |
|------|-----------------------------------|
| DVLS | Devon Valley Landfill Site |
| DVL | Devon Valley Landfill |
| BSLS | Bellville South Landfill Site |
| BSL | Bellville South Landfill |
| MRF | Material Recovery Facility |
| SLM | Stellenbosch Local Municipality |
| SWM | Solid Waste Management |
| WWTP | Waste Water Treatment Plant |
| PET | Polyethylene Terephthalate |
| GLB+ | General:Large:Leachate Producing |
| MSW | Municipal Solid Waste |
| GHG | Greenhouse Gas |
| ISWM | Integrated Solid Waste Management |
| ILO | International Labour Organisation |
| NGOs | Non-Government Organisation |
| CBOs | Community-based Organisations |
| CoCT | City of Cape Town |
| ENDA | Employment Non-Discrimination Act |

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Abstract

The local economy of the City of Cape Town supported by formal economic activities that are carried out through modern production processes whose existence is officially recognized and benefits from the protection of the authorities, and the informal activities that exist outside official control and protection systems. There is a dynamic connection between actors in the formal sector and those in the informal sector, which is seen at the levels of production, distribution and consumption of goods and services. This research investigates the linkages between informal and formal resource recovery activities in Devon Valley Landfill Site in Stellenbosch and Bellville South Landfill Site in Bellville. The two landfill sites are at the margins on the city economy where the formal and informal sectors interact and at times collide. Notwithstanding the negative health effects associated with the informal waste collections and the fact that informal waste collectors are neglected by policy makers in many developing countries in general and in South Africa in particular, evidence from Southern Africa has shown that the informal sector fosters considerable social, environmental and economic benefits that should be preserved. Informal recyclers constitute the essential workforce of the recycling business. These recyclers have undertaken various commercial and environmental tasks as a survival strategy long before the state and private entities became interested in participating in this profitable business. Waste recycling in most developing countries is a response to the inability of the formal economy to absorb a growing urban population, and the value placed on recyclable materials in the globalized economy. The study explores the various linkages between the informal sector and formal sector in the recycling industry and it examines the activities of these people involved in informal sector activities at the bottom end of the commonly neglected waste recycling chain. It also examines how waste pickers have developed livelihoods based on resource recovery activities at Devon Valley Landfill Site and Bellville South Landfill Site. This thesis is the result of an extensive literature review and primary data collection using a mixed methods approach. Primary sources of information consulted include, waste pickers, dealers, buy-back centres and manufacturing companies. This thesis attempts to establish the respective correlation between urban poverty, informal waste collection, and the recycling industries. The findings reveal that informal recycling is intricately linked to the formal recycling sector with waste pickers selling their waste to merchants and recyclers.

Chapter 1: Background

1.1 Introduction

Solid waste management and recycling is a growing economic sector in many African cities that generates considerable wealth and provides employment and livelihoods to many urban residents (Tevera, 1994; WIEGO, 2014). However, the informal economy of the waste management sector appears to be widespread, and more extensive than that of the formal sector. Researchers estimate that, of the 24 million people who work in recycling activities, about 80 per cent perform in the informal economy (WIEGO, 2014).

South Africa is generally regarded as a model for Africa's economic development (Karani & Jewasikietz, 2007). Nonetheless, similar to other developing countries, it currently faces the serious challenges of improving the welfare of its population. Despite government initiatives, unemployment has been on the increase during the past 10 years. Increasing levels of urban poverty and unemployment have resulted in some urban residents resorting to informal activities as livelihoods strategies. One such activity is informal waste collecting (Langenhoven & Dyssel & 2007; Gwebu & Rankokwa, 2006). In urban South Africa, as in many other African countries, informal waste collecting is considered by both the state and local authorities to be an undesirable activity that has no place in urban countries that aspire to be global cities. As pointed out by Samson (2008, 3), "most people [in South Africa] prefer not to see the [waste collectors] and look down on them for doing such dirty work; many municipalities consider them to be a nuisance and are trying to get rid of them".

According to Rahman (2000, 8), informal waste collectors are usually perceived by urban residents as a "public nuisance and a problem brought on by jobless people and [the] homeless". Research in many developing country cities has shown that, with a different attitude on the part of municipal authorities, informal waste collectors can significantly contribute to the urban economy, the conservation of natural resources and the alleviation of urban poverty by creating employment and supplying re-usable raw materials to recycling industries (Samson, 2008). In countries such as Colombia, India, Indonesia, Nigeria, Zimbabwe, Egypt and Brazil, the value of informal waste collectors is

recognized not only by scholars but also by local authorities (Jaffe et al., 2004 & Conyers et al.,).

The informal sector has a historic role in waste management and recycling in India and it is well known that waste recycling is no exception to this with an estimated 95 percent of waste being recycled through the informal sector (GTZ-MAIT, 2007). The informal waste recycling sector provides jobs to thousands of people in urban and peri-urban areas, and supports the formal waste management agencies like municipalities.

A widespread and active network and considerable manual skills enable the existence of an informal but entrepreneurial SMEs based infrastructure that permits a profitable waste management business. Most of these informal SMEs concentrate on one or two recycling activities that have well established relationships to other informal waste recycling SMEs up or down the recycling chain. Value is added at each stage creating employment at different levels, thereby sustaining the system. The waste recycling in the informal sector essentially involves collection, segregation, dismantling. Additionally, there are extensive repair and refurbishment activities resulting in an extended life of the products and a large second hand market (Raghupathy et al., 2013).

The economics of recycling and the prevailing scales of operations are some of the factors that keep the informal sector going. An additional important factor is the social bondage between recyclers in the informal sector, which could be used as a cohesion factor to bring them closer and provide a platform for them to share their thoughts. The differences among the informal recyclers need to be ironed out to bring about an attitudinal change, to build a strong bondage within their community. The intention behind this process would be to provide an identity to the cluster/group and facilitate an exchange of their experiences and knowledge (Raghupathy et al., 2013).

Within the study “Informal Economy Monitoring Study”, coordinated by WIEGO (2014), the main categories of economic benefits of informal waste recyclers have been identified. One of the benefits refers to the fact that the informal activity leads to regular incomes, which are absolutely necessary to provide the subsistence of informal collectors and their families; the same aspect was identified by Rockson et al (2013), while

Nzeadibe and Chukwuedozie (2011) noted that the average incomes of informal collectors are often significantly higher than the minimum incomes in most cities.

The informal activities carried out by the informal collectors and recyclers allow the supply of recoverable materials to the concerned entities; according to the results of the study performed by WIEGO (2014), more than three quarters of the questioned informal collectors have declared that they have been capitalizing the recovered waste by trading them to formal recycling enterprises; in Pune, India, the informal recyclers collect organic material wastes in order to compost them and to produce biogas. Thus, informal activities allow the authorized recyclers to extend their activity and waste recycling capacities and to enter new markets (Gunsilius, 2012). Matter et al (2013) believe that the informal activities supply secondary materials to the economic agents of the local market, which may contribute to the stimulation of the local population of recycled goods, to the development of the local market and community economy in general.

According to Gunsilius et al (2011), there are also other categories of persons that obtain benefits from informal recyclers; the wastes collected by informal activities are capitalized through intermediates, who earn profits from the difference between the price they offer to informal recyclers for the collected waste and the rates they charge to formal recyclers for the traded waste.

By collecting recyclable material wastes (packages, in most cases) randomly disposed of in public areas, the informal recyclers contribute to the provision of public cleaning (Afon, 2012; Asim et al, 2012). According to Gunsilius et al (2011) informal recyclers manage to save an important quantity of wastes from disposal on landfills and waste dumps, which is the most significant ecological benefit of informal activities. The study shows that the informal recyclers from six municipalities of South America, Africa, Europe and Asia manage to recover almost 20% of the generated quantity of waste (in 3 of the 6 cities included in the study); more than 80,000 informal collectors have been acknowledged to be responsible for the recovery of approximately 3 million tons of waste per year in all 6 cities from the study. The waste includes paper, plastics, various metals and biodegradable material such as food leftovers and garden refuses.

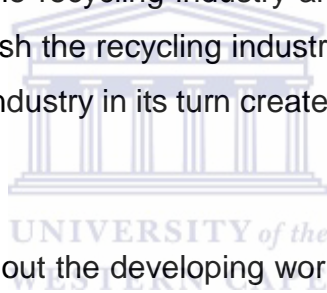
Studies done in several countries show that recycling is one of the cheapest and quickest methods to reduce greenhouse gas emissions (Tellus Institute, 2008). The reuse, recovery and recycling of materials from waste, even by informal activities, contributes to the reduction of the quantity of raw materials necessary to produce and supply goods and services, and to the preservation of natural resources and energy (Gunsilius et al., 2011).

The existence of resource recovery activities brings multiple benefits to whom local authorities whose responsibility is at community level. In many under-developed countries the informal collectors provide the unique form of urban waste collection, for the lowest cost, and sometimes without any financial obligation from the municipality part. Monirozzaman et al (2011) synthetize the benefits, for the local authorities, obtained from the existence of informal waste collection activities: create new jobs, reduce the quantity of stored wastes, extend the life of waste landfills, preserve primary resources and energy, reduce the pollution caused by waste etc. Regardless whether it is performed by formal or informal means, recycling helps the community to „advance” towards the top of waste management hierarchy (Asim et al., 2012).

Several scholars have argued that there is a strong link between the Millennium Development Goals (MDGs) and informal waste collection and the recycling of solid waste as well as sustainable development (Langenhoven & Dyssel, 2007; Medina, 2009). In fact. A particular aspect of the MDGs focus is on the eradication of extreme poverty and hunger, and on improving the quality of life, while ensuring environmental sustainability (United Nations, 2008).

According to Medina (2008) “informal waste [collection] represents a perfect illustration of sustainable development that can be achieved in developing countries as jobs are created, poverty is reduced, raw material costs for industry are lowered, resources are conserved, pollution is reduced, and the environment is protected.” This implies that informal waste collection activities go hand-in-hand with the objectives of sustainability as they recover recycling material; they create jobs opportunities for the waste collectors, while protecting the environment at the same time. Other scholars (Langenhoven & Dyssel, 2007) are of the opinion that informal waste collectors provide economic and

environmental benefits such as providing incomes to unemployed individuals, furnishing inexpensive raw materials to industries and reducing the demand for the collection and transportation of valuable commodities. For Cointreau et al. (1991), several studies have shown the social, economic and environmental importance of informal waste collection worldwide. For instance, in Bangkok, Jakarta, Kampur, Karachi and Malina, informal waste collection “saves each city at least US \$25 million a year in imports of raw materials and reduces the need for collection and disposal equipment” (Medina, 2008, p15). Thus, this implies that there is a positive correlation between informal waste collection activities and the sustainable development sphere [economic, social and environmental], if used rationally. In other words, if the informal waste collection operation is well managed, it can contribute to solving the social, economic and environmental problems facing poor populations. A study of the recycling industry and the subsistence waste collectors in Mitchell’s Plain (Cape Town) by Langenhoven and Dysseel (2007) shows that there is a strong relationship between the recycling industry and informal waste collection as the informal waste collectors furnish the recycling industry with raw materials and re-usable materials while the recycling industry in its turn creates employment opportunities for the informal waste collectors.



These activities occur throughout the developing world, although they are often ignored by policy makers. The way in which a city handles its solid waste impacts the environment, public health, and social welfare. It has been estimated that up to 2% of the world's urban population depends on waste either directly or indirectly for their income (Medina 2000). This number is expected to grow due to high economic and population growth rates occurring throughout the world. Informal recycling systems provide the poor in developing countries with jobs, supply industries with raw materials, and reduce the stress on municipal infrastructure, such as collection and landfills (Gerdes & Gunsilius, 2010). Effective recycling systems can reduce the negative impacts on the environment due to improper waste disposal methods, such as burning and open dumping in public spaces and rivers, and from the excessive resource use of virgin materials by industries. With respect to recycling rates, the informal supply chain in Bandung achieves a high level of efficiency, however the system fails to address issues of the protection and promotion of the workforce involved.

There are several reasons for this high level of efficiency in Bandung. First of all is the fact that the informal system in Bandung provides the incentive to maximize the level of recycling in the city (Medina, 2008). There is an economic incentive driving the recycling system in Bandung toward maximizing material recovery. Another reason recycling is successful in Bandung is due to its decentralized approach and its relationship to the formal disposal system. In this system materials are removed from the waste stream at multiple points in the formal system, while in the centralized model of industrialized countries, materials are separated only at the source for recycling. While source separation is important for maintaining the quality of materials and promoting a positive attitude about recycling to the public, when this is the only means of recovery, any materials that are not recovered at the source will be disposed of in landfills or incinerated.

In the Bandung system however, materials that are not collected from the source can be recovered from the waste transfer site, and then again from the landfill, leading to a high recovery rate. While this recovery is done primarily by waste pickers, they are assisted by a highly decentralized network of middlemen that facilitate the aggregation and transportation of materials throughout the city. Thus the overall efficiency of the system can be directly attributed to both groups and should be reflected in the policies aimed at the industries (Porter & Mark, 2009).

This thesis does not set out to investigate the role and linkages of the informal sector in the recycling industry and the structure and function of the informal solid waste recycling throughout the Cape Town. It rather focuses on two distinct precincts, namely Stellenbosch and Bellville. This thesis also investigates the roles and conditions in shaping access and networks of relations and interdependence that emerges within and beyond the landfill sites.

1.2 Research Statement

Waste picking has become a key domain of development studies, but waste pickers are still amongst the most vulnerable social groups and are overrepresented in informal work. The latter is characterised by many risks to their health and social status, as well as irregular and variable income. Together these risks prevent waste pickers from gaining economic empowerment and thus, weaken the benefits earned through employment (Chen, et al, 2005). But, for many impoverished people informality offers the only opportunity to make ends meet. In Bellville and Stellenbosch, for example, people make a means of living through extracting valuable materials from streets, drains and dumps.

Within literature a range of terms has been employed that refer to these workers. The most common terms are 'waste picker' or 'scavenger'. The First World Conference of these people in 2008, agreed on the term 'waste picker' (Samson, 2009). The present study uses this term that also emphasizes that these workers perform labour at the bottom of a much larger waste recycling chain. By definition, waste pickers are "those involved in the extraction of recyclable and reusable materials from mixed waste" (Wilson et al, 2006:797) and thus, have constructed their livelihoods around waste.

WESTERN CAPE

The World Bank estimates that about 1% of the global population and 2% of the population in developing countries earns its livelihood from waste picking (Samson 2009). The sight of people doing these activities is also ubiquitous in African cities. Samson (2010) identifies De Kock's (1986) as the earliest author who dealt with people who live from waste material in Africa. Since the turn of the 21st century there has been a growth of such research, most of which has been carried out in Latin America as well as in Asia. Africa hardly contributes to the current international debates on these people (Samson 2010). However, in economically less developed countries, it is certain that waste pickers play an important role in compensating for the failures of the public waste services.

Informal waste collection can be considered as a strategy for urban survival and also a means of urban waste management. Thus, informal waste collection activities should be considered as a pathway to the development of urban areas rather than as an

impediment. Informal waste collectors should, therefore, be treated with care and should be empowered (Jaffe et al., 2004). There are many reasons why the urban poor resort to waste picking and waste recovery activities at municipal landfills as a livelihood strategy. One such reason is unemployment that impoverishes urban residents and causes them to be homeless, and turning to the humble role of informal waste collectors in order to provide for their basic needs (Jaffe et al., 2004). Poverty and migration are two of the concepts closely associated with waste collectors. Immigrants, who arrive in the country and migrants from the rural areas and from other countries, that fail to find proper employment, tend to scavenge to generate an income on which to survive and, in some cases, to remit money back home.

The following master thesis focuses on waste pickers in Stellenbosch and Bellville. It aims to deepen the understanding of the interaction and linkages between informal and formal waste collection and to shed light on the livelihoods developed as waste pickers. The main research questions which this thesis seeks to answer are the following:

1. What is the profile of the waste pickers (informal sector) that operate at the Stellenbosch and Bellville South Municipal landfills?
2. What is the pattern and nature of interactions between formal and informal recycling networks that determine resource recovery operations at the two municipal landfill sites?
3. What are the linkages between the recycling industry and the two municipal disposal sites in Cape Town?
4. How have waste pickers developed livelihoods based on resource recovery activities at the two landfill sites?

1.3 Justification For The Study

Increasing population levels, booming economics, rapid urbanization and the rise in community living standards have greatly accelerated the municipal solid waste generation rate in developing countries (Minghua et al., 2009). The management of solid waste is one of the main challenges facing any urban area in the world. This means that both developed and developing countries experience waste management problems. Municipalities, usually responsible for waste management in the cities, have the challenge to provide an effective and efficient system to the inhabitants. However, they often face problems beyond the ability of the municipal authority to tackle (Sujauddin et al., 2008) mainly due to the lack of organization, financial resources, complexity and system multi dimensionality (Burntley, 2007).

Some scholars have identified challenges influencing the elements of the waste management systems. According to Sujauddin et al. (2008) the generation of waste is affected by family size, education level and the monthly income. It has been reported that collection, transfer and transport practices are affected by improper bin collection systems, poor route planning, lack of information about collection schedule (Hazra & Goel, 2009), insufficient infrastructure (Moghadam et al., 2009), poor roads and number of vehicles for waste collection. Lack of knowledge of treatment systems by authorities is reported as one factor affecting the treatment of waste (Chung & Lo, 2008). Insufficient financial resources limiting the safe disposal of waste in well-equipped and engineered landfills and absence of legislation are mentioned by Pokhrel and Viraraghavan (2005).

Literature suggests that technical challenges influencing the system are related to lack of technical skills among personnel within municipalities and government authorities (Hazra & Goel, 2009). Municipalities have failed to manage solid waste due to financial factors. The huge expenditure needed to provide the service, the absence of financial support, limited resources, the unwillingness of the users to pay for the service and lack of proper economic instruments have hampered the delivery of proper waste management services (Sharholly et al., 2008).

Municipal solid waste has significant negative externalities, with impact on the environment and health. Uncollected solid waste in cities provides a favourable habitat for insects, vermin and animals, which proliferate and spread air-and waterborne diseases, such as plaque, dengue fever and diarrhea among local populations. When not disposed of with sound sanitary practices, leachate produced by accumulated MSW can leak into the environment and contaminate ground water and surface water. MSW also contributes to some global environmental challenges, such as the increase of greenhouse gas (GHG) emissions in the atmosphere, contributing almost 5% of total human-based GHG emissions (Hoorweg & Bhada-Tata, 2012). Although some attempts have been made in recent decades to improve solid waste management systems, for example, the paradigm shift from conventional waste management practices to the Integrated Solid Waste Management (ISWM) in order to effectively manage the waste stream.

The ISWM is a comprehensive waste prevention, recycling, composting, and disposal programme. An effective ISWM system considers how to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment (Wilson et al., 2009). ISWM involves evaluating local needs and conditions, and then selecting and combining the most appropriate waste management activities for those conditions. It focuses on investigating the stakeholders' action behaviour and factors that influence the elements of the city's waste management system and the technical but also environmental, socio-cultural, legal, institutional and economic linkages present to enable the overall system to function. To facilitate the analysis of information, existing elements of the waste management systems are described in terms of waste generation and separation, collection, transfer and transport, treatment, recycling and final disposal, as shown in Figure 1 (Scheinberg et al., 2010, 2011).

However, it is still a huge challenge for many developing countries to handle the growing volume of urban solid waste. The lack of adequate systems to manage solid waste could negatively impact on human health, while, at the same time, natural resources could be degraded (Samson, 2008). Furthermore, high levels of unemployment and inadequate skills have resulted in the emergence of a large informal waste sector in cities of the global South.

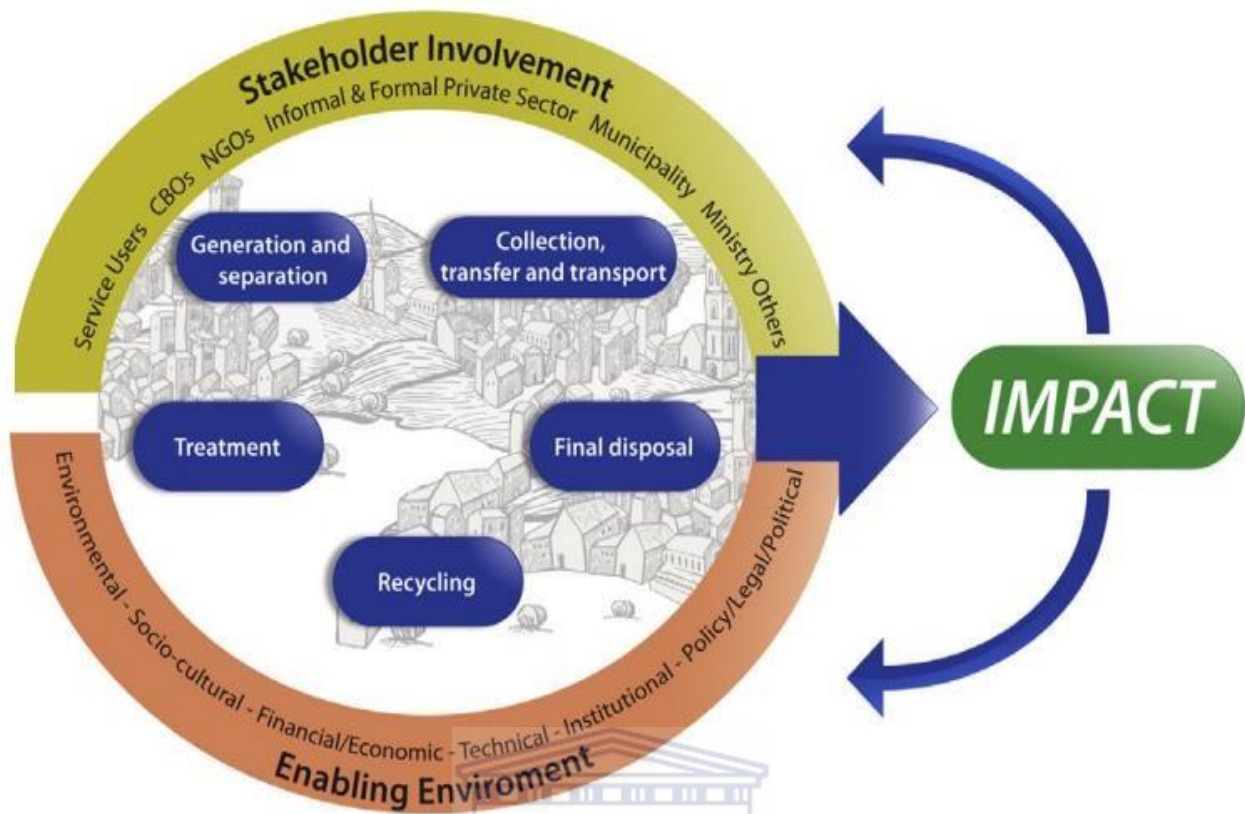


Figure 1: The integrated sustainable waste management model
Source: WASTE, 2004; adapted from ISSOWAMA Consortium, 2009

Urban poverty in many developing countries in general and in South Africa in particular is indeed one of the more serious problems facing urban managers. Reducing poverty is seen as the world’s greatest challenge and in South Africa it is counted as one of the country’s triple threats, the other two being unemployment and inequality. According to Statistics SA, 2015, more than half the population (53.8%) lives in poverty. Statistics SA defines three levels of poverty, using three different poverty lines: “extreme poverty”, defined as only being able to afford a very minimal basket of food, and nothing else; an “austere poverty line”, defined as a level below which one has to sacrifice some food to obtain some basic non-food items; and an “upper-bound poverty line”, which measure the income people need for a small basket of absolutely essential items, after meeting their basic food needs. With the latest update estimating that in 2014 the food poverty line is R440 per capita per month, while the austere poverty and upper bound poverty lines are R544 and R753 per capita per month. Statistics SA rebasing of the food poverty

line increased it by 10% to R355 in 2011. This means the number of South Africans living in extreme poverty (and therefore facing extreme hunger) increased from 20.2% of South Africa's population to 21.7%. The report from Statistics SA, 2015, defines "extreme poverty" as the lowest possible income to buy just enough food with the minimum recommended energy requirements of 2100 kilocalories a day needed to stay alive.

Because of unemployment and in many cases a lack of skills to find appropriate jobs in the formal labour market, some of the urban poor in Johannesburg are involved in informal solid waste activities as a means of survival. Samson (2008, p.3) argues that "with the rising levels of unemployment in the late apartheid period, it is not surprising that informal scavenging has become a more visible element in the South African cityscape." Samson (2008) also points out that urban poverty is the result of a government policy issue in post-apartheid South Africa.

This implies that the proliferation of urban poverty is the consequence of inadequate policies or alternatively, adequate but not well implemented policies. According to Nkosi (2006) it is on account of rapid economic growth and the consequences of urbanization that the production of solid waste has become more than its management. Subsequently, it contributes to serious social and environmental problems in Cape Town. This rapid growth and rampant consumption patterns, have outstripped waste disposal efforts. In addition, more space is being used for the illegal dumping of waste (Karani & Jewasikiewitz, 2007). Medina (2008, 3) defines the informal waste collectors as "a profession of the 21st century, a profession which is relevant when it solves an important problem in society and does it within a system". Hence, solid waste management cannot be separated from informal waste collection. Gwebu and Rankokwana (2006), who carried a study on informal waste collection in Gaborone, the capital city of Botswana believe that, although informal waste collectors are considered a nuisance and are continually receiving negative publicity, informal waste collection is in fact a fundamental component of viable waste management strategies.

It is hoped that this study might be of benefit to local authorities who might then recognize the positive role played in the environment and the economic and social spheres by informal waste collectors. Thus, informal waste collection has the potential to contribute in the future to a positive plan for waste management and poverty alleviation. This could

be done by sustaining and integrating the informal waste collectors into the national waste management system, as well as creating new opportunities of waste management associated with informal waste collection. Furthermore, this research might also contribute to public policy that have been designed to promote waste reduction or influence the choice of waste disposal technologies employed by generators of waste, and foster improved attitudes towards informal waste collectors.

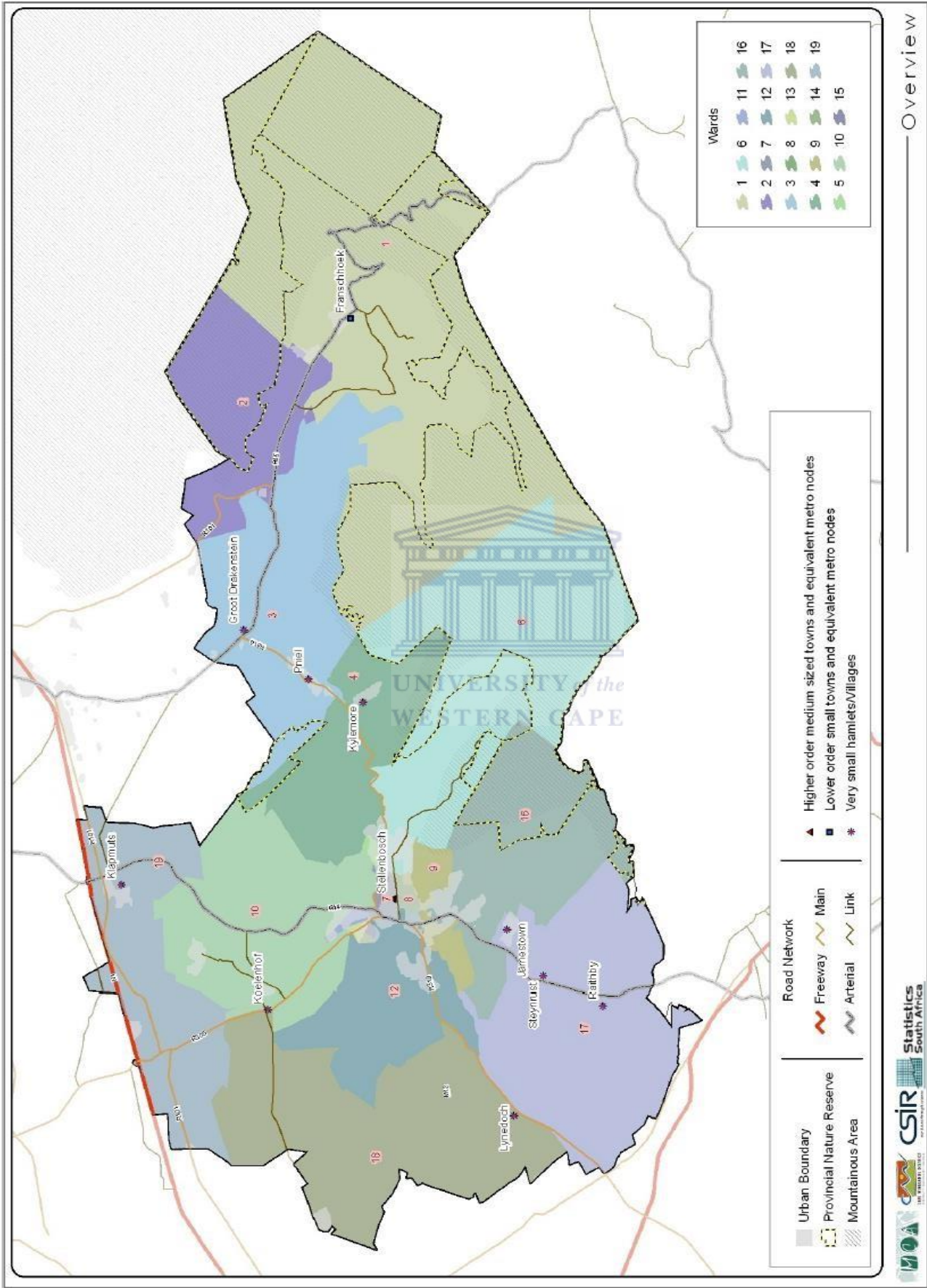
Informal waste collectors tend to be an important main source of raw materials for recycling companies. The ILO defines informal waste collectors as “individuals or small and micro-enterprises that intervene in waste management without being registered and without being formally charged with providing waste management services”. They are often not officially recognized and acknowledged, yet they contribute significantly to the waste management of cities, by collecting, sorting, processing, storing and trading waste materials in the recycling value chain. Hence, the government should regard this activity with favour. Government should establish a variety of recycling plans as an incentive for job creation for informal waste and other poverty-stricken people, and ultimately improve the informal economy. At the same time, they would contribute to resource conservation (Samson, 2008). Thus, the productivity of informal waste collectors is an important aspect worth exploring.

The areas in Cape Town chosen for conducting research on this matter include, Devon Valley Landfill Site in Stellenbosch, one of the city’s central business districts and Bellville South Landfill Site in Bellville, an impoverished residential area. My interest in the livelihoods of people who recover materials from landfill site arose when I visited the Devon Valley landfill site with my father. When I saw the waste pickers I was immediately fascinated by them and was interested in what they were doing. Bellville South Landfill Site was chosen, because I wanted to investigate the similarities between the two sites as BSLS are managed by a different municipality. Another aspect that this research focus on is a comparative study of informal waste collection activities, with similar activities being classified into groups so that it is possible to differentiate between the various forms of waste collection and as such, to identify specific patterns.

1.4 Study Area

Greater Cape Town has a population of approximately 3.75 million inhabitants (City of Cape Town, 2015). Cape Town provides numerous opportunities in terms of education, business activities, tourism and employment, as well as amenities. Thus, people from local and international source areas are continually arriving in the metropolis. Cape Town is often referred to as a global city, because it is an important node in the global economic system. In 2014 Cape Town was named the World Design Capital by the International Council of Societies of Industrial Design. In 2014, Cape Town was named the best place in the world to visit by both The New York Times and The Telegraph (City of Cape Town, 2015). This research project does not set out to explore informal waste collection throughout the entire Cape Town Area because that would be a mammoth task. It focuses on two precincts, namely Stellenbosch (Devon Valley Landfill Site) and Bellville (Bellville South Landfill Site). These specific areas were chosen in order to explore and compare the patterns between a lower-middle class residential area (Bellville) and a middle-upper class residential area (Stellenbosch). In addition, these areas were chosen for their proximity to recycling companies where informal waste collectors sell their commodities to the middle-man. Hence, these specific locations made it easy to pinpoint the spatial location of informal waste collectors in the metropolitan area of Cape Town.

Stellenbosch is the second oldest town in South Africa and has fondly been called 'Eikestad' or City of Oaks and its streets are lined with some of the most beautiful surviving examples of Cape Dutch, Georgian and Victorian architecture in the Cape. The Stellenbosch municipal area includes the towns of Stellenbosch (58 000); Franschhoek (9 000) as well as a number of rural hamlets such as Wemmershoek, La Motte, De Novo, Kylemore, Pniel, Johannesdal, Languedoc, Groot Drakenstein, Muldersvlei, Klampmuts, Elsenburg, Raithby, Jamestown, Koelenhof and Vlottenberg (most with a population of less than 5 000), as shown in figure 2. The *Eikestad* (City of Oaks) together with Franschhoek and the surrounding award winning wine farms, form the centre of the wine industry in South Africa. Stellenbosch has transformed its economy, which was originally based on agricultural activities, to service related niche sectors, such as finance, business, tourism and science and technology. Stellenbosch is situated about 50 kilometers east of Cape Town, along the banks of the Eerste River and has a population of 77 476 (Integrated Development Plan, 2014/2015).



Overview



Figure 2: Shows a map of Stellenbosch Municipality including the wards
Source: 3rd Generation” Integrated Development Plan 2012-2017

The total value of economic activity approaches R4 billion per annum, with a growth rate of over 4%, representing a quarter of the district's value-added. Sectoral figures indicate financial and business services contribute the largest share to the economy followed by manufacturing, together these sectors contribute over half of the economic value. Trade and government services make up another quarter of the economy with a fairly even split. Agriculture, transport and communication, community, social and personal services and construction make up approximately 20% of the economy. 2011 Census indicates that the percentage of people aged 20 years and older with no schooling declined in 2001 (5.8%) and decreased even further in 2011 (3.1%), 25.2% of the people completed grade twelve, and 17.3% achieved higher qualification in 2011. Stellenbosch municipality had an unemployment rate of 21.4% and an employment rate of 19.7% in 2011. The majority of the population have an annual income between R19 601 – R38 200 (Integrated Development Plan, 2014/2015).

Stellenbosch Municipality has operated a waste disposal site in the Devon Valley area, opposite the Veldwachters River from the municipal sewage treatment works, since the late 1960s. The landfill is geographically located at 33° 56' 31" S, 18° 49' 14" E. The municipal property is partially used for waste disposal and the remainder has been leased on long term agricultural leases to farmers. The Stellenbosch Local Municipality (SLM) is the designated permit holder. The site is owned by the Council. The Council owns additional land towards the north and west of the site, effectively acting as a buffer between the landfill and the adjacent rural/agricultural land uses. The DVLS is flanked by the Devon Valley Road, Stellenbosch Waste Water Treatment Plant (WWTP) and the Devon Valley Industrial Area to the east, the R310 (Adam Tas Drive) to the south, and agricultural land uses to the west and north. Current activities are largely linked to the landfilling of general waste (Barbour & van der Merwe, 2011). The Devon Valley Landfill Site (DVLS) currently serves the entire Stellenbosch Municipal Area (general waste only) (Barbour & van der Merwe, 2011). According to Frankson (2015), it was determined that 13,831 kg of recyclable waste can be extracted from the waste stream per week instead of being sent to landfill amounting to 719,212 kg per year. Presently 75% of all paper and dense plastics are recycled, 50% of plastic film and glass and 25% of all metal products and the rest sent to landfill.

On the other hand, Bellville is a "city" within the City of Cape Town. Originally called "12 Mile Post", since it is located exactly 12 miles (20 km) from Cape Town city centre. Bellville and its surrounding areas are thriving suburbs within which thousands of small local businesses are located. Bellville South includes the following sub-places: Bellville Lot 1, Bellville Lot 2, Bellville Lot 3, Bellville Lot 5, Bellville Lot 6, Bellville South, Bellville South Ext 13, Bellville South Ext 14, Bellville South Industrial, Beroma, Blanc Kelly, Glenhaven, Green Lands, Mimosa, Parow Industrial, Sacks Circle Industrial, Steel Park, Transnet, as shown in Figure 3 on the next page.

Bellville is a city in the greater Cape Town Metropolitan Area and has a population of 112 507. The Bellville South Landfill Site (BSLS) is situated in the central metropolitan area at Sacks Circle, in Bellville Industrial area and is bounded by the Belhar residential areas to the west and south, the Bellville wastewater treatment site on the northern boundary, and the R300 freeway on the eastern boundary (Statistics South Africa, 2015).

The Bellville Sanitary Landfill is located in the Bellville South area of Cape Town, South Africa. This site is one of the six sites in the Cape Metropole, which service the community of over 3 million people. Most of these sites are approaching closure because of lack of space for further waste depositing. The estimated operational period prior to closure averages five years. 2011 Census indicates that the percentage of people aged 20 years and older with no schooling was 2,7% in 2011, 27,1% of the people completed grade twelve, and 11,0% achieved higher qualification in 2011. Bellville South had an unemployment rate of 20.4% and an employment rate of 50.5% in 2011. Majority of the population have a monthly income between R 3 201 - R 6 400 (Statistics South Africa, 2015).

The site receives over 300 000 tons of solid waste per annum and over 1000 tons a day, some 25% of the total Cape Town waste. With the other sites approaching closure the rate of waste disposal is bound to increase. The Cape Town community, which is estimated at over 3 million produced 1.51 million tons of waste per year in 1999. This figure grew by 6% to 1.6 million tons per year. The total estimated waste produced by an individual is some 500 kg per year. The close proximity of the site to the Sacks Circle Industrial area makes it ideal to supply these industries with natural gas. As the gas extraction and utilization thereof are newer concepts in South Africa, this provides opportunities for studies to be carried on this proposed pilot site (Statistics South Africa, 2013). Figure 4 on the next page shows the spatial location of these respective precincts.



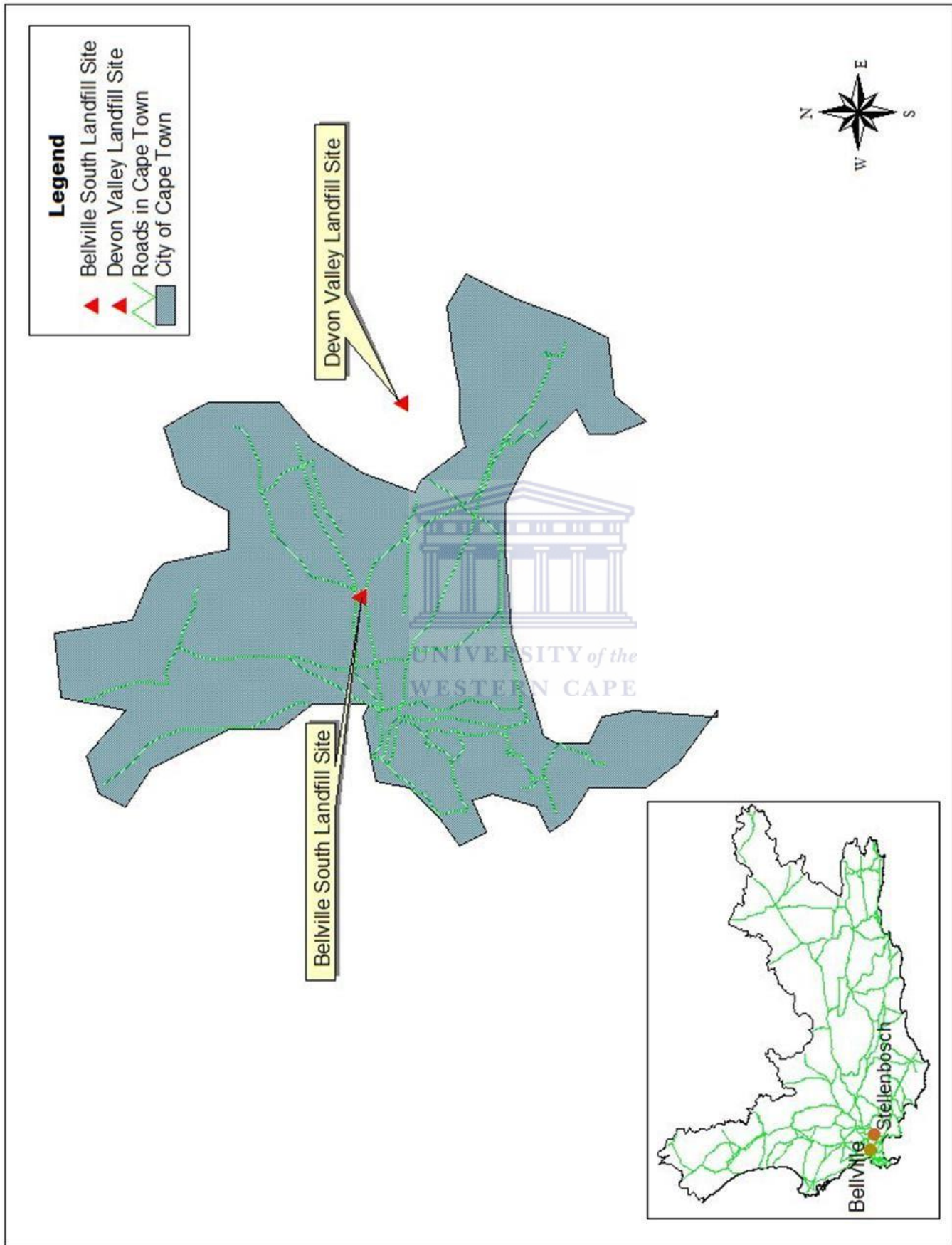


Figure 4: The location of DVL and BSLS
 Source: City of Cape Town, 2015

1.5 Current Solid Waste Management In Cape Town

Although the Municipality of Cape Town operates under different institutional, technical, and financial capacity than other Municipal Councils, Cape Town confronts similar SWM challenges (South African Cities Network 2006:3-17). Cape Town have his own political history that shapes their institutions and communities. Cape Town continues to face racially discriminatory provision of public services, including waste management. Today, the legacy of apartheid has left socio-economic status stratified according to race, which has cause inequalities in SWM services (Integrated Analysis Solid Waste Baseline Report, 2007). Furthermore, with 3.5 million people and as the second most populous city in South Africa, Cape Town is generating an increasing amount of waste from various packaging materials of glass, plastics, and paper (Ferrara et al., 2008).

In the last few years, its waste generation has increased by as much as 7 percent even though there has been a flattening of population growth. The growth in its waste stream can be attributed to the improvement in economic conditions. In addition, Cape Town's landfill sites are rapidly reaching capacity. Illegal dumping is an ongoing problem for the Municipality, and there continues to be low public awareness in handling waste (South African Cities Network 2006). According to the City of Cape Town Waste Management Draft Sector Plan (2013/2014), Cape Town generate 1 685 927 million tons of waste per annum (City of Cape Town Waste Management Draft Sector Plan, 2013/2014)

In order to adequately serve all the seven areas, the Municipality began to build numerous partnerships with private companies, NGOs and CBOs. The City contracts with private companies to collect and transport waste from residential sites to the refuse stations and landfill sites. About 80 percent of "formal houses" in Cape Town have wheelie bins or mobile garbage bins that allow for weekly collection of waste, and about 50 percent of informal settlements receive a refuse collection and area cleaning service from the Municipality (Integrated Analysis Solid Waste Baseline Report, 2007).

Consequently, this decentralization led to the emergence of multiple stakeholders in Cape Town's SWM process. The process was no longer limited to the public sphere; private companies and community-based actors have entered into the process. The

interaction of these stakeholders reveals that a more integrated and coordinated approach is required for an effective SWM system (Integrated Analysis Solid Waste Baseline Report, 2007). The Devon Valley Landfill Site of Stellenbosch was established in 1964, but was only converted to a landfill in the 1989. With a daily tonnage ranging from about 6000-6800 in February 2012,

1.5.1 Overview Of Stellenbosch Landfill Site

According to Saliem Haider (Head of Solid Waste Department at Stellenbosch Municipality, during the interview in March 2015), Stellenbosch is one of the highest producers of municipal solid waste (not counting industrial, construction and mining waste) in the country. The facility also receives waste trucked in from transfer stations located in the Klapmuts and Franschoek areas. In addition, the facility also accepts garden waste, rubble and general household waste from the public. Due to the site's unfavourable location (sensitive land use) and that it is reaching its capacity, the landfill site is likely to be closed in the near future

In terms of the current operations, the landfill site is open from 08h00 to 18h00 from Mondays to Fridays and is open 09h00 to 15h00 on Saturdays and public holidays. The facility is closed on Sundays. In terms of the current operations, salvaging of materials is permitted under controlled conditions during operational hours. The site is enclosed by a concrete palisade fence and access is via a single gate that is locked after hours. GM Waste currently deploys two permanent staff members at the gate during operational hours. Formal road access to the facility is via Devon Valley Road. Key targeted materials include metals, plastics, white paper, wood and bricks. Informal salvaging appears to have been part of the operations since operations initially started in the 1960's (Barbour & van der Merwe, 2011).

1.5.2 Overview Of Bellville South Landfill Site

The Bellville South landfill receives general municipal waste and it has been in operation since the 1960s and it currently receives 600 000 tons of waste per annum and a 1000 to 2000 tons of waste daily. An additional 150 000 tons per annum will be landfilled on site when the Faure landfill closes. According to Mr. Nelson (during the interview in March 2015, who is the manager at the Bellville South Landfill Site), the site has a GLB+ classification (General:Large:Leachate Producing) and serves an essential role in the disposal of the city's waste.

The landfill site is managed by the City of Cape Town. The facility also accepts garden waste, rubble and general household waste from the public. In terms of the current operations, the landfill site is open from 08h00 to 18h30 in the summer and 08h00 to 17h00 in the winter from Mondays to Fridays and is open 09h00 to 14h00 on Saturdays, Sundays and public holidays. In terms of the current operations, waste pickers do not have access to the landfill site, due to the fact that the activity has been discontinued in 2007. Although waste picking still occurs during after-hours from 18:00 to 21:00 in the evenings. The site is enclosed by a concrete palisade fence and access is via a single gate that is locked after hours and patrolled by police during the day.

Poor town planning and pressure for housing have resulted in residential creep to the site boundaries. The site has been under immense pressure from the local communities to close. The site is situated above deep soils comprising Aeolian Cape Flats sands and the landfill overlies the Cape Flats aquifer, a primary groundwater body located close to the ground surface. Given the close proximity of the residential areas and the high water table in the area, the city exercises high standards of operating and management to ensure that the negative impacts of odours and the release of landfill gases and leachates generated by the landfill are properly contained.

Both landfill sites are large landfill sites/ the landfill size class depends on the amount of waste that a site may receive on any given day. The divisions between the classes start from a Communal site which could receive 0-25 tons per day; to a Large landfill site which could receive in excess of 500 tons per day. Table 1 describes the different size classes.

| Landfill Size Class | Maximum Rate of Deposition (MRD) (Tonnes per day) |
|----------------------------|--|
| Communal (C) | 0 – 25 tons per day (<25) |
| Small (S) | 25 – 150 tons per day (>25 / <150) |
| Medium (M) | 150 – 500 tons per day (>150 / <500) |
| Large (L) | More than 500 tons per day (> 500) |

Table 1: Landfill size classes

Source: CoCT - Integrated Waste Management Policy, 2006

1.6 Research Aim And Objectives

The aim of this thesis is to explore the role of the informal sector in the recycling industry and to examine the structure of the informal solid waste recycling in Cape Town.

The specific objectives of the study are:

1. To determine the profile of waste pickers (informal sector) in two different geographical areas – namely, Stellenbosch and Bellville South.
2. To examine the interaction between formal and informal recycling networks that determine resource recovery operations at the two (DVLS and BSLS) municipal landfill sites.
3. To gain an understanding of the linkages between the recycling industry and selected municipal disposal sites in Cape Town.
4. To investigate how waste pickers at the two municipal landfills in Cape Town have developed livelihoods that are based on resource recovery activities at landfill sites.

1.7 Thesis Structure

It is the intention of this thesis to explore the interactions between the informal and formal sectors in the waste recycling industry of Cape Town. Chapter 2 provides a review of the pertinent literature on the topic. The various sections of the chapter review the literature on the following topics: informal waste collectors in developing countries; informal waste collection in South Africa; reasons for the existence of the informal recycling sector; and the interaction between informal and formal recycling processes. Chapter 3 outlines the methodology adopted in gathering and analyzing the necessary data. Chapter 4 analyses the research data and explores the interactions between formal and informal recycling networks and examines the views of the waste pickers in the informal waste collection as well as those of the formal waste collectors. The discussions will be guided by empirical data and frequently taps into the insights from the secondary data discussed in Chapters 1 and 2. The conclusion of the study will be presented in Chapter 5.

1.8 Summary

This chapter presents the research problem that have helped shape the aim and objectives of this thesis. Exploring the urban literature of urban waste management system highlights two major themes. Firstly, that there is an urban waste management problem in many cities of the world and problems associated with waste manifest themselves in different forms and in different places. Secondly, that the urban waste problem is getting worse everywhere for a variety of reasons which are city or region specific. Clear distinctions and similarities can be noted between waste management systems in economically developed and economically developing countries. Distinctions include the amount of waste that is produced, the composition of the waste produced and the waste management system that is in place to deal with the waste generated. Similarities include rapid urbanisation and the fact of increasing waste generation. Conventional ways and methods of managing wastes are not sustainable. However, in economically less developed countries, it is certain that waste pickers play an important role in compensating for the failures of the public waste services. For many impoverished people informality offers the only opportunity to survive. Thus, informal waste collection activities should be considered as a pathway to the development of urban areas rather than as an impediment.

Chapter 2: Literature Review

2.1 Introduction

Waste pickers are characteristically poor, often homeless, socially disadvantaged and are at continual risk for a myriad of health concerns (Dias, 2009). Waste pickers making a living out of waste, are utilizing the discarded resources. They are actually making use of an opportunity to survive under difficult circumstances. Waste pickers at landfill sites are becoming an increasing phenomenon and also yet not much is known about them, their activities and contribution to the recycling industry. There is a need, therefore, to find out interactions and linkages that exist between informal and formal recycling. Gaining insight into how waste pickers have developed livelihoods based on resource recovery activities at landfill sites will have broad social and economic advantages for South Africa. Governments, policy makers, communities and social researchers need to understand the role that informal recyclers play and this will give them an opportunity to focus on urban issues.

The research mainly focuses on the linkages and the interactions that exist between the informal and formal recyclers, and also explores the role that the informal waste collectors play in the solid waste management system. It also identifies the problems encountered and the opportunities generated through the role that informal waste collectors play in the recycling industry. The other fundamental point investigated through this research is how informal waste collectors in Cape Town have developed livelihoods based on resource recovery activities at landfill sites.

Other aspects of the literature related to informal waste collection in South Africa and internationally that are discussed in this chapter are set out under the following headings: Informal Recyclers: Who are they and what do they do?; formal and informal sector recycling; conceptualizing informal and formal recycling; context of informal waste pickers; the interaction between formal and informal recycling networks that determine resource recovery operations at the two (DVLS and BSLS) municipal landfill sites and the linkages between the recycling industry and municipal landfills.

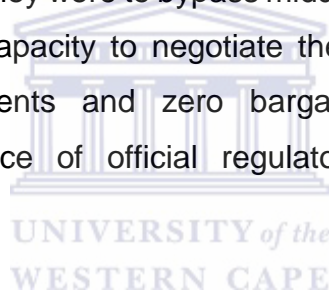
2.2 Informal Recyclers: Who Are They And What Do They Do?

"...tired and sweaty people...that come to big companies to look for or sell waste, while carrying their children on one shoulder and pushing their carts with the other arm, or come in a ramshackle carriage pulled by a horse that is as thin and unpolished as themselves" (Adriana Ruiz-Restrepo, *Las nuevas aventuras de Tomy Jerry*, April 25, 2011).

Informal recyclers are situated in the lowest level of the recycling industry. Contrary to common belief, waste pickers did not invent this activity but, rather, they responded to industries' demand for raw and cheaper materials. Some poor populations have specialized in recovering, selecting, transferring-be it from public dumps, private households and/or larger generators of waste-and supplying reusable materials to small and medium warehouses or intermediaries, who in turn deliver this material to larger intermediaries or small and large industries (Sylvestre, 2003).

Being positioned in the lowest level of this cycle implies two issues that reinforce their socio-economic vulnerability: their bodies undergo severe physical burdens -as they have direct contact with the toxic elements of waste and carry them on their back or by pushing heavy carts- and they receive the lowest and most irregular salaries in all of the recycling industry. According to Sylvestre (2003) and several academics who have researched the economic benefits of recycling in Colombia, informal recyclers face a notorious imbalance of income distribution within the recycling cycle. Given that they often do not have the means to accumulate large quantities of reusable materials, recyclers sell what they collect on a daily basis. They depend on several kinds of middle agents: those with small storehouses and those with medium warehouses. These middle range intermediaries often sell again to larger warehouses, industrial storehouses and sometimes directly to industry. Middlemen who buy from informal cooperatives also depend on what the industry is willing to pay for raw materials. In order for middlemen to secure profit from these transactions, they must offer low prices to the poor recyclers. The final price is ultimately defined based on the supply and demand of materials but do not incorporate the daily labour costs of selecting, separating and collecting recyclable waste -this being one of the primary injustices that recyclers face in the current system of waste

management in Bogota. Matter et al (2013) believe that the informal activities supply secondary materials to the economic agents of the local market, which may contribute to the stimulation of the local population of recycled goods, to the development of the local market and community economy in general. According to Gunsilius et al (2011), there are also other categories of persons that obtain benefits from informal recyclers; the wastes collected by informal activities are capitalized through intermediates, who earn consistent profits from the difference between the price they offer to informal recyclers for the collected waste and the rate they charge to formal recyclers for the traded waste. Sylvestre (2003) affirm that "there is a qualitative distinction between middlemen or storage owners, which is that middlemen support their commercializing activities through the work of recyclers". Although Bogoti lacks economic studies on the recycling value chain, Gutberlet (2008) estimates that despite the extreme fluctuation in prices, based on volume paid by small and medium middlemen and large industries Colombian recyclers would earn five times more if they were to bypass middlemen and go directly to industries. Recyclers have little to no capacity to negotiate their payments and are exposed to exploitation, irregular payments and zero bargaining power. This inequality is strengthened by the absence of official regulatory frameworks in the recycling businesses.



Understanding the composition and dynamics of informal waste pickers has not been straightforward and easy to accomplish. For one, they were not among government's priorities or interest for several decades. The first attempt for the local government to learn from waste pickers and include them in their policymaking was in 2003, when the District and the National Department of Statistics launched a research study of their demographic, economic, living and mobile conditions. In addition to this study, ENDA had produced anthropological studies on the mobilization and technology mediums of recyclers. The academic researchers that follow and support the cause of waste pickers usually work with specific associations or groups, but do not have a full picture of the number, the dynamics and the landscape of informal recycling in Bogoti. This incomplete understanding of the presence and dynamics of this group has led authorities to create an inappropriate set of policies in several occasions.

2.3 Formal And Informal Sector Recycling

The urban economy is supported by two pillars, the formal and informal sectors (Zia et al., 2008). The formal sector is made up of public and private enterprises which are legally and financially backed by government agencies. In contrast, the informal sector lies out of state control. Despite this however, formal and informal enterprises are often dynamically linked; be it through production, distribution or consumption (Katusiimeh et al., 2013). Gutberlet and Baeder (2008) believe that in 'poor countries' the informal sector gives an invaluable 'frontline' service to large sections of society and often determines the direction of the whole economy. Informal Sector Recycling (ISR) is a term used to describe individuals or enterprises involved in the extraction of recyclable materials from mixed Municipal Solid Waste (MSW). As will be seen throughout this review, the trading network of the informal recycling sector is more comprehensive and efficient than it is first taken to be (Chi et al., 2011).

The informal collectors carry out their activity by searching through garbage and looking for various used products and recoverable materials; some of them trade wastes to intermediates (Matter et al., 2013), others prefer to capitalize material waste directly from sanitation operators authorized to recycle waste. In most cases, informal waste recycling is carried out by poor, disadvantaged, vulnerable and/or marginalised social groups (for examples gypsies, rural migrants, disabled, elderly, the illiterate and religious minorities) who often resort to scavenging as an adaptive response (income) (UN HABITAT, 2010). The socio-economic and socio-demographic characteristics (level of income, gender, age distribution, marital status) of scavengers differ from location to location (Asim et al., 2012). Medina (2007) reported that as much as 2% of the population in some developing countries depends on waste picking for everyday survival. This figure is however difficult to corroborate since the informal sector is not usually included as a census category, so reliable data on the number of individuals engaged in scavenging are difficult to obtain (Zia et al., 2008). The informal sector is characterized by small-scale, labour-intensive, adapted technology, low-paid, unorganized/ unplanned, and unregistered/ unregulated work (Monirozzaman et al., 2011). Chi et al. (2011) describe their activities as being part of a self-sufficient, shadow economy. Individuals and family groups within the sector do not usually possess trading licences, do not pay taxes, and are not included in

government insurance, social welfare or funding schemes. Having said this, Wilson et al. (2006) believe that the informal sector collect a variety of indigenous materials and process them into a variety of intermediate and final products; the skills to do so are often acquired outside the formal school system. This is reinforced by Ojeda-Benitez et al. (2002) who stated that through the high degree of creativity and flexibility they possess, the sector could respond instinctively to the needs and demands of the market. In order to better appreciate the current status of informal sector recycling in developing and transition countries (also called less developed countries (LDCs), i.e. countries with low living standards, underdeveloped industrial base, and low Human Development Index (HDI) relative to other countries).

2.4 Conceptualizing Informal And Formal Recycling

The conceptualization of formal-informal linkages in a waste recycling industry will be used in this study. The approach is an adaptation of the conceptual framework developed by Mushumubusi (2011) in a study in Dar es Salaam, Tanzania, that focused on formal-informal elements in urban infrastructural provision. Kieth Hart in 1973 coined the term 'informal', and used the formal-informal dichotomy in the study of a migrant group and distinguished them on the basis of wage earning and employment. He used different terms such as, 'informal income generating activities', 'urban proletariat', 'petty capitalism', 'unremunerated sector', 'unorganised sector' and 'self-employed individuals' as interchangeable with informal sector. Nevertheless, he neither recognized the existence of wage-earning workers in the informal sector nor did he identify the criteria on the basis of which the self-employed in the two systems could be distinguished. Before that, Hart, Machado and Antonio (1971) established a distinction between the occupational opportunities offered to the urban workforce in the two sub-systems, 'formal' and 'informal'. According to them, the informal sector comprises of the jobs, which are offered by individuals who purchase the services generally for a short duration and on an irregular and temporary basis.

Assessing the dichotomy in the development discourse and the unconstructive result it has brought about, Ostrom et al (2006) present what they consider a fruitful option – a formal- informal continuum. By this, the authors imply the continuum between high and

low levels of reach of official governance mechanisms which should be “decided on case by case basis by taking into account the self-governing structures that communities are capable of producing within or without the reach of official structures.” The authors, based on their review of empirical studies, conclude that no simple rule exists that increasing or decreasing “formalization” necessarily improves or worsens the well-being of the poor, such as waste pickers. That is a fundamental finding and a blow to current urban development policies and practices as they are largely based on the assumption that “formalization” of the informal sector improves the well-being and living conditions of the poor.

Figure 5 shows a conceptual framework that highlights the relationship between the formal and the informal sectors. I will use this framework to help structure my research and analyse the interactions between formal and informal components of waste recycling. The framework will help me understand the role that the informal sector plays in the recycling network and how the formal and informal sector interact with each other, as well as gain an understanding of the linkages between the recycling industry and municipal disposal sites as a private urban space.

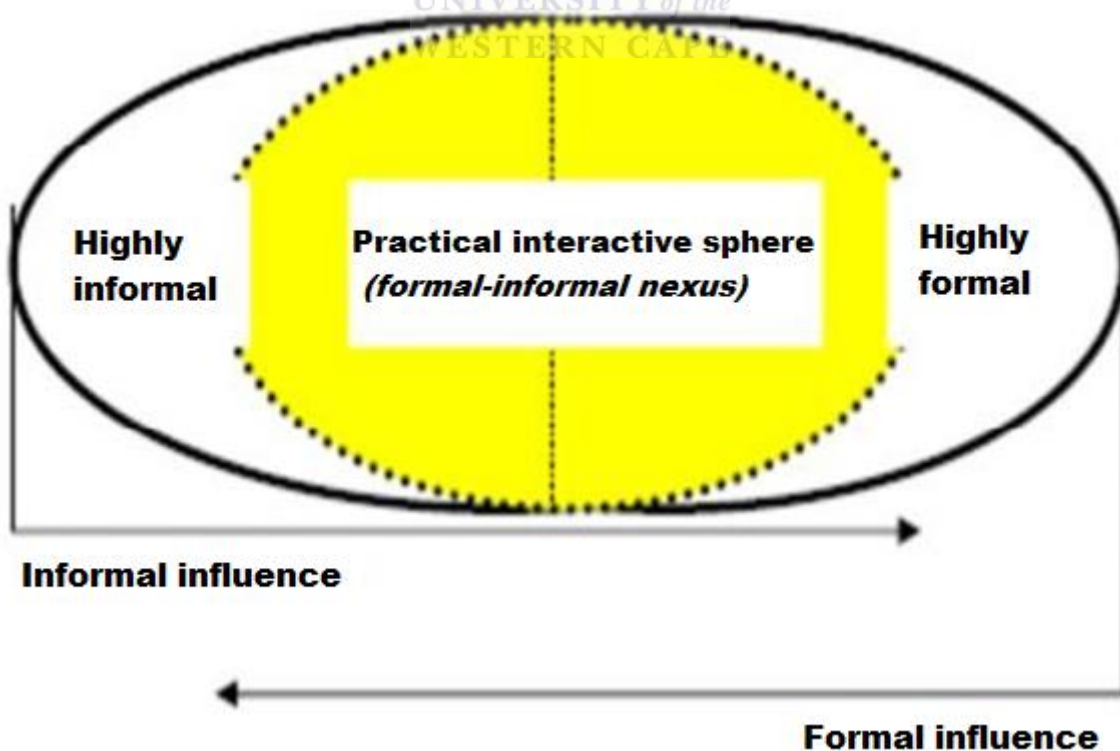


Figure 5: Conceptualization of Formal-Informal elements in a waste recycling industry
 Source: Mushumbusi (2011)

The framework presents two extremes. At the one extreme where there is total formality the system may tend to be rigid and counterproductive. At the other extreme where there is total informality the system may tend to be chaotic and counterproductive as well. The two extremes are illustrative of inherent shortfalls within each system. This suggests a blend of the two practices, considering historical, geographical, economic, societal, cultural, and technological factors. The inner zone of figure 5 would represent the practical interactive sphere. Therefore, the formal/informal binary may be useful to illustrate the particular way in which one exists within the other. The informal sector operates outside the system of government regulation. Informal waste recycling is carried out by poor and marginalised social groups who resort to waste picking for survival (Medina, 2000).

2.5 Context Of Informal Waste Pickers

Reno (2009) citing Mydans and Erlanger (2007) stated that waste picking is portrayed as something done out of necessity, and the people doing it were suffering from object poverty. How much recycling finally takes place depends on the decisions taken by both consumers, waste pickers and recycling firms (Baksi & Van Long, 2009).

An informal waste recycling activity is a phenomenon in developing and least developed countries as a result of low economic development. According to Asim et al. (2012) this sector is left for those who are poor and marginalized urban dwellers that resort to scavenging and waste picking for survival. Informal waste recycling is carried out by outcasts and marginalized social groups such as gypsies, rural migrants and religious minorities who resort to scavenging/waste picking for income generation and some even for everyday survival (Wilson et al., 2006). Reno (2009) contends that waste picking is only likely to increase globally as different wastes continue to move across borders, shadowing the circulation of goods and generating substantial economies of waste in the process.

In cities with formal and municipal waste management systems, there are at least four main categories of informal waste recycling. The categories are stated as follows:

- a) *Itinerant waste buyers*: these are waste collectors that are engaged in the collection and marketing of sorted dry recyclable materials. They collect the recyclable items from door to door, and this category of informal waste collectors are common in most parts of the world (Zia et al., 2008). The activity is often undertaken by individuals and so is labour intensive. It also involves capital investments in order to purchase bicycles, hand carts, wheelbarrows (Wilson et al., 2009). Asim et al., (2012) believe that the number of itinerant buyers is on the increase as householders are realising the economic benefit of selling material.
- b) *Street waste picking*: gather secondary raw material from mixed waste in markets, streets, garbage bins, drains and transfer stations all over the urban fabric (Zia et al., 2008). Asim et al. (2012) noted that street pickers work an average of 10h a day and cover an area of 10-15km.
- c) *Municipal waste collection crew*: recyclables are recovered from vehicles transporting Municipal Solid Waste to disposal sites. Collection crews later sell the materials to scrap dealers and divide the income amongst themselves (Sembring & Nitivattananon, 2010).
- d) *Waste picking from dumps*: these are waste collectors that recover recyclables from dump sites before being covered. The recovered items are then sold to temporary junk shops that are located on edge of dumps (Asim et al., 2012).

Asim et al., 2012 have further shown the coordination of these categories as a system in the context of developing countries. The complex structure Figure 6 highlights how the formal and informal are explicitly linked in the waste recycling system (Wilson et al., 2009; Sembring & Nitivattananon, 2010; Chi et al., 2011; Asim et al., 2012). In a monopolistic market (only one buyer), middlemen grossly take advantage of waste pickers by paying low prices for the materials. Individual waste pickers or those who are relatively isolated on dumps are the most susceptible to exploitation as they do not have an organised supportive network.

Based on the definitions that have been given, waste is considered as something with no value and discarded by the original owner. Related to this conception of waste, many

people that work on waste and mainly of the informal waste recyclers are perceived negatively and stigmatized by the society at large. Another aspect that needs to be raised is the question in relation to the ownership of waste in the context of the informal waste recyclers. In most cases, informal waste recyclers are considered as thieves for collecting recyclables from the waste disposed (Gutberlet, 2008).

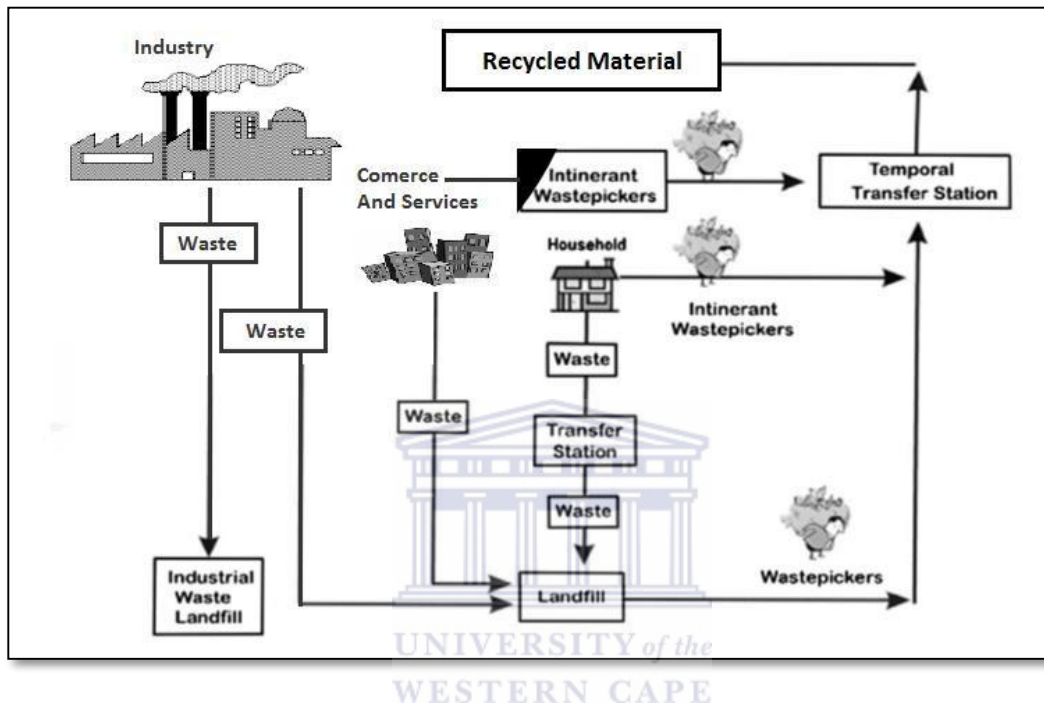


Figure 6: Informal recycling system in developing countries.
Source: Asim et al. (2012)

However, informal waste recyclers have the skill of identifying waste with the potential of economic value even if discarded by the original owner. According to Asim et al. (2012) informal recyclers sort, clean and alter the shape of the waste and gives value in to a commercially viable quantity. The selection criteria for the recyclable materials include profit margins, accessibility, convenience, ease of transporting and handling. The most common materials that are recycled include plastics, aluminium, textiles, paper, steel and other metals. Almost all material can be recycled, nevertheless, the value given to the recycled material depends up on the demand and uses for it. The value of the materials is the major driving force for the informal sector.

According to Gerdes and Gunsilius (2010) waste pickers constitute the bottom tier of the urban informal sector. Figure 7 below highlights the position occupied by the waste pickers in the broader waste management system.



Figure 7: The position of informal waste pickers in the broader waste management system Source: Gerdes and Gunsilius (2010)

In South Africa, the municipal waste management systems do not appear to be ready to accommodate the waste pickers. However, Gerdes and Gunsilius (2010) indicate that the official waste management systems in many cities, such as Cairo, could not be managed without the myriad of waste pickers and scrap collectors, who often form the basis of waste collection services at no cost to local authorities, central government and residents. Gerdes and Gunsilius (2010) further emphasise that while informal activities such as street waste picking very often take place outside official and formal channels and are unlicensed and untaxed, street waste pickers nevertheless contribute significantly to national economies.

These authors conclude that street waste pickers are entrepreneurs who add value merely by collecting and then transforming waste into tradable commodities (Gerdes & Gunsilius 2010). Another advantage of organically grown informal sector activities such as this is that they are highly adaptable and flexible, and able to respond quickly to demand-driven forces (Gerdes & Gunsilius 2010). The literature review reveals that much has been written about waste pickers working and living on dumpsites or landfill sites in

South Africa (Chvatal, 2010; Samson, 2010a), but very little about the interaction and linkages between informal recycling and formal recycling.

According to Benson and Vanqa-Mgijima (2010), South Africa has a long history of people collecting waste to survive. They suggest that since the adoption of neo-liberal policies in South Africa, the scale of private reclaiming has increased, as has the availability of poor people to take part in the reclaiming chain. One of the reasons for this is increasing levels of unemployment. Job losses have shifted people onto the streets in order to earn an income or sustain a livelihood, and, as Medina (2007) indicates, waste collecting and selling is an activity that saves many people from starvation (Theron, 2010).

Waste pickers should further be considered in the context of a formal waste management cycle. There cannot be waste collection if there is no waste generation (Schenck & Blaauw 2010). The waste cycle is illustrated in Fig. 8. Waste pickers can make a living only if there are people who generate waste. Medina (2007) states that the amount and characteristics of waste generated in First and Third World countries differ markedly. Waste generation rates in industrialised cities are typically higher than in cities in Third World countries, and the quantity of waste generated tends to increase as income increases.

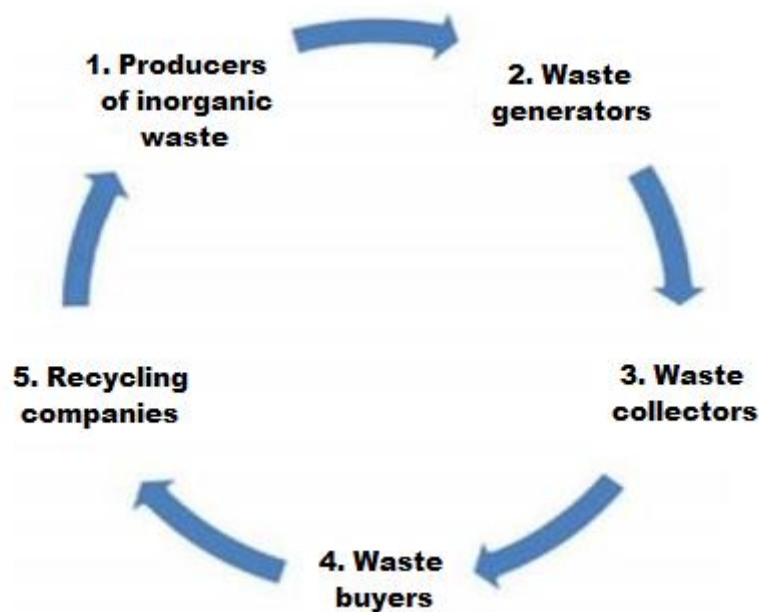


Figure 8: The waste cycle.
Source: Gerdes and Gunsilius (2010)

The average US resident produces over 1.5 kg of waste per day, while a person in Cotonou, Benin (Africa) produces only 125 g in the same period. Waste generated by First World communities therefore creates survival opportunities for waste pickers who live in these communities. Another dimension that sustains the informal waste management system is the existence of buyers or buy-back centres and recycling companies. If there is no waste and nobody to buy and recycle the waste, there would be no reason for the waste pickers to enter this sector. Gerdes and Gunsilius (2010) report that several studies have shown that these informal recycling activities have positive effects on the environment, reduce the costs of waste management systems and provide income opportunities for large numbers of poor people. Dias (2009), who was involved with organizing and researching the waste pickers in Belo Horizonte, Brazil, confirmed that in 2008, 5,100 tons of waste was collected by informal waste pickers in the streets and the dumpsites. This amounted to 52% of all the recyclables in Belo Horizonte.



2.6 Interaction Between Formal And Informal Recycling Networks

The recycling scheme of the formal and informal sectors unveils a fairly complex and highly intermeshed system based on well-established patterns and relations. Formal recycling firms as recyclable material traders, which buy materials have been operating as family businesses with long-time experiences. These well-established recycling firms have built an association controlling the business and purchase prices. Recyclables from households and small business shops are collected by informal sector operators, including collection crews/street scavengers/, landfill scavengers, or by the communities themselves. Recyclables are sold to the dealers which are both formal and informal recycling firms, after that sold to the middleman or sold directly from the firms to the manufacturers. However, some kinds of recyclables such as soft drink bottles are returned to the manufacturers directly. To close the loop, products made from recyclable materials are sent back to the consumers. Informal collectors are the street scavengers, collection crews, and landfill waste pickers. The former four parties play a major role in collecting recyclables directly from various sources around the city, whereas at the end of the chain the landfill waste pickers salvage the leftover recyclables. There are some specific sources such as the large-scale supermarkets, military area, and the municipal

collecting trucks. Recyclable materials from these specific sources has their different destinations, recyclables from the supermarkets and the municipal collecting trucks are sent to one distinct company, while those from the military area are sent to another firm. Casual buyers or middleman for purchasing directly from major generators are also operating, (Suchada et al., 2010). Figures 9 and 10 highlight how the interaction and material flow in Stellenbosch and Bellville.

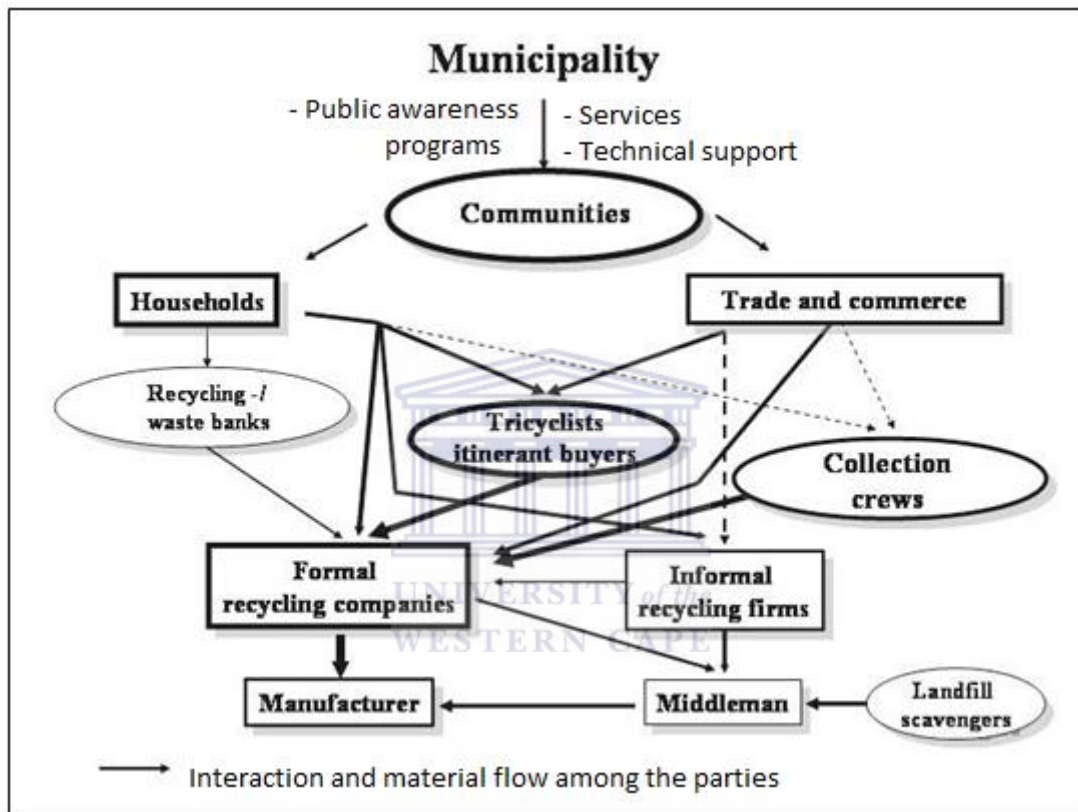


Figure 9: Interaction and material flow within the Stellenbosch municipality
Source: Survey outcome

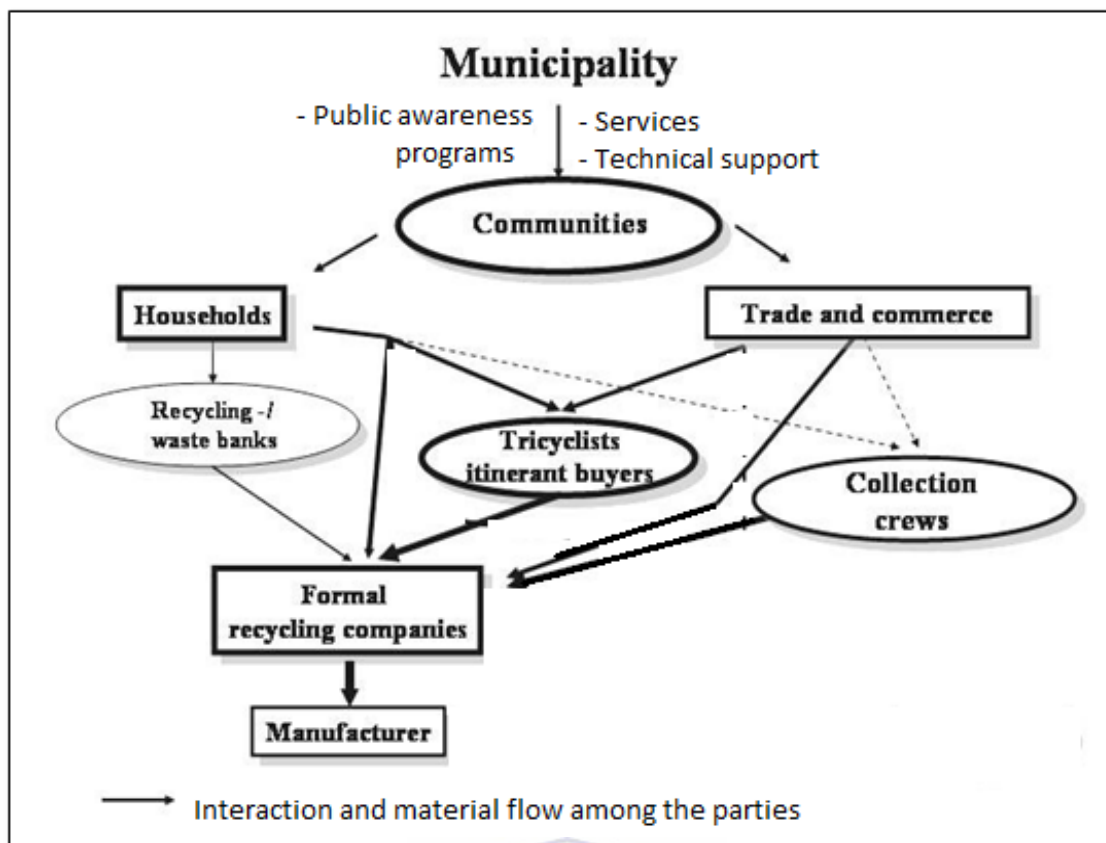


Figure 10: Interaction and material flow within the Bellville Municipality
Source: Survey outcome

The optimization of resource flows is required to obtain quality products and has to be set as a goal while providing the model for integrating informal and formal recyclers. As a first step in the process all elements of the value chain need to be identified and all stakeholders have to be involved. The mechanism of transfer waste needs to be planned in such a way that the material reaches its destination in the shortest time possible and avoids any pilferage during handling and transit. A system of collection and transportation using third party or involving multi-stakeholder system would be a viable solution. Saving time and energy in the operations should become an integral part of the system (Raghupathy et al., 2013).

The model in Figure 11 provides the interaction between the formal and informal sector taking the interests of both into account in a rational choice framework. The model shows that there are mutual gains to be obtained from the trade of material from the informal and formal sectors because of their comparative advantages. We also show that the social welfare is enhanced by this interaction between the formal and informal sector and results in reduced pollution, better resource management and creation of green jobs in the recycling (Raghupathy et al, 2013).

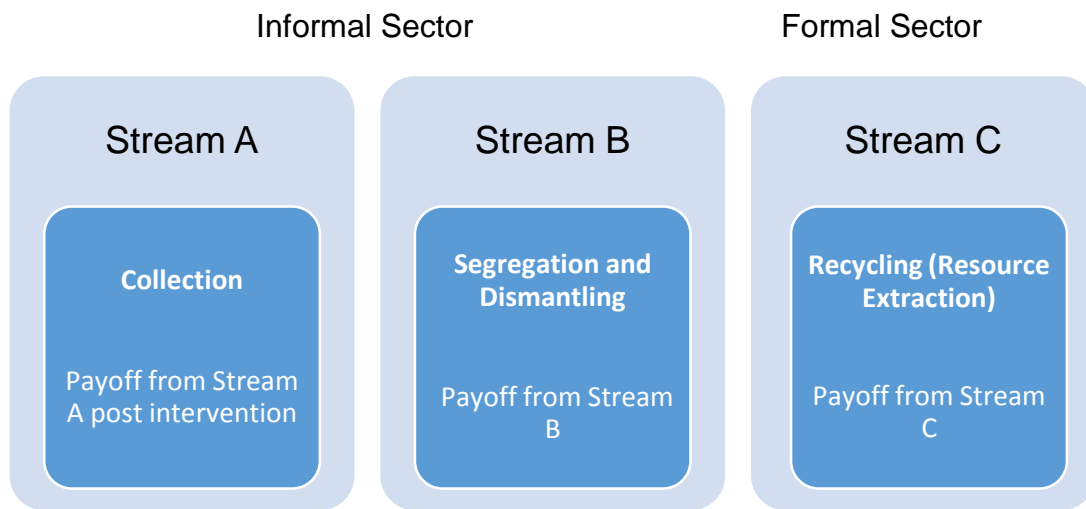


Figure 11: Proposed future scenario of interaction between informal and formal recycling
Source: Raghupathy et al, 2013

2.7 Linkages Between The Recycling Industry And Municipal Landfills

Informal recycling is intricately linked to the formal recycling sector. The formal recycling sector has the means to convert the material back to a useable product, and thus is almost entirely responsible for the demand in recyclable material. The linkages between informal recycling and formal recycling are therefore not only present, but in most cases they are necessary to keep the informal recycling sector functioning. The informal recycling industry is thus largely dependent on the formal recycling industry but it is less clear as to how dependent the formal recycling industry is on material from informal collection (Sentime, 2011). The waste recycling informal activities are those activities carried out by persons or enterprises involved in the extraction of recyclable materials from the mass of wastes generated within the community (Ezeah et al., 2013). Even though, at first sight, the informal collection and recycling of wastes is neither efficient, nor viable, Chi et al (2011) believe that the informal sector benefits from waste marketing and capitalization possibilities that are clearly superior to the formal waste management ones. Katusiimeh et al (2013) consider that there is a dynamic connection between the actors in the formal sector and those in the informal sector, which is seen at the levels of production, distribution and consumption of goods and services.

A number of authors argue that the concept of 'value chains' can be employed to demonstrate the ways in which manufacturers of products made from recyclable materials are directly linked to informal reclaimers, on whom they are dependent for some of their inputs (Dilata, 2008; Visser & Theron, 2009). The concept of 'value chains' does, indeed, provide an important analytic that helps to demonstrate the existence of links between the informal and formal recycling economies. Ngoepe (2007) is unique in seeking to establish the strength of this relationship, noting that reclaimers provided 40% of the scrap to small and large recycling firms. However, it is important to recall that reclaimers do not only collect recyclable materials but as Tevera (1994) argues, they are largely disarticulated from the formal recycling industry and focus on collecting reusable, as opposed to recyclable materials. In the conclusion to her study of street reclaimers in Durban, Ralfe notes that it is unclear to what extent the formal companies depend on materials provided by reclaimers, (Ralfe, 2007). A range of local factors will determine the depth and strength of these relationships in different places. As varying degrees of dependency open up different strategic possibilities for reclaimers (both to exert their power over formal companies and to develop autonomous modes of organising) it is important to investigate these issues in each particular location.

Backward linkages into the formal economy are common in the informal recycling industry. Some collectors rely on particular factories or shops to get recyclable material, for example cardboard, and the majority of these places let the collectors take their recyclable material for free. However, Hayamiet et al. (2006) documented one instance where a waste picker working in the Durban CBD was 'allowed access to the cardboard of a storekeeper, only after she had swept the pavement outside the shop' (Hayami et al., 2006). In some cases, the collector becomes an itinerant waste buyer, and purchases the waste for a fee (Hayami et al. 2006). This indicates a backward linkage into the formal economy. However, many collectors do not buy waste, and therefore backward linkages into the formal economy are relatively weak.

On the other hand, forward linkages into the formal economy are common. Nearly all informally collected recyclable material reaches a formal sector recycling firm, and the literature confirms this (Hayami et al., 2006, Rouse, 2006). However, there is some evidence to suggest forward linkages into the informal sector in some places. Tevera (1994), in a study of garbage pickers working on a landfill in Gaborone, found that unlike

the situation elsewhere in many African cities, where dump scavenging activities are an important source of materials for the formal recycling industry, in Gaborone only 2-10% of the weight of the recovered material went to recycling companies while the remainder was used by waste pickers or went to the informal sector (Tevera, 1994: 29).

2.8 Summary

This literature review has confirmed that recycling in general, and waste picking in particular bring abundant social and economic benefits to society as a whole including livelihoods, employment, social status, clean environment, raw material savings, income generation, poverty alleviation, promotion of conservation of natural resources and reduction of landfill space. Despite substantial research done on recycling and waste management, informal waste pickers have long been unrecognised stakeholders on the fringes of the urban waste landscape. Little exploration has been conducted on the contributions of the urban poor to economic growth and environmental conservation. The collection, sorting and packaging of recyclable materials is thus usually misunderstood or considered insignificant in the wider recycling industry. This study investigates the role played by informal waste pickers in the recycling industry and adds value to the work done by other researchers in the field of recycling and waste management. Furthermore, studies of informal waste collectors elsewhere point to the fact that these people are generally marginalized – they are uneducated and extremely poor.

Chapter 3: Research Methodology

3.1 Introduction

Research is defined as a systematized effort to gain new knowledge. It aims at re-searching more relevant facts from the existing facts. It involves the systematic methods consisting of enunciating the problem, formulating as a hypothesis, collecting facts and reaching certain conclusions either in the form of solution towards the concerned problems or in central generalization for the same theoretical formulations.

The interviews took place in and around the landfill sites, in Stellenbosch at the Devon Valley Landfill site and in Bellville at the Bellville South Landfill site, during May – June 2015. These areas were chosen for their accessibility to the Cape Town area, and due to the fact that I have been to these landfills numerous times with my dad during the past few years.

My interest in the livelihoods of people who recover materials from landfill site arose when I visited the Devon Valley landfill site with my father. When I saw the waste pickers I was immediately fascinated by them and was interested in what they were doing. According to my dad they were collecting waste to trade for money and some of them were living at the landfill. I was captivated by their livelihood strategy. At the same time, I asked myself the following questions: who are these people: What are their activities: Where do they come from; Where do they stay? What do they eat? Why are they based at this particular landfill site?

My interest in the BSLs arose when travelling to campus with the train, we passed the landfill site everyday and because I did my honours thesis on DVs in Stellenbosch I was curious whether it was also seen as a source of employment and income to the people in Bellville. However, I never saw people collecting waste on the landfill site. According to my dad a few years ago there were waste pickers but they have no longer access to the landfill site and that have made me even more curious. All these questions arose my curiosity even more and I needed to find answers for my questions. Why are they not allowed on the landfill site and how are they making a living?

Gaining access to the two study areas involved a step-by-step process. Firstly I had to get a letter from the University of the Western Cape, confirming that I am a student at the university and explaining what my project is about and what I want to do and that the data collected will only be used for academic purposes. This letter was sent to the Head of Solid waste Department at Stellenbosch Municipalities and to City of Cape Town. Stellenbosch municipality was first to grant me permission to the DVLS, however City of Cape Town officials was a bit skeptical and took very long to respond, but eventually gave me permission to visit BSLS.

3.2 Research Design

Babbie and Mouton (2003) defined research design as a set of guidelines and procedures to be followed in addressing the research problem. This study will be using qualitative methodology design, which is the process of understanding where the researcher develops a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting (Creswell, 1998). In qualitative research, data is collected from those immersed in everyday life of the setting in which the study is framed. Qualitative research aims to gather an in-depth understanding of human behaviour. This research will be conducted at the landfill sites in Stellenbosch and Bellville. Qualitative research is recommended when a researcher aims to interpret phenomena in a specific context rather than simply establishing a link between two variables.

This type of research has had a contested history in qualitative inquiry, and divergent views of the appropriateness of such goals in qualitative research are currently held. The aim of explanatory research is to answer the question of why. Explanatory research attempts to go above and beyond what exploratory and descriptive research to identify the actual reasons a phenomenon occurs. An explanatory researcher is interested in the reasons behind these facts, explaining things in detail and not just reporting. It builds and enriches the reasons behind the theory. Explanatory research also attempts to build and elaborate on theories and add to predictions and principles where possible. (Maxwell & Mittapalli, 2008).

This study was conducted in two phases: In Phase 1, the study will be focusing on the perception of the waste pickers who collect waste for recycling in Stellenbosch and Bellville. In Phase 2, the study focused on the opinions of the dealers and the recycling companies in these two areas.

3.3 Data Collection

The target population of the study consisted of 12 informal waste pickers who collect waste materials from the two different landfill sites. Primary data was obtained using 20 in-depth face-to-face semi-structured interviews (open and closed-ended questions) and questionnaires, with 12 informal waste pickers, 4 dealers, 2 manufacturers of products that use recycling materials as inputs, and 2 municipality officials. To get an in-depth understanding of the linkages and interaction between informal and formal recycling as well as the livelihoods as informal workers of the waste dump. It was aimed to elicit the waste pickers' views as well as the views of extern people from the formal recycling companies and representative of the formal SWM. Thereby, samples were selected step by step according to the new insights they were expected to give. Thus, the exact amount of samples was not set right from the beginning. It was aimed to gain an insight into waste pickers' livelihoods by carrying out semi-structured interviews with waste pickers on two different landfill sites. Thereby, the snowballing method was applied to enter the field. In using this method, waste pickers with whom contact had already been made used their social networks to refer the researcher to other participants. Thus, upon arrival in Stellenbosch and Bellville the research was initially led by an intermediary, the landfill site manager, who facilitated acquaintance with waste pickers. Out of this first contact several other waste pickers who were mainly active in waste picking and sorting waste on the landfill site, were met and chosen as participants. I was trying to find respondents who are representative of the waste pickers in terms of race, gender, age and length of period as waste pickers. This has enabled me to get the best data that represents the diversity of people working at the two different landfills.

Primary data was obtained using detailed semi-structured interviews (open and closed-ended questions) and questionnaires, with 12 waste pickers, from which 6 were at the Devon Valley landfill and the other 6 from Bellville South landfill. Semi-structured

interviews usually start with specific questions, but allow for the interviewee to follow his or her thoughts later on (Zikmund, 2003).

Silverman (2011) argued that qualitative interviewing produces accounts that offer researchers a means of examining intertwined sets findings: evidence of the nature of the phenomenon under investigation, including the contexts and situations in which it emerges, as well as insights into the cultural frames people use to make sense of these experiences. Combined, they offer important insights for theoretical understanding.

The primary technique for collecting the quantitative data was different self-developed questionnaires for the waste pickers, dealers and municipalities, containing items of different formats: multiple choice, asking either for one option or all that apply, dichotomous answers like “Yes” and “No”, self-assessment items, and open-ended questions. The waste pickers’ questionnaire consisted of fifty-two questions, which are organized into eight sections. The first section of the survey asked questions related to the socio-economic characteristics of the participants’. Demographic questions constitute information regarding participants’ age, gender, race, working status, marital status, educational status and job description. Some questions in the survey have an open-ended “Other (specify)” option to provide one correct answer for every subject in the study.

The second section focused on the residential location of the participants’, which contain questions “where do you live” and those who were removed from the DVLS were ask “Where do they live now?”. The third section focused on how external factors influenced participants’ to engage in this activity. The fourth section focused on the types of items recovered and the process involved in selling the waste and to whom. The fifth section focused on the participants’ average income and the sixth section is a self-evaluation of how the waste pickers feel about the payments, on a scale from 1 to 5, from “Very satisfied” to “Very dissatisfied”, is used. The seventh section focused on the health conditions of the participants’. The eighth section focused on the perception of the waste pickers regarding recycling and waste management.

The dealer’s questionnaire consisted of thirty-five questions, which are organized into four sections. The first section of the survey asked questions related to the formal activity,

such as “Why did they join this activity”. Some questions in the survey have an open-ended “Other (specify)” option to provide one correct answer for every subject in the study. The second and third section focused on the types of items recovered and how many resources they buy on average, the process involved in selling the waste and to which recycling companies, as well as their average income. The fourth section is open-ended questions, focusing on the participants’ operation, which consisted of questions, such as, “Are you guided by laws?”, “What do you think about the recycling operation?” and “What are the major challenges that you encounter?”

The municipality interview consisted of 9 open-ended questions, which focused on questions regarding informal recycling and waste management, such as, “What do you think of the informal recycling activity?”, “Does this activity contribute to waste management?” and “What do you think about formalizing the informal recycling activity?”.

3.4 Interview Guideline

Waste pickers was interviewed in places where they were found, at the landfill sites, as they moved their bags to and from picking up waste. In Stellenbosch the dealer was interviewed at the DVLS and in their offices and in Bellville the dealers was interviewed at their scrapyards. The manufacturing companies was all interviewed at their offices and the municipality official from City of Cape Town was interviewed at the BSLS and the municipality official from Stellenbosch was interviewed at his office. Questions was open-ended by nature to get the maximum responses from the participants. Where interviewees could not express themselves in English, their mother tongue was use to clarify their responses to questions asked.

3.5 Data Analysis

Different techniques of analysis were used to extract information from the data pertaining to each objective. As mentioned, the nature of this dissertation is both qualitative and quantitative, and an exploratory approach is used. A key principle of the exploratory approach is to gain understanding on a certain phenomenon.

As we have established, quantitative research is concerned with frequencies and relationships between variables. Analysis is seldom drawn from a single questionnaire and only made from aggregated data. With qualitative research, on the other hand, analysis is frequently made with reference to single extracts from interviews that are closely examined. Therefore, the volume of transcript material is important since too much can mean that analysis is superficial or incomplete. In the research project assumed names are used and not their real names in order to protect their identity. A total of 20 interviews were conducted for this research.

With regard to the first objective – demographic status of waste pickers in two different areas – this objective was quantitatively analysed through questionnaire analysis. Grouping respondents' answers into graphs proved useful in analysing the socio-demographic and economic background and characteristics of the people involved in waste recycling. When it comes to objectives two and three – the interaction between formal and informal recycling on the two (DVLS and BSLS) municipal landfill sites – a section of the interview was dedicated to extracting information relating to each objective. The responses were written out and analysed. It should be noted that extracts were taken directly out of the interviews and analysed. I listened and looked at how the waste pickers were attached to the landfill site and I observed their perception of the landfill site and interpret it. According to Merriam 1998, meaningful hypotheses can be established only after gathering data, that is, after establishing contact with the people in the field through interviewing or observing (Merriam, 1998). The fourth objective - to examine how waste pickers have developed livelihoods based on resource recovery activities at landfill sites - the first phase of the research was a qualitative exploration of the factors that influence the waste pickers drive to work from their perspective. Therefore, a qualitative research approach permitted an in-depth exploration of situations in which data originated from this population and allowed me to gain sufficient understanding of the situation from the participants' first-hand experiences.

3.6 Ethical Statement

Ethical issues were addressed at each phase in the study in compliance with the regulations of the University of Western Cape. I asked for permission to interview, observe and take pictures of the participants and explained to them what the study is about and that it is their right if they do not want to participate. The confidentiality and anonymity of participants was respected and protected by numerically coding each returned questionnaire and keeping the responses confidential and when taking pictures of the participants their faces were blurred out. While conducting the individual interviews with the selected respondents, they were assigned fictitious names for use in the description and reported the results. The participants did participate voluntarily and could refuse to answer questions should they deem the questions unnecessary and were free to stop if they felt uncomfortable. All study data, including the interview tapes and transcripts, was only used for academic purposes. Participants were told summary data would be disseminated to the professional community, but in no way will it be possible to trace responses to individuals.

3.7 Challenges And Recommendations For Fieldwork

Research was carried out between May and June, during the autumn season. Field observations on the landfill sites could not be carried out when it rains. The landfill sites are not solid and often get slippery under the impact of rain. The waste pickers were very interested in the study which made contact easy. At both landfill sites I was properly introduced to the waste pickers by the landfill site managers, which also gave the waste pickers an overview of my purpose and that it is only for academic research. The waste pickers at the DVLS were very helpful and comfortable when I told them that I am from Stellenbosch and some of them remembered me from my previous research.

As far as direct observation is concerned, it must be said that it took time for people not to stop doing their routines when noticing that they were being observed. The BSLs had to be visited several times before it was possible to observe waste pickers' daily routines as they only had access to the landfill site during the night. However, data collection in Stellenbosch and Bellville turned out to be easier than expected. I would recommend a

pilot study, before starting with the interviews. A pilot study of informal waste collectors in Stellenbosch and Bellville was conducted prior to the main research survey to assess the feasibility of the research sites and the presence of informal waste collectors at the sites. Meriwether (2001, 2) states that a pilot study is important as “it provides the researcher with ideas, approaches and clues”. At the DVLS, observation played a big part. From my previous study at the DVLS I encountered the challenge while interviewing the waste pickers, whenever a certain truck came the interview was to stop in order for the waste picker to collect waste. With this research I had experience and knew how to start the interview process. Through my pilot study at the DVLS, I knew when was the best time to interview the waste pickers, what days and time what specific truck came that always had valuable waste, at what time dealers came to the landfill site to buy their waste, which also helped me in knowing when they will be at the landfill site in order for me to interview them. The pilot study was also very helpful at the BSLS, because when I went to the landfill site during the day I notice that there were no waste pickers’ insight and found out that they came during the night when the landfill is close because they are not allowed on the landfill site. The waste pickers showed interest in the study and took time to participate, because they only had access to the waste during the night it made the interviews difficult, because they have limited time to collect waste and I found myself walking with them and doing the interviews while they was searching for valuable items in the night. I would recommend to have the interviews during the day and observed waste pickers during the night.

3.8 Summary

This research was based on vital guidelines for the case study method, which appears to be important as it furnishes the research with a good understanding of the sample population under scrutiny. A twofold approach based on both quantitative and qualitative information and obtained from primary and secondary data sources, was used. The survey questionnaire was administered to informal waste collectors while in-depth interviews were held with key informants from Stellenbosch Municipality and City of Cape Town, as well as dealers at the study sites and middle-men from the recycling companies were means by which relevant data could be obtained. Open-end questionnaire data were analysed and the data were statistically presented.


Chapter 4: Data Analysis And Discussion Of Findings

4.1 Introduction

This chapter presents the data and discusses the findings concerning informal waste recycling in Stellenbosch and Bellville in the Greater Cape Town Metropolitan Area. It is structured as follows: Demographic and social profile of the waste pickers at landfills; Interactions between formal and informal recycling networks; Linkages between the recycling industry and municipal disposal sites; and Waste pickers have developed livelihoods based on resource recovery activities at landfill sites.

4.2 Demographic And Social Profile Of The Waste Pickers At Landfills

4.2.1 Gender



The gender distribution of the landfill waste pickers at both Devon Valley and Bellville South landfill sites reveals a clear male dominance, characterized by 8 males and 4 females. The gender distribution therefore is 66.67% and 33.33% respectively for the male and female waste pickers, as shown in Figure 12. This distribution tends to be typical in other informal economic activities. This can be due to the fact that waste picking is hard work and women are often very particular on what type of jobs they will do, we can say they have a sense of pride. Some women just don't want to get their hands dirty. This phenomenon is typical according to a study done by Blaauw (2010), in South Africa where day labourers in the informal labour-market activity was 96.4 per cent male and 3.6 per cent female. However, in contrast, in Dhaka City, the majority of waste pickers were female, and only 24 per cent were male (Ullah, 2008).

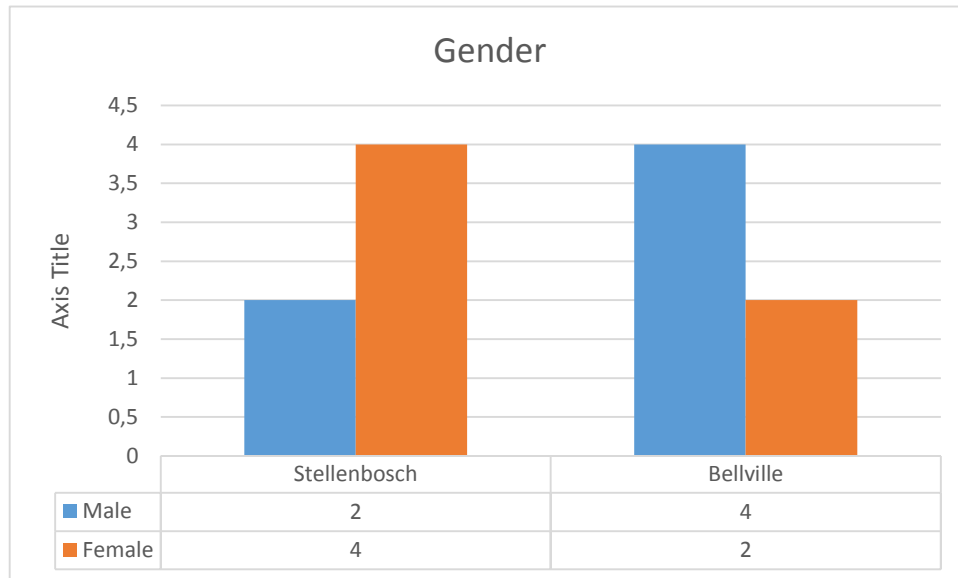


Figure 12: Gender distribution of waste pickers on DVLS and BSLS
Source: Survey outcome

4.2.2 Race

In South Africa, waste picking is primarily an occupation for blacks with a very low representation from other population groups (Schenck & Blaauw, 2011). It seems that there is a common trend, internationally and nationally, for waste pickers to be migrants from rural areas who came to the urban areas or cities to look for work.

In my findings this trend was not evident. The interviewees indicated on-site tenure of more than a decade. There seems to be a balance in the race distribution at the DVLS, with a 50% split between the black and coloured respondents. This can be due to the fact that the DVLS is situated next to Devon Valley, which is a coloured neighbourhood. However, the black waste pickers are from Khayamandi (a black informal settlement), which is more to the northern side of the landfill site. At the BSLS there were only coloured waste pickers, as shown in Figure 13. This can be due to the fact the landfill site is located in a coloured neighbourhood, as the landfill site largely consists of people who grew up in the immediate surrounds and general Bellville South Area. As stated in the first chapter, the BSLS is situated in Belhar, which is historically a coloured areas.

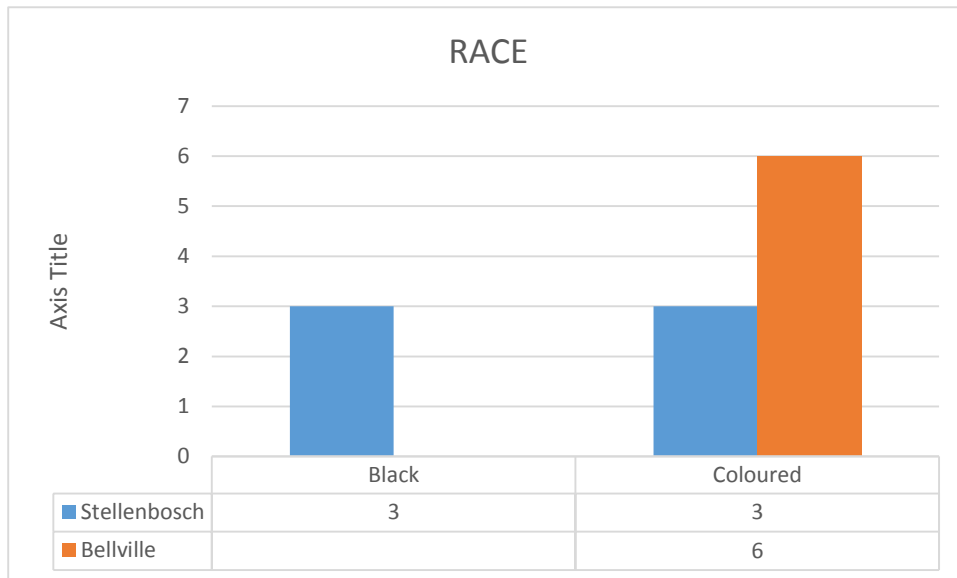


Figure 13: Race distribution of waste pickers on DVLS and BSLS
Source: Survey outcomes

4.2.3 Age And Marital Status

The ages of the waste pickers range from age 19 to 73. Most of the waste pickers falls in the age group of 21-30 years. Almost 34 per cent of the respondents in the survey were younger than 35 years of age with an average age of just over 40, as shown in Figure 14. It is interesting to note that overall the landfill waste pickers are older than, for example, the day labourers in South Africa. The study by Blaauw (2010) showed that, in 2007, more than 70 per cent of day labourers in South Africa were younger than 35 years old. This is explained by the fact that being a day labourer requires much more physical strength in terms of the tasks required of them.

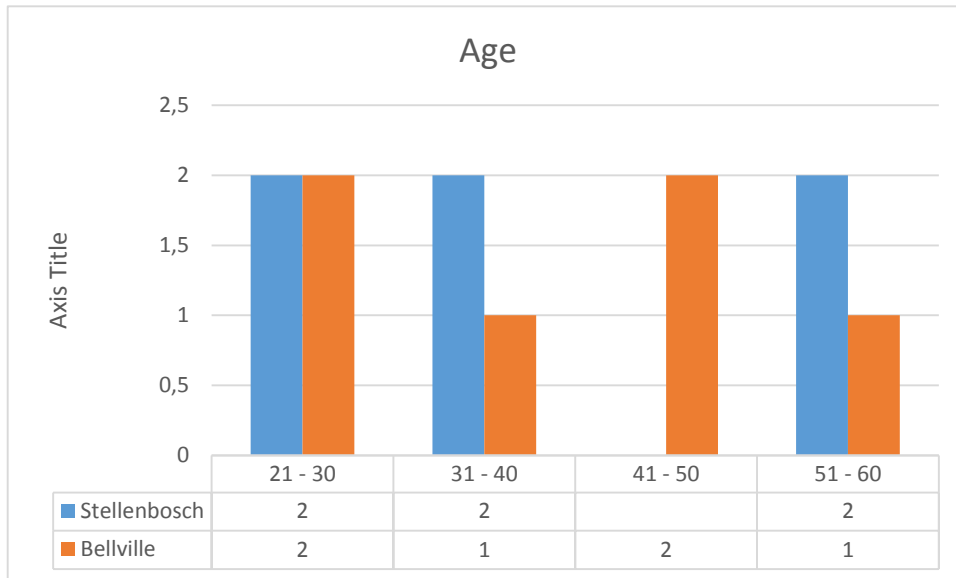


Figure 14: Age distribution of waste pickers on DVLS and BSLS
Source: Survey outcome

Only one of the respondents from the BSLS indicated that she is married at the time of the research. The data furthermore showed that eight (66.67 per cent) of the landfill waste pickers at both landfill sites were single, and only one (8.33 per cent) were living with a partner and two (16.67 per cent) was widows respectively, as shown in Figure 15. Given that they have to scratch out a living simply to sustain themselves, it is not surprising that so many are not married.

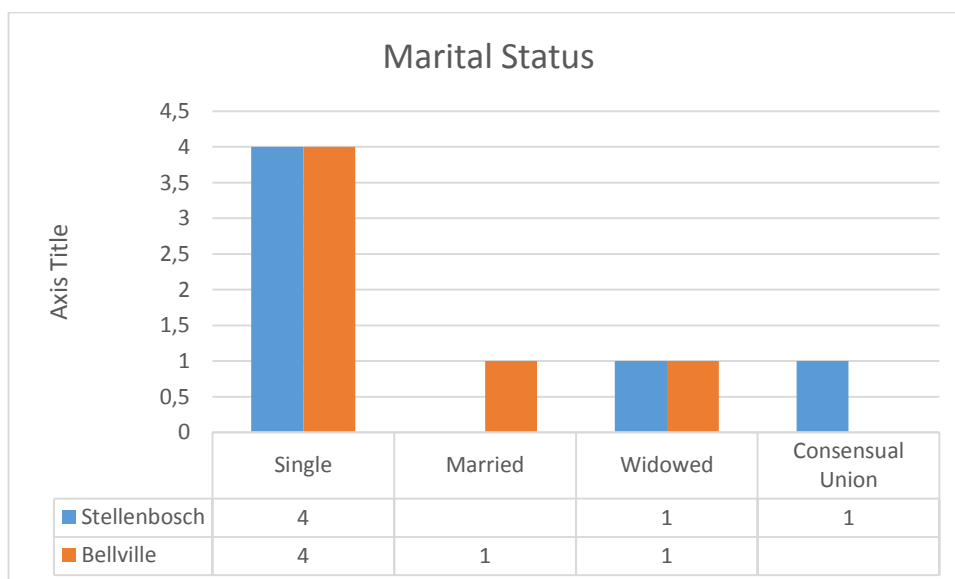


Figure 15: Marital Status of waste pickers on DVLS and BSLS
Source: Survey outcome

4.2.4 Level Of Education

It is clear from Figure 16, that both DVLS and BSLS waste pickers have low levels of school education. Of the total number of 12 landfill respondents, 66.66 per cent of BSLS waste pickers had some primary education compared to the 50 per cent of DVLS waste pickers. However, 50 per cent of the DVLS waste pickers had some secondary-level education, with the highest grade being grade 10, compared to the 33.33 per cent of BSLS waste pickers.

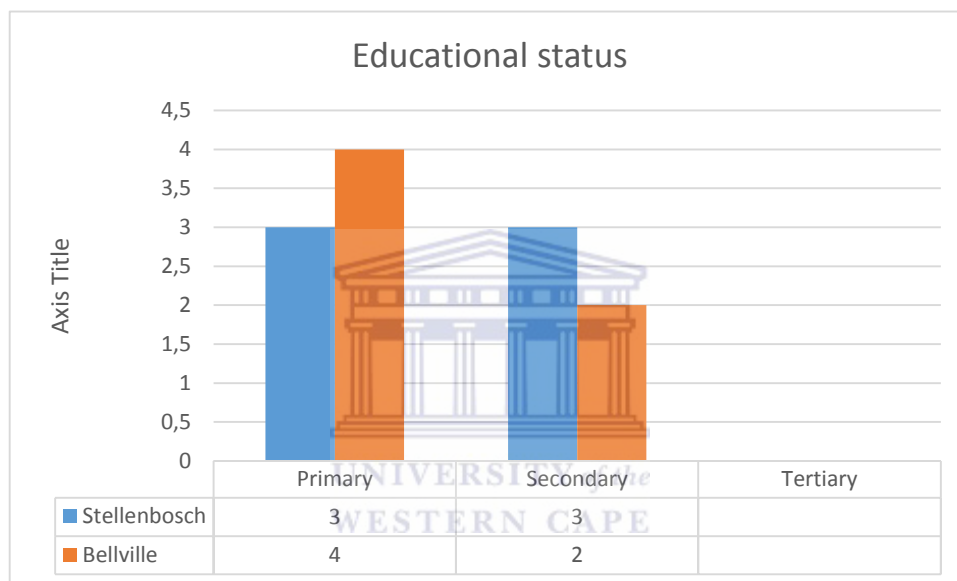


Figure 16: Level of Education of waste pickers on DVLS and BSLS
Source: Survey outcome

One landfill waste pickers have completed Grade 12 or had other qualifications. In terms of the education of waste pickers at both landfill sites, the overwhelming majority did not complete their secondary school education, which corresponds with the findings by other studies in South Africa, such as Schenck and Blaauw (2011) who concluded that the education level of waste pickers in South Africa is very low.

The low level of education of the waste pickers inhibits their competitiveness in entering the formal job market, but it allows them to enter waste picking as it does not require any qualification. Although the waste pickers lack formal academic education, certain skills are required for picking waste. They need to be physically fit and happy to work long

hours, including very early in the morning or late nights. They need to have the temperament to collect waste. You must be able to lift heavy objects, handle difficult shapes and must be willing to get dirty. Being a waste picker you need to have certain skills in order to make money to provide food for themselves and/or their family in order to survive. For example when gathering waste they focus on collecting the type of waste that pays the most and right type of plastic to collect, as they focus on PET plastic bottles, in other words, bottles labeled with a 1 or 2 as most recycling services accept those plastics. If you put an average man at a landfill site and tell him to start collecting recyclable materials, he would not know where to start or know what items to collect in order to earn the most money.

4.2.5 Income Patterns

An analysis of the income earned by waste pickers indicates that only the DVLS waste pickers sell their waste daily and the BSLS waste pickers sell their waste weekly. When asked how much they make on a typical day, the amounts vary from a minimum of R60 to a maximum of R300 per day depending on the type and amount of waste collected. It is clear from the graph that the waste pickers in Bellville earn less money compared to those in Stellenbosch. This can be due to the fact that waste pickers on the BSLS only get to work 3-4 hours in the evenings, where the DVLS waste pickers work 8-10 hours a day. The DVLS waste pickers work six days a week and the BSLS waste pickers work seven days a week, collecting waste before they sell it to merchants or recyclers. The average income earned per day by the waste pickers at the DVLS and BSLS, is shown in Figure 17.

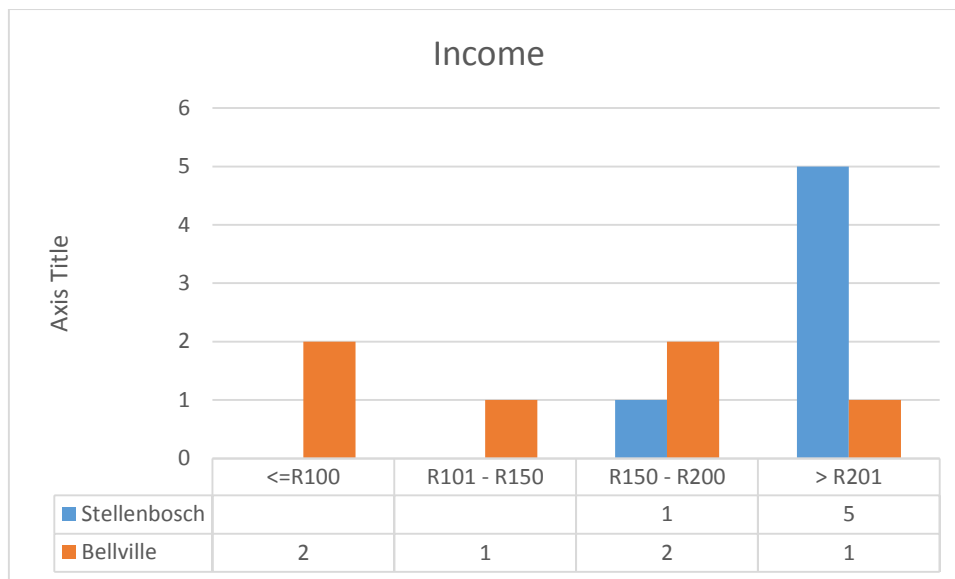


Figure 17: Average income earned per day by waste pickers
Source: Survey outcome

A study done in the Free State indicates that half of the landfill waste pickers do not sell their waste daily and they sell their waste at different time intervals, ranging from two weeks to three months (Viljoen et al., 2012). All the landfill waste pickers on DVLS in Stellenbosch, however, sell their waste on a daily basis. One reason for this might be that, at landfill sites, waste is more freely available and in larger quantities, and the close proximity of the waste on the landfill sites makes it more accessible. Reasons why all the waste pickers sell their waste on a daily basis is due to the fact that the dealers come to the landfill site every day at different time frames. The black and coloured waste pickers sell their waste to different dealers. CL Waste Scrap Metals and a dealer, named Oupa, come to the landfill site, six days a week at one o'clock and take the black waste pickers and their waste to the scrap yard, where their waste is weighed and payment is received. A scrap dealer, named Randell, from Elsie's River comes to the landfill site six days a week to buy waste from the coloured waste pickers. Their waste is not weighed, before determining the amount to be paid, instead the scrap dealer negotiates with the waste pickers for a price. The waste pickers stated that the amount they got was rather low. A plastic dealer, named Sharon also comes to the landfill site every day, however her waste are only collected on a Tuesday and Thursday, by TAS Plastic Manufacturing. A study done in Kaduna Nigeria on the urban livelihoods and social networks by Adama (2012) compliment my findings, in cases, middlemen go to the dump sites to purchase the

materials. The middleman goes to the Gabasawa dump site, located in the Kaduna between 12 noon and 1 pm daily to buy materials from waste pickers. According to Adama (2012), the waste pickers confirmed that they could not take the materials to the market to sell due to the long distance. The middleman pays them less than the amount they would receive if they took the materials to the market.

However, all of the landfill waste pickers on the BSLS in Bellville do not sell their waste on a daily basis, but at different time intervals, on a week to week basis. This can be due to the fact that waste picking at the BSLS has been discontinued from 2007, which means that waste pickers only have illegal access to the waste after working hours when the landfill site is closed, from 18:00 in the evenings. During this time it is already dark and the waste pickers can't collect a lot of valuable waste, because they don't have access to the landfill site. There is no dealers that comes to the landfill site to buy their waste. They will rather collect waste the whole week and then sell their waste to scrap yard dealers in their neighbourhood, named Shirley and Majoda. According to the BSLS waste pickers, Majoda pays more than Shirley for the recovered items.

Another factor that has an impact on the livelihoods of the waste pickers is the unpredictability of their incomes. Waste pickers do not always earn the same income, and their income fluctuates from day to day and from season to season. It is important to know that the dealers play a significant role in the income-earning potential of the waste pickers since they are directing the volumes, prices and frequency and type of waste collected. The dealers just buy certain types of waste from the waste pickers as indicated below in Table 2, which summarises the kind of recyclable waste products that the dealers buy as well as the average prices the waste pickers receive for the different waste products, which also have an impact on their income potential.

| Material | Price per kg: Waste picker to trader (R) | Price per kg: Trader to Wholesaler (R) | Price per kg: Wholesaler to Recycling Unit (R) |
|-------------------------|--|--|--|
| Cardboard | 0.25 | 0.38 | 0.60 |
| Plastic (bottles) | 1.50 | 2.20 | 3.00 |
| Copper | 30.00 | 50.00 | 80.00 |
| Light steel | 1.00 | 1.50 | 2.50 |
| Heavy steel | 1.60 | 2.20 | 3.00 |
| White paper | 2.00 | 2.50 | 3.00 |
| Newspaper/ Magazines | 0.30 | 0.40 | 0.60 |
| Brass | 25.00 | 30.00 | 40.00 |
| Aluminium cans | 6.00 | 8 | 12.00 |
| Glass (bottles) | 0.10 | 0.10 – 0.15 | 0.50 |
| Bricks | 0.50 – 0.60 | 1.00 | 1.50 |

Table 2: Amounts that waste pickers receive and trade for different types of waste.

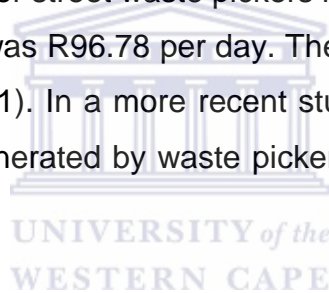
Source: Survey outcome

The study further found that at DVSL, on a good day, waste pickers collect waste that generated as much as R300 per day. On a bad day, however, this figure is significantly reduced to a low of R60. The waste pickers earned an average monthly income per month of R792 to R6600 and this is generally much higher than the income for unskilled day workers. However, at the BSLs, on a good day, waste pickers collect waste that generate an income between R150-R200 per day, but this does not occur frequently. On

an average day, they get at least R80-R100 per day and on a bad day less than R40 per day.

From the findings there are clear indications that waste pickers on the DVLS make more money than the waste pickers on BSLs. This can be due to two reasons: the fact that waste pickers on the BSLs only have restricted access to the waste material; secondly they only have access to the waste from 18:00 to 21:00, which by that time it is already dark and you cannot see properly and thirdly because Bellville falls in the lower-class brackets, the dealers pay them less money.

The lowest income for those in Cape Town in 2009 was between R15 and R20 per day, and the highest was around R100 a day (Visser & Theron, 2009). In comparison, Simon (2010) found that \$1 (R8) a day was the going rate for a waste picker in India. The average lowest daily income for street waste pickers in Pretoria in 2010 was R19.15 and the average highest income was R96.78 per day. The average daily earning was R50 a day (Schenck & Blaauw, 2011). In a more recent study, Sentime (2011) found that, in Braamfontein, the income generated by waste pickers ranged between R50 and R250 per day.



According to the dealers, the prices do not change often, which gives the waste pickers some certainty on the income to expect for their waste. However, the perceptions amongst the waste pickers concerning the income they earn for their waste do not reflect this. Most landfill (40 per cent) waste pickers are satisfied with their income. I found this quite surprising. Although the income earned by waste pickers was perceived to be fair, it is important not to ignore the fact that most of the waste pickers have a number of people who depend on their income hours from.

Literature says that waste pickers are the poorest of the poor, but my findings have revealed that they earn about R300-500 in a good week. Statistics SA shows that in order to be classified in the group of extreme poverty you have to earn R335 per month or R753 per month to fall in the upper bound poverty line group. This clearly shows that they are not the poorest of the poor, as they are making much more than this a month. The income is generally higher than people engaging in comparable activities getting paid per day, for example a gardener.

4.2.6 Items Collected

Waste pickers collect any recyclable waste material in whatever form or shape that merchants accept in exchange for cash. The most commonly collected materials include, cardboards boxes, water and coke bottles, white paper, newspaper, magazines, tin, cans, aluminium, steel, iron, brass, plastic, old stoves, kettles, televisions, computers, glass, cellphones, watches and bricks. Photo 1a and 1b shows some of the recyclable material that are recovered by waste pickers.

Photo 1a: Recyclable Plastic at DVLS
DVLS Photo by Monique Muller



Photo 1b: Recyclable metal at DVLS
Photo by Monique Muller



Photo 2a: Recyclable plastic at BSLs
Photo by Monique Muller



Photo 2b: Recyclable metal & plastic at BSLs
Photo by Monique Muller



The research revealed that most waste pickers at the DVLS knew exactly the rates of payment for each kilogram of waste material recovered. However, some of the waste pickers at the BSLS did not know the rates for the items they recovered. In an interview with one of the waste pickers at the BSLS, you can get the idea that they don't really know the rates and that they don't really care, as long as they get something. Jason, Marina's grandchild, is not a waste picker, but enjoys spending time with his grandmother searching and collecting valuable items that others have thrown away.

Box 1: Interview with Marina and her grandchild regarding the prices of recycled Items

Monique: How much do you get per kilogram for metals?

Marina: Uhm. I can't remember now.

Jason (Marina's grandchild): Ouma, dit is 50 cents for light metal and R1.70 for heavy metal. (Grandma, it is 50 cent for light metal and R1.70 for heavy metal)

Marina: Oh yes, die kleinkinders weet beter as ons Grootmense oor die pryse (Oh yes, the grandchildren knows the prices better than us grownups)

Most waste pickers focused their efforts on picking the types of waste that pay the most, such as copper, brass, aluminium, white paper, steel and plastic bottles. However, on days when these items were not available, waste pickers would collect other materials simply to ensure an income at the end of the day.

According to most waste pickers, aluminium is a favourable item to collect as it is 100 percent recyclable and can be recycled over and over again. Aluminium cans can be recycled into new cans and it takes 95 percent less energy than making new ones. In fact, recycled aluminium can be back in use to hold a new drink a mere 60 days after being recycled. Some waste pickers specialized in collecting a certain type of waste, such as plastic, steel or cardboard. In the study most of the DVLS waste pickers collect plastic. The reason behind this was that plastic was easy to collect and there are large amounts of plastic items available at the landfill sites and some had mutual relationships with

generation of specific waste materials, and thus preferred to collect waste from these generators as it was more convenient, and because they were guaranteed a certain amount of waste which, in turn, could earn them a good wage on a specific day. For example one of the dealers, who was a waste picker before, has a contract with TAS Africa (a plastic manufacturing company) to buy all the plastic from the waste pickers and sell the plastic material to them, on which she earns a monthly salary and it gets paid into her bank account. However, at the BSLs four out of six waste pickers collected metals, light and heavy metals. The reason behind this was that from metals they earn more money, because they are restricted by access to landfill site and time to collect recycled items, which means in a short time and little amount of metals the earnings they get from metals is enough to survive on.

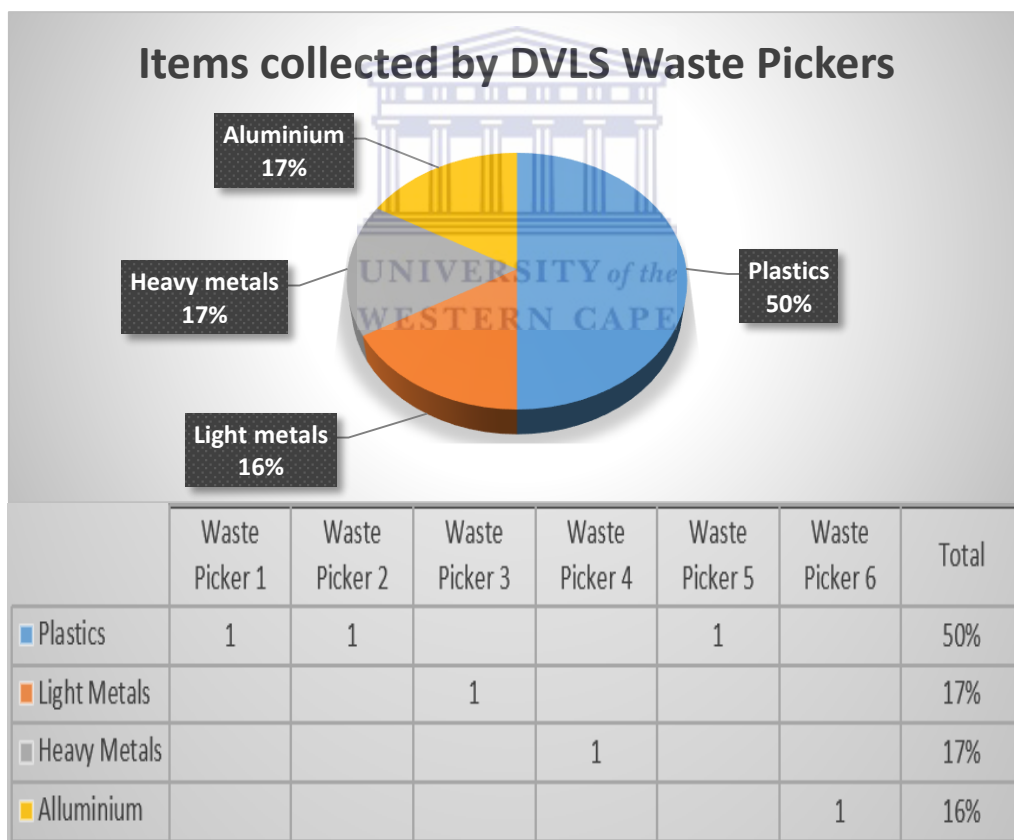


Figure 18: Shows the waste collected by waste pickers at the DVLS
Source: Survey outcome

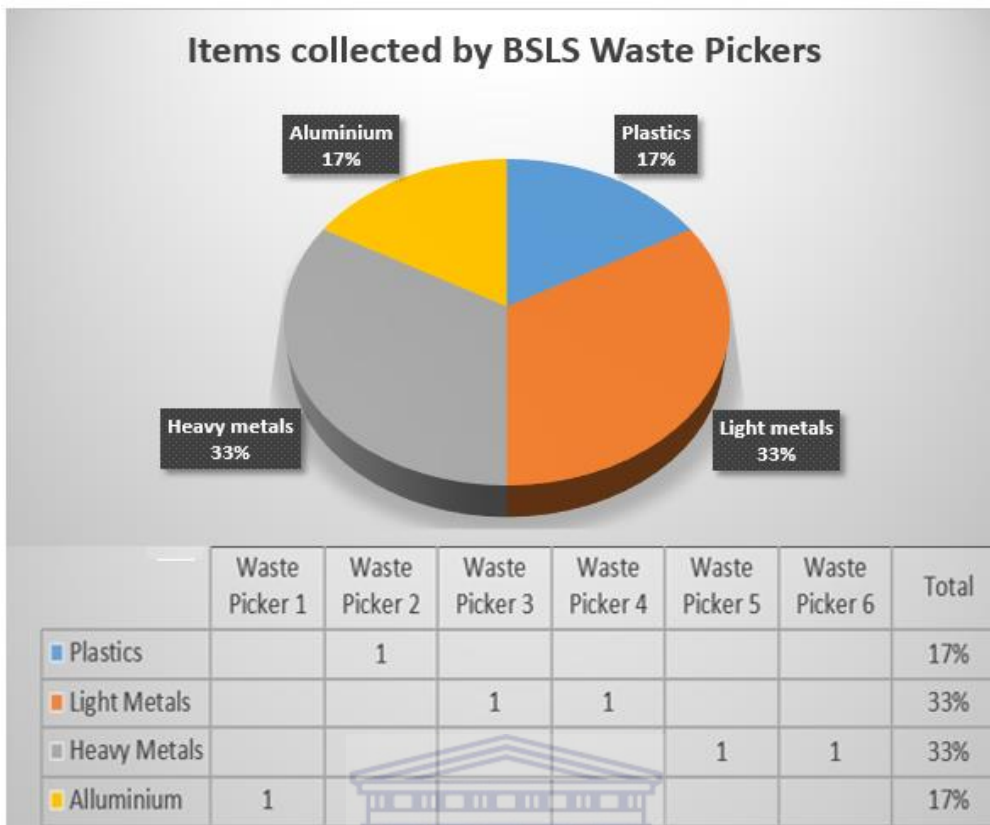


Figure 19: Shows the waste collected by waste pickers at the BSLS
Source: Survey outcome

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4.3 Interactions Between Formal And Informal Recycling Networks

4.3.1 Interaction Between Waste Pickers And Local Municipalities

The waste pickers at the Devon Valley landfill site claimed that they have a fairly good interaction with the local municipality. As there are certain agreements in place to make sure everybody have a fair chance to recover recycled material and are save. Stellenbosch municipality provides security officers to make sure that waste pickers are not in harm's way, for example they are not allowed to jump on moving trucks, and should stay away from certain areas at the landfill site, where contaminated waste have been buried. This is a view held by those who work on the Devon Valley landfill site, as the following extract shows:

Box 2: Interview with John and Ouma regarding their interaction with the municipality

- Monique:** Do you think the municipality cares about waste pickers?
- John:** Yes.
- Monique:** Do you have an agreement with the municipality to get access to the landfill site?
- John:** Yes, we have to be here at 05:00 in the morning to receive a bib, to get access to the landfill. Otherwise you can't get in and we don't have access to the waste.
- Monique:** At what time do you need to wake up?
- John:** Baie vroeg (Very early), because we don't live on the landfill site, the municipality have moved us to Vlottenberg.
- Monique:** of course in order to be here at 05:00
- Ouma:** Isi leke nie, ons moet nou vroeg opstaan en baie ver loop. (It's not nice, because we have to wake up early and we have to walk far)
- John:** En as os nie 05:00 hier is nie in die ry staan nie dan kan os ook nie in kom nie. (If we are not standing in the line by 5am, we are not allowed into the landfill site)

According to John their interaction with the municipality is hostile, it is more an agreement followed by rules and regulations. We have an agreement to enter the landfill site and recover resources, if we obey the rules. According to him the municipality also provided housing for the waste pickers so that they don't have to live on the dumpsite, because it is illegal and a high risk. Most of the waste pickers didn't like the move from the landfill site to Vlottenberg, because they now have to walk far distances to the landfill, almost 6 kilometers, which means they have to get up even earlier in the morning. One of the other waste pickers, Ouma, who is 55, said, "It is exhausting to walk this far, before starting to work".

Box 3: Interview with Saliem Haider (Head of Waste Department at Stellenbosch Municipality)

Monique: How much waste (in tons) are being dump per month or week for each area dumping their waste at DVLS?

Saliem: About 3000t per month domestic refuse; 176t recyclables per month. The site receives in the order of about 250-300 tons per day.

Monique: Do informal recyclers play a key role in recycling waste in Stellenbosch, especially at Devon Valley Landfill site (DVLS)?

Saliem: Their waste reduction is less than 0.5% of the incoming waste, but is a living for those who performs it. The risks and dangers far outweigh the benefits of this form of recycling, and it would be much better if it is more structured and organized via a Material Recovery Facility, which we are planning.

Monique: What happens with the remaining waste that are not reclaimed by informal recyclers?

Saliem: 99.5% are disposed of in the landfill cell, via sanitary landfill techniques.

According to Saliem Haider waste picking does not contribute a lot to recycling as he mention they only recycling 0,5% of the incoming waste. However, he thinks that you can't deny them access to the landfill site, because for most of them it is their only source of income. Stellenbosch Municipality have plans to build a Material Recovery Facility, where they will employ a few waste pickers to sort and separate the recovered material.

All of the waste pickers at the Bellville South Landfill Site claimed that they have no interaction with the municipality. Waste picking at the landfill site was discontinued in 2007, which means waste pickers are not allowed on the landfill site to do any sort of resource recovery activities. Four respondents felt that their job had been taken away from, as well as their main source of income. They feel that the municipality did not care about them or wonder how are they are going to put bread on the table. This is a view held by those who pick waste illegally at the Bellville South landfill site:

Box 4: Interview with Marie and Kobus regarding informal recycling

- Monique:** What interaction do you have with the municipality?
- Marie:** Niks (None). Ek weet nie hoekom hulle waste picking ge-discontinued het nie, waarvan moet ons dan nou 'n lewe maak? (I don't know why they discontinued waste picking, how much we make a living now?)
- Monique:** Is this the reason why you illegally access the dumpsite in the evenings?
- Marie:** Ja, os het i 'n ander keuse nie. Os het i 'n ander werk nie en os moet iets doen om brood op i tafel te sit. (Yes, we don't have any other choice. We don't have other jobs and we have to put bread on the table.)
- Marie:** Os wag tot wane metro police weg is en dan gan os in, want as metro police os vang dan slaan hule ons en laai os ini police van en laai ons by 'n ver plek af. (We wait until metro police leave the site and then we enter, because if metro police caught us, they beat us and throw us in the van and drop us far from home.)
- Kobus:** En hule stiek die valuable recycle items weg, hulle begrawe dit sodat ons dit nie kan kry nie. (They hide the valuable recycle items from us by burying it so that we can't find it.)

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According to Marie, they have been waste picking at the Bellville landfill site for many years, before it was discontinued in 2007. The reason why waste picking was discontinued, none of them know. Marie feels very frustrated, because of the discontinuing of waste pickers. She also admitted that she knows that she is illegally waste picking and not obeying the rules of the law, they don't have any other options. She is the sole provider for her household, and need this income in order to survive. Three of the respondents also claimed that those who manage the BSLs, hide the valuable items so that the waste pickers can't find it, to keep them away from the landfill site.

In his explanation of their interaction with the municipality, Jodie, a waste picker at BSLs, said: *"Waste pickers without access to waste are like farmers without land or fisherman without fish—we just can't survive!"*

Implicit in Jodie's statement is that the interaction with the municipality are unreasoned. Although the waste pickers know that they can get into big trouble for illegally waste picking and the money being offered for their recyclable items is very low, they are willing to take that risk, because they are desperate. He feels that the municipality know their situation and poverty is a big issue in Belhar. They need to survive and they are willing to do whatever it takes, no matter the risk, because without this income they wouldn't be able to provide food for their families.

Box 5: Interview with Mr. Basil Nelson (BSLS Manager) regarding his interaction with the waste pickers.

Monique: How do you interact with the illegal waste pickers?

Mr. Nelson: They know that they are not allowed on the site and can get into big trouble, I know them all.

Monique: But, how do you interact with them?

Mr. Nelson: I don't really interact with them, I just keep telling them that they can't be here. I am not against waste picking. I think they just need to be educated on the pros and cons.

Monique: Do you think that the role of informal recycling is important for waste management by the municipality?

Mr. Nelson: Yes indeed. It should be recognized and formalized and it could be a major tool to poverty alleviation if properly streamlined and controlled.

Outcomes of interviews conducted with the representatives of local authorities from Stellenbosch Municipality and City of Cape Town about informal waste collectors reveal the following opinions: Authorities from Stellenbosch Municipality and City of Cape Town acknowledge the contribution of informal waste collectors, not only to the waste management system but also in creating opportunities for the poor. However, their main concern is about the negative health issues relating to informal waste collecting. Their stance is to terminate the operations of the informal waste collectors on the streets and at the dumping sites, in the vicinity of the industries, shops and households where they are exposed to several risk factors. Notwithstanding this negative attitude, in the context of the recycling initiatives, the local authorities are encouraging recycling initiatives as one of the strategies not only to reduce waste but also to sustain the environment and to

create economic opportunities for the poor. The local authorities point out that the role that the informal waste collectors play could pose problems for waste management, however, since, in their search for food and recycling materials on the dumping sites, they take apart and disperse the waste, thus polluting the environment (Vilakazi, 2009).

On the other hand, the local authorities are of the opinion that informal waste collectors are creating opportunities for their survival since they are generating an income from their scavenging activities and are at the same time reducing the volume of waste.

4.3.2 Interaction Between Waste Pickers And Middlemen (Dealers)

A study done in the Free State indicates that landfill waste pickers do not normally sell their waste daily and that they sell their waste at different time intervals, ranging from two weeks to three months (Viljoen et al. 2012). All of the landfill waste pickers on Devon Valley Landfill Site in Stellenbosch, however, sell their waste on a daily basis, from Mondays to Saturdays to three different dealers. One reason for this might be that, at landfill sites, waste is more freely available and in larger quantities, and the fact that the dealers come to the landfill site at different time intervals, 11:00, 13:00 and 15:00 every day and the waste pickers don't have to walk or travel to any scrapyards. Almost all of the waste pickers at both landfill sites claimed that their interaction with the dealers are strictly business. At the BSLS the waste pickers interact with the dealer on a weekly basis and not daily. Due to fact that they only get access to waste at six, which by that time it is already dark and they can't see properly. They have to collect their recycled material every day and sell it at the end of the week in order to get value for their effort.

All the waste pickers interviewed claimed that the interaction between them and the middlemen revolve around the buying and selling of waste. In general, the informal recycling market is demand driven from the top. The demand for particular recyclables by the dealers and the prices they are willing to pay plays a huge role in determining the prices. There is some level of negotiations between the different groups, but the power to influence prices decreases considerably further down the chain. The waste pickers have the least bargaining power. Waste pickers are paid after the materials are weighed, but they have no role in how prices are arrived at. The explanation given by the

middlemen is that prices are fixed and fluctuate along with fluctuations in the exchange rate of the US dollar. Not only do waste pickers not take part in price fixing but the majority are uneducated and are also not in a position to validate the information on the dollar given to them. They are simply told what the market prices are. It is therefore easy to see why some attribute the low incomes of waste pickers directly to the low prices paid by middlemen, especially in cases where markets are monopolized.

In the study I noted that the interaction between the middlemen and the waste pickers as symbiotic: the more collectors supply the middlemen the better business is. Most of the collectors in Stellenbosch and Bellville reported being treated well by the middlemen, indicative of the realisation by these middlemen that the collectors are an asset to them. Some waste pickers reported being exploited, but most indicated a fairly good relationship of interdependence. Some buy-back centres were very supportive towards them. In one instance, a staff member at a scrapyards who received the goods acted as a “bank” for the waste pickers, keeping their money safe to reduce the risk of their being robbed.

4.3.3 Interaction Between Middleman/Dealer And Manufacturing Companies

Box 6: Interview with Sharon (dealer at DVLS) regarding her interaction with TAS Plastic (a plastic manufacturing company in Blackheath)

Monique: What items do you buy from the waste pickers?

Sharon: Harde plastiek. (Hard Plastic), Polyethylene

Monique: To whom do you sell it?

Sharon: I was also a waste picker for many years, but now I am a dealer. I buy all the hard plastic from most of the waste pickers at DVLS and sell it to TAS Plastic

Monique: How did you become a dealer?

Sharon: I have a verbal agreement with TAS Plastic to buy the plastic from the waste picker and then TAS Plastic comes every Tuesday and Thursday to collect the plastic recovered and pay my money in my bank account.

According to Sharon, a dealer at the DVLS, who previously was a waste picker and then became a dealer when she was approached by Mr. Roedolf, the owner of TAS Plastic, to buy the plastic materials from the waste pickers and sell it to TAS Plastic. Sharon has a direct relationship with the recycling companies. This extract from the interview gives a clear indication that the dealer has a direct relationship with the recycling company. The dealers are agents of large and well known recycling companies, this statement has also been found in other studies done by Viljoen et al. (2012). These recycling companies usually guarantee that they will buy the waste products which they acquire from the dealer/middlemen. The plastic that the recycling companies collect through the dealers/middlemen is sent to the plastic factories, which transform the waste plastic into raw plastic materials. Dealers/middlemen ensure that they provide recyclable waste in large quantities and on a regular basis to the recycling industries, which reduces the importation of raw materials, and in turn assures low-cost and affordable new products to the market.



Box 7: Interview with Majoda (dealer in Bellville) regarding his interaction with manufacturing company

- Monique:** What items do you buy from the waste pickers?
- Majoda:** Mostly metal (heavy and light), aluminium cans and plastic
- Monique:** To whom do you sell you recyclable items?
- Majoda:** Pelmanco Recycling
- Monique:** How much do you give them per kilogram?
- Majoda:** The prices change every day. I weight their stuff and I don't subtract any cost when the material I buy is dirty or wet.
- Monique:** Do recycling manufacturing companies subtract money when waste is wet and dirty?
- Majoda:** Yes

Implicit in Majoda's interview is that the interaction between the dealers/middlemen and the manufacturing companies is strictly business. According to Majoda the manufacturing

companies are very strict regarding the waste, because materials received from mixed waste will generally be contaminated and relatively low grade. Value can be added to the materials by cleaning, classifying, washing and drying, compacting, aggregating them into a commercial quantity and altering their physical shape to facilitate transport. However, Majoda feels that he does not have the space or money to buy the technology, in order to compact the recyclable items, especially the aluminium cans, bought from the waste pickers, because he has a very small junk shop. Matter et al. (2013) believe that the system is however not optimized to secure maximal value creating. This is because some dealers/middlemen do not have the space or technology to add value to the recovered materials and so these 'unclean' materials are sold at low prices. According to Majoda, if the plastic that he sell to recycling/manufacturing companies are wet and dirty, they subtract R0.40 per kilogram, which means at the end of the day he properly earns less money than the waste pickers.



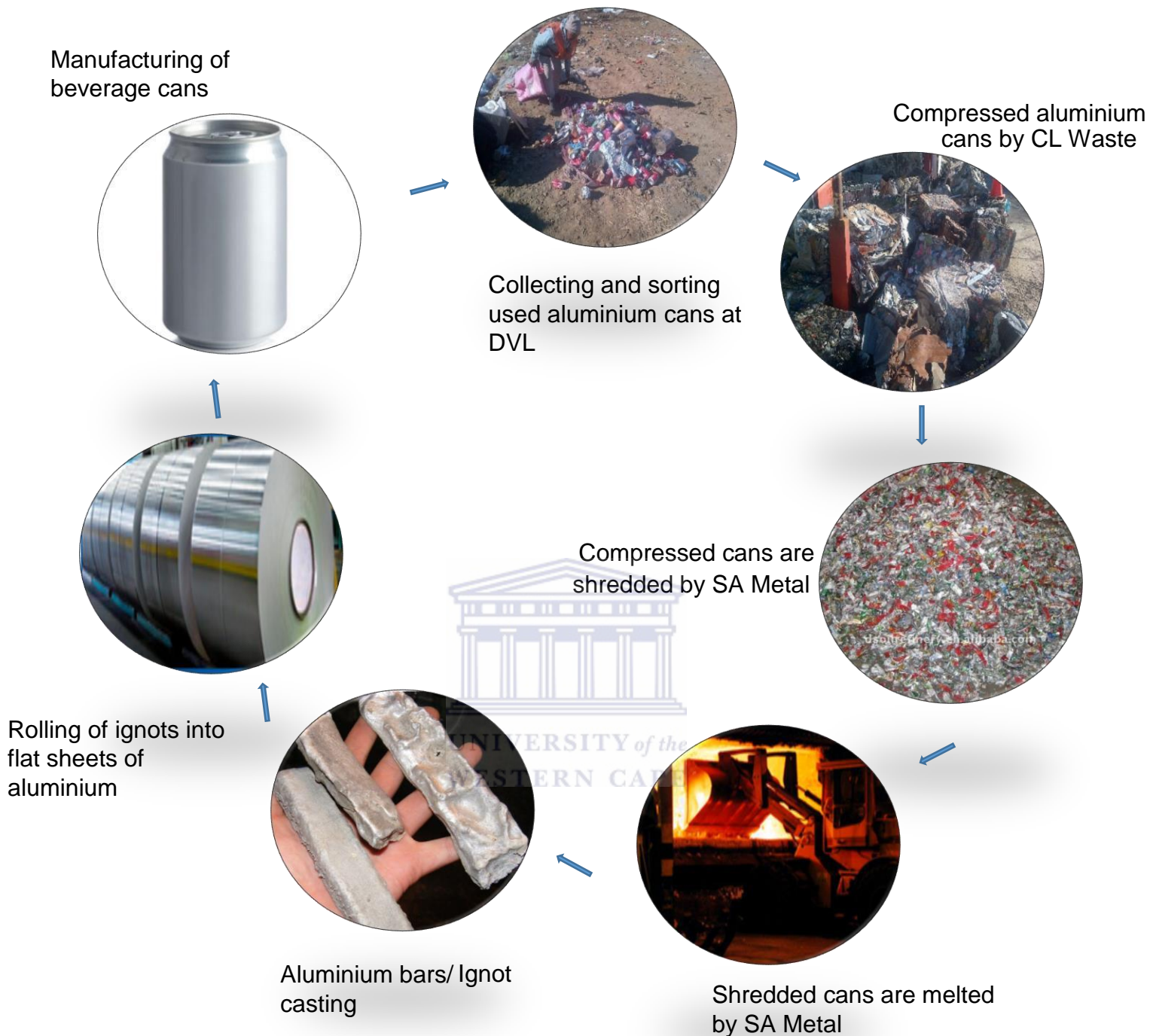


Figure 20: Interaction between informal and formal recycling processes in the recycling industry
 Source: Survey outcome

Figure 20 highlights the connections and interactions that exist between informal and formal recycling, with a focus on aluminium can recycling. Aluminium cans are collected and sorted by waste pickers at DVLS and BSLS. These aluminium cans are sold to CL Waste, who compressed the cans into bricks, which is then sold to the manufacturing companies who offer the best price, in this case SA Metal. These compressed cans go

through a process of shredding and melting, and are formed into aluminium bars, which are then rolled into flat sheets. SA Metal sell these sheets to Nampak, who then manufacture the beverage cans.

Box 8: Interview with Mr. Roedolf (owner of TAS Plastic) regarding the interaction between him and the dealers

Monique: Why did you decide to get involved in this business?

Mr. Roedolf: Because 10 years ago we (me and my dad) saw an opportunity to get involved in taking plastic waste out of the municipal landfill system and do something useful with it and in the process create jobs , earn an income and utilise our own factory building in doing so.

Monique: What type of business do you have?

Mr. Roedolf: We buy in scrap plastic from waste collectors all over the Western Cape and recycle the waste plastic into useful pellets ready for use in the extrusion and injection moulding industry. We have an intensive process whereby this is done in our factory

Monique: How much waste do waste pickers (informal recyclers) deliver to your factory daily?

Mr. Roedolf: 5000 kg plus

Monique: What type of waste do waste pickers deliver to your factory shop?

Mr. Roedolf: Plastic waste number 2, 4 and 5

Monique: Do you have a contract with the waste picker, at the Devon Valley Landfill Site or a verbal agreement?

Mr. Roedolf: Verbal gentleman's agreement

Monique: Where do you sell your waste and what do you do with the waste when you receive it?

Mr. Roedolf: We do not sell any waste, like mentioned we put it through a recycle process and then we sell it as raw material to manufacturing industries

Monique: What is the supply and demand price for recyclable materials?

Mr. Roedolf: Prices change constantly and vary for each buyer and seller. Today's price will not be valid for tomorrow or for the next guy. There is a long list of materials each with a different price. You will have to go to each buyer and seller to get the current prices.

Monique: What is the name of the manufacturing industries that you sell the raw material to?

Mr. Roedolf: MCG Industries, Macneil Plastics, DPI, Polyoak Packaging, Andrag and many more, the list is too long.

4.4 Linkages Between The Recycling Industry And Municipal Disposal Sites

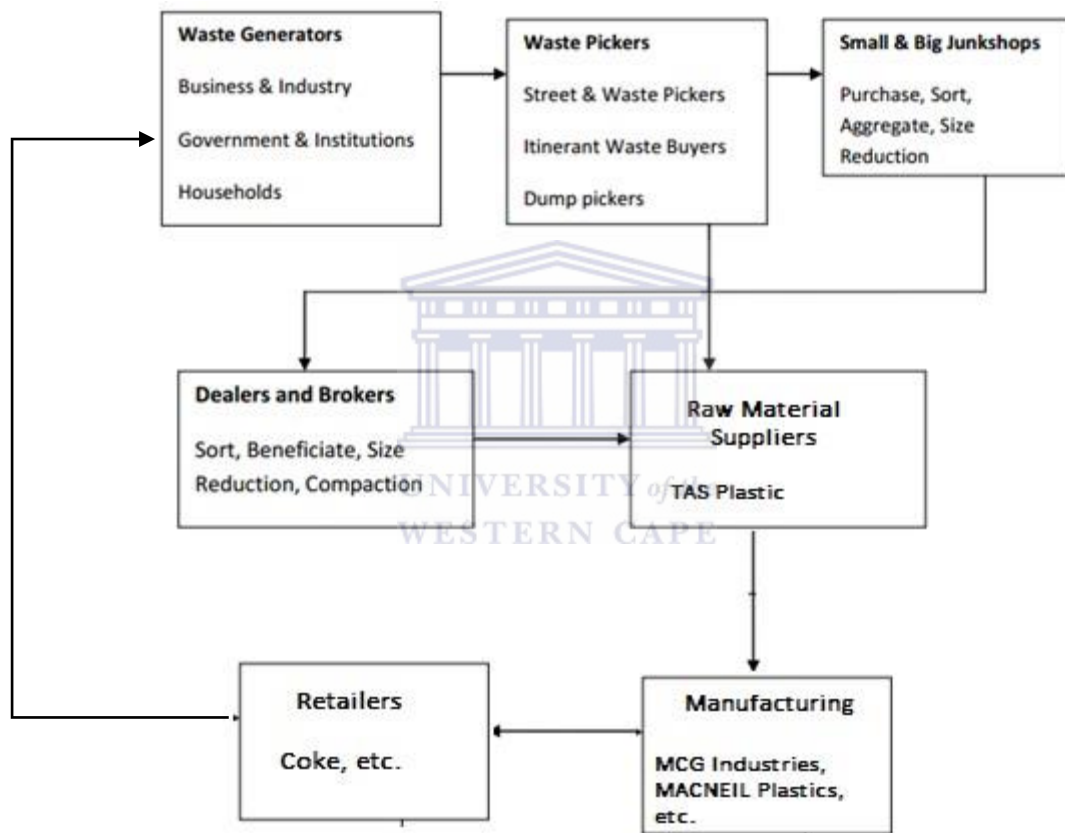


Figure 21: Informal Recycling Value Chain

Source: Survey outcome

The questions sought to identify and establish the linkages between recycling industry and the landfill sites. The questions were answered through interviewing waste pickers, dealers and manufacturing companies. To understand the role of the different stakeholders and their linkages in the generating, picking, collection, processing and final

usage of recyclable materials, the informal recycling value chain in Figure 21, below was developed:

The informal value chain makes it easier to understand the generation, separation, collection, transfer and transporting, processing, packaging, re-use and recycling of recyclable materials in order to achieve sustainability in waste management. According to a study done by Oelofse & Godfrey (2008), waste pickers buy trolleys from retailers, merchants and recyclers. This is similar to my findings at the DVLS. *When asked: “Where do you get the big plastic bags that you carry your material in?”. One of the waste pickers, (Jones) responded that they get it from CL Waste Recyclers.*

According to Jones they don't buy it they get it for free. At DVLS, the waste pickers carry these bags only on the landfill site, but at the BSLS waste pickers carry these bags over long distances, sorting and collecting waste from landfill site.

Some of the waste from government, private and public institutions, shops, schools is delivered directly to the manufacturing industry for production of consumer goods. *When asked: “How else do you collect waste apart from waste pickers (informal recyclers)? Mr. Roedolf (manufacturing company) responded that he collect more than a 100 places all over Western Cape, like landfills, factories and major collectors and sites, the list is too long”.*

Informal recycling is intricately linked to the formal recycling sector. Waste pickers sell their waste to merchants, and or recyclers and or generators of recyclable waste. Merchants in turn sell their waste to the local and or export manufacturing industries or generators of recyclable materials. Generators of recyclable material re-use the waste from merchants and waste pickers to manufacture consumer goods. Recyclers sell their processed waste to local and or export manufacturing industries. There is a strong inter-connectedness and inter-dependence between waste pickers, merchants, recyclers and generators of recyclable materials that facilitates the entire value chain to work in a balanced way.

Waste Pickers collecting waste



Recyclable plastic



Dealer loading recyclables onto truck



Recyclables sold to dealers

Dealer sells recyclable plastic to TAS Plastic (Plastic manufacturing)



Product is then sold to retailers/wholesalers, e.g. Coke-Cola

Raw plastic material is sold to MCG Industries



Coke-Cola use crates to put their product in

Injection moulding of Crates and Containers

Re-process plastic waste from discarded rubbish on a landfill to a useful product that are used as a raw material to plastic manufacturing companies.

Figure 22: Informal-Formal Recycling Supply Chain Source: Survey outcome

The study also observed a good relationship of interdependence between various role players in the informal – formal supply chain. I noted that there are a close supply chain relationship between waste pickers and municipal disposal sites. The municipal disposal sites supply the waste pickers with a source of employment. For many waste pickers, members of the urban poor, the Devon Valley Landfill Site and Bellville South Landfill Site, is not just a public space for dumping waste, but most of them see it as their workplace. Waste pickers are a common sight on both landfill sites as they make a living collecting, sorting, recycling and selling material, such as paper, cardboard, plastic, glass, metal, which someone has thrown away.

The study also observed a good relationship of interdependence between waste pickers and middlemen. While middlemen have established relations with other actors in the recycling chain, the way they interact with each other also deserves some attention because it highlights some interesting aspects of network dynamics. A major basis for the relations is the desire to acquire enough capital to purchase recyclables. Similar to the networks already discussed, the trading of recyclables is the major activity that features in the relations between middlemen and agents, but on a larger scale. The differential economic capacities and the interdependences between the two are reflected in the type of relations that have evolved.

As noted above, some middlemen have problems sourcing the capital needed to purchase huge quantities of recyclables and are forced to negotiate or make arrangements with recycling companies to whom they supply. There is another option which highlights not only the role of finance in network relations but also the interconnections and interdependences in informal recycling. Some agents obtain contracts from recycling plants to supply recyclables and are often in a desperate situation for a number of reasons. A major problem is that they have limited time to supply the materials. A major strategy adopted by agents when faced with such a situation is to give advance payments to a middleman. The middleman uses the money to purchase the recyclables and is then paid whatever balance is left after supplying to the agent. Agents may be desperate, but this type of transaction is still mainly based on relationships of trust and occurs after several

interactions between the two. In terms of bargaining power, agents appear to have the upper hand. In many cases, agents already know from the recycling plants, the type of materials in demand and how much the plants are willing to pay for them.

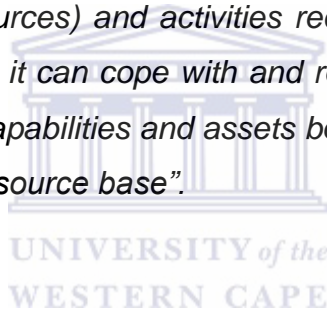
This comes into play during the bargaining process with middlemen because agents then use the knowledge to decide how much they are willing to pay for a particular material. They are not likely to offer an amount that would not ensure them a reasonable profit margin. As discussed below, middlemen have very little room for maneuver since agents are the main outlets for them to market recyclables. The major activity in this network is still the buying and selling of recyclables but on the largest scale. This is the top end of the chain. Just as is the case with the other networks, the relations are largely informal. In terms of the transactions, the companies have a higher bargaining power. They decide which agents to deal with.

This advantage is further enhanced by the fact that agents are not formally registered with the companies but can become regular customers after repeated interactions. This is not only a reflection of the level of informality, but crucially, in the absence of formal rules, it gives the companies a lot of leverage. Furthermore, the bargaining power of agents is weakened by the fact that they cannot take the waste back to where they bought them.

4.5 Waste Pickers Have Developed Livelihoods Based On Resource Recovery Activities At Landfill Sites.

When asked “what is a livelihood”, few would struggle to answer. “Making a living”, “supporting a family”, or “my job” all describe a livelihood. The term is well recognized as humans inherently develop and implement strategies to ensure their survival. The hidden complexity behind the term comes to light when governments, civil society, and external organizations attempt to assist people whose means of making a living is threatened, damaged, or destroyed. From extensive learning and practice, various definitions have emerged that attempt to represent the complex nature of a livelihood.

According to Eldis (2010), “A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”.



The waste pickers at the BSLS and DVLS developed a livelihood by collecting and selling metals and plastic from the municipal landfills. According to the Mr. Basil Nelson, the manager at the BSLS “waste picking is a source of livelihood for poor workers that is accessible to the most marginalized individuals in society because of lower barriers to entry in terms of skills, education levels and also limited capital requirements and waste picking as the consequence of poverty and hardship”.

The waste pickers in my study earn a living from recycling. According to Theron, 2010, this can be due to the fact that it is an easy market to enter, as there are no barriers to entry and no qualification, permit or permission is required. However, this statement does not compliment the waste pickers in my study. At the DVLS, the waste pickers needs permission to enter the landfill and they are strictly controlled and at the BSLS, the waste pickers don't have permission, they are denied access to recycling and to the landfill site. Waste pickers can make a living only if there are people who generate

waste. The City of Cape Town currently generates 3.2 million tons of waste per annum, therefore it creates survival opportunities for waste pickers who live in these communities.

When I asked one of the waste pickers at the DVLS, *“Do you like your job?”* I was amazed by the way he responded to my question. He said: *“I won’t say I like my job or I don’t like my job. I know it is not the best job out there. But here I am my own boss. I am an entrepreneur.”*

I thought to myself *“How can they be called entrepreneurs?”* The answer to this question was answered while I was closely observing the waste picking behaviour. Just like many drops of water makes an ocean, they know that many small pieces of paper or many number of polythene carry bags of 0.005 micron thickness will constitute a kilogram and it will fetch them a few rands. They are capable of seeing value in anything that can be recycled and they use this opportunity to make a living. Waste pickers, though invisible, help reduce the waste that reaches the landfill sites. Waste pickers are those entrepreneurs whose livelihood depends on informal collection, segregation and sale of scrap.

According to the representative of the waste pickers at the DVLS, ‘the waste pickers are a sizeable proportion among the poorest workers in the urban informal economy. They earn their livelihoods from the collection, segregation and sale of scrap for recycling. Many of them are sole income earners. They work for more than 10 hours and walk between 10-12 kilometers daily carrying heavy loads of up to 40 kilograms. Waste pickers are considered to be self-employed having no legally tenable employer-employee relationship either with the municipalities or the recycling industries to which they contribute. As occupational communities they are economically marginalized, socially excluded and politically voiceless and disempowered. It has been established that waste pickers play a significant, though informal, role in the management of urban solid waste by contributing to resource recovery, environment conservation, reduction in municipal cost and the reprocessing industry. Interestingly, this unorganized sector is in fact the backbone of a very orderly and huge industry, with the corporate sector involved in plastic buying and recycling at the end of the chain. Here the logical question is that if the factory owner who is last in the chain is accepted as gifted

entrepreneur, why not the primary group who enables the availability of the raw materials to the factory owner, be respected as primary entrepreneurs. If the waste pickers roles and attributes are identified and acknowledged, and also they are organized, and if corporate involvement increases, the waste picking industry will sort out the bulk of the waste problems our cities face. The recycled plastics are required to produce a wide range of furniture, stationary and household items, including mixer covers, bottles, mugs, buckets, plastic chairs and stools, toys, etc. The waste paper pieces on the road, carton boxes, tetra packs, and other packing items restored or collected through them, could limit cutting down trees for making paper products.

4.6 Summary

In the light of what has been discussed in chapter 4 with regard to the analyses and findings of this study concerning Stellenbosch and Bellville informal waste collectors in the Greater Cape Town Metropolitan area, the outcome shows that informal waste collectors shows that informal waste collectors in Bellville and Stellenbosch contribute significantly to the reduction of valuable solid waste and its disposal. Furthermore, they constitute the support structures for recycling companies as they provide more raw materials that any another private companies are able to. This is evident from word-of-mouth communications during interviews with middlemen-men from respective recycling companies. In addition, informal waste collectors contribute to two aspects of sustainability in Cape Town. Firstly, in meeting human needs and conserving natural resources as they provide employment opportunities for poor, unemployed urban residents, and secondly in providing low-cost materials to various industries, thereby contributing to recycling and ultimately to a cleaner environment. Although local authorities in Cape Town recognize the importance of informal waste collectors in waste management and in creating income-generation opportunities for themselves, they are generally not supportive of the activity. For example, they lack enthusiasm in monitoring and promoting this activity as one of the possible solutions to brown urbanism challenges facing the city. Furthermore, the City of Cape Town does not seem to have done enough to assist the informal waste collectors who are economically marginalized. Also, South African legislation pertaining to solid waste management appears to exclude rather than to include them.

Chapter 5: Conclusions

5.1 Introduction

The main aim of this study was to explore the role and linkages of informal sector in the recycling industry and to examine the structure and function of the informal solid waste recycling in Cape Town, as well as the role and conditions in shaping access and the networks of relations and interdependence that emerges within and beyond the landfill sites. The results of the various phases of the research were presented in Chapter 4. The findings of the study are consistent with the findings of the study done by Schenck and Blaauw (2011) who concluded that most waste pickers collect waste merely as a means of survival. The findings also highlight the strong linkages and interaction that exist between the informal and formal recycling sector and it also highlights the inter-dependence between the formal recycling companies, manufacturing and waste pickers.

This chapter relates to the findings of the research on informal waste collection in Stellenbosch and Bellville to the literature examined in Chapter 2. It also reviews the contribution of informal waste collection to the search for solutions to aspects of environmental sustainability and livelihood strategies of poor urban dwellers. With regard to the geographical profile of informal waste collectors, Medina (2000) found that informal waste collection involves both skilled and unskilled immigrants from local regions/provinces, neighbouring states and even states further afield. The case study of Stellenbosch and Bellville landfills confirms this fact since the majority of informal waste collectors are South Africa nationals, mostly from the Western Cape.

It has been pointed out that, in terms of the age and gender profiles of informal waste collectors, more young people are involved than adults (Schenck & Blaauw, 2011)). In the case of Stellenbosch and Bellville, the majority of informal waste collectors are younger than 40. This could be explained in terms of the fact that many younger people are the bread-winners for their families. Furthermore, most of them are not involved in any occupation other than that of collecting waste. It was also evident during the data collection of the study that young people at the DVLS leave their homes early in the

morning and the young people at BSLS also leave their homes and wait at the gate of the BSLS until it closes and the metro-police have left, before they can embark on the search of recyclable materials. This clearly makes the operation a survivalist mechanism for the urban poor people in Cape Town.

In terms of the education level of informal waste collectors, a number of researchers (Medina, 2000 & Schenck and Blaauw, 2011) found that informal waste collectors are generally uneducated in fact. However, this premise is not applicable in the case of Stellenbosch and Bellville where informal waste collectors include both educated and uneducated individuals. This confirms the fact that informal waste collection activities in Cape Town are performed not only by uneducated people but also by individuals with a wider range of qualifications, depending most probably on the circumstances surrounding their lives such as unemployment and a lack of income for satisfying their basic needs.

In terms of the types of waste collected by informal waste collectors, scholars such as Wilson (2006) point out that the most common materials recovered from garbage are paper, plastic, rags, metal, glass and food leftovers. However, not all of these material are collected in Stellenbosch and Bellville. Light metal, heavy metal and plastic are the main waste component. This confirms Medina's (2009) statement that the type of solid waste gathered by informal waste collectors is established by the spatial location of the particular scavenging area. The types of commodities required by recycling companies.

On the positive side, these impoverished informal waste collectors operating in the urban areas do indeed create job opportunities for themselves; they generate an income and furnish re-usable materials at cheaper prices. Adam (2012) found that informal waste collectors in Nigeria earn more or R1000 per month, while Dilata (2007) found that informal waste collectors in South Africa earn R265.50 per week. On the contrary, however, this study found that depending on their spatial location, it is common for the Stellenbosch informal waste collectors to earn between R500 – R1000 per week, and Bellville informal waste collectors to earn between R200 – R500 per week, which could represent a minimum of R2000 and a maximum R4000 per month, and roughly a minimum of R24 000 and a maximum of R48 000 per annum. This

implies that informal waste collectors can earn fairly substantial incomes for themselves and thus escape from poverty.

This findings therefore corroborate the arguments of other scholars such as Adam (2012) who state that informal waste collectors play a vital role in the informal waste economy and also represent a source of income for impoverished households in urban areas, specifically developing countries. Therefore, if Stellenbosch and Bellville landfills alone attracted large numbers of informal waste collectors, each one would play an important role in alleviating the high unemployment levels in Cape Town. In addition, informal waste collectors are prolific in the rest of Cape Town and are indeed found in all South African cities. As such, waste collection is proving to be a significant income-generating operation for the urban poor in South Africa as a whole. Thus, an effective waste policy integrating informal waste collectors into the waste management system in Cape Town in particular and in South Africa in general could perhaps contribute to the alleviation of urban poverty and the maintenance of clean environments. Adam (2012) draws attention to the contribution of informal waste collectors in terms of environmental and social issues. Informal waste collectors, generate employment for themselves (the poverty-stricken sphere of the urban population); they generate income for poor communities and also contribute to cleaning up and conservation of resources.

Informal waste recycling at Stellenbosch and Bellville landfills is an important livelihood activity, proved by the urban poor. In terms of the wider debate, there is no evidence of the internationalization of networks in Stellenbosch and Bellville, but there exists a network of relations spanning the household, community, city and intercity levels. The study attempted to unravel the complex interactions, collaborations, and the dynamics of power and bargaining within networks. The relations formed are informal but are well structured. There are clearly defined roles, which make it difficult for actors to operate outside network rules. This is crucial because it is the more powerful members who shape the rules. Those with greater access to financial and social capital drive the system and exert more influence. However, power is not solely concentrated in the hands of particular actors or groups. Finance is an important factor shaping power relations in networks, but it would be simplistic to say that it confers absolute power on actors. The study confirms the hierarchical structure of informal recycling and much

of this has to do with the differential economic capacities of the actors, but the strong interconnectedness and interdependences inherent in the system make it impossible for actors or groups to acquire absolute power. Actors with limited financial capital can use other means or draw on social capital to neutralize the power of the more financially endowed. This is best captured in the relations between agents and middlemen. Agents have the finance but do not have direct access to recyclables, while middlemen may lack the necessary finance but have the control of waste sources. The result is an arrangement which recognizes each other's leverage. Social capital is also drawn upon to maximize access to finance and useful in structuring informal relations as what occurs when actors carry out transactions based on relationships of trust and solidarity. However, there is also the negative side of social capital as demonstrated in the case of middlemen who use their contacts with companies to exclude others from having access to waste materials. Furthermore, the study confirms that network relations are embedded in specific sociocultural contexts.

Thus, while the city of Cape Town is largely indifferent and accommodating to the activities of informal waste dealers, it relates differently with the different groups. The study raises the important question regarding whether the specific pattern of relations between informal waste collectors and the recycling companies that has evolved at Stellenbosch and Bellville landfills applies elsewhere in Cape Town or in other South African cities. It is important to carry out further empirical investigations to shed more light on what can be considered a very important aspect of informality.

5.2 Threats To The Livelihoods Of Informal Workers – Evidence From The Ground

In the literature waste pickers are described as a threat and nuisance to communities, societies and municipalities, but this study showed that waste pickers are not a threat to communities and the environment in Cape Town. Indeed, they are victims whose livelihoods are threatened by regulations and decisions made by municipalities. Overall the research shows that although the waste pickers at Bellville South Landfill have developed a livelihood based on resource recovery, but the municipality made a decision that waste pickers should no longer have access to the landfill. By denying

them access to the Bellville South Landfill Site and discontinuing informal recycling at the site the municipality will effectively be destroying their livelihood strategy.

Access to waste and privatization of waste management activities and of waste collection and recycling facilities are the key problems with direct impact on informal activities and implicitly on the livelihoods of informal collectors. In the frame of the “First Global Strategic Workshop of Waste Pickers”, that was carried out in Pune, India, in 2012, representatives of the informal collectors and recyclers from 22 countries identified the privatization of waste management systems and the movement of the gravity center from waste storage by energy-recovery waste incineration as constituting two factors with strong negative impact on the informal waste sector, leading to the limitation of the informal collectors and recyclers’ access to recyclable material waste. The issue of limited access to waste was reiterated by the informal recyclers included in the study „Informal Economy Monitoring Study”, performed by WIEGO (2014), 73% of them indicating that the limitation of the access to wastes constitutes a major threat for their own activity.

The impact of the modernization process on the subsistence of informal workers in solid waste management is usually significant. As these workers are active in informal physical and social spaces and survive on resources that are public (waste), modernization processes tend to be a threat to informal waste pickers, resulting in: the “evacuation” of spaces where the waste pickers work, as they are “swept out” to the periphery; persecution by the authorities and the police; confiscation of material; criminalization of the activity and denied access to landfill sites. *Scheinberg (2011) argues that* waste pickers, become losers in the modernization process when their access to waste is denied.

Clearly waste-pickers could reach a better standard of living if the local authorities recognized their role in the solid waste management system.

Attitudes of municipal authorities towards the informal waste recycling differ from place to place: in some places there is hostility, in others indifference, and in some places they are regarded as a useful part of the waste management system and are given

the opportunity to enhance their livelihoods. In Cape Town waste recycling is yet to receive the amount of official support that it deserves. There are several ways how this can be achieved. One way would be to upgrade the informal sector by integrating informal waste pickers directly into collecting waste at source, with a right over recyclables and a guarantee of regular access to waste. Another way would be by mobilising informal waste recycling through the establishment of direct contractual relations with waste recycling organisations and companies. For efficient waste recycling, it is more appropriate and economical to use the existing structures of the informal sector. For example, Brazilian municipalities partner with waste picker cooperatives, giving them the right to receive recyclables collected by the municipality and to rent recycling centres. In Bangladesh, Waste Concern and a few other NGOs train waste pickers in organic waste recycling (composting). To conclude, the role of landfill waste pickers in municipal waste management is commendable, and needs to be supported.



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Appendixes

Appendix 1: Questionnaire Administered To Waste Pickers



UNIVERSITY OF THE WESTERN CAPE

DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES

**RESEARCH PROJECT: WHEN NECESSITY BEGETS INGENUITY: A STUDY
OF INFORMAL WASTE RECYCLING AT STELLENBOSCH AND BELLVILLE
IN CAPE TOWN**

**THE CONTEXT OF MUNICIPAL LANDFILL SITES QUESTIONNAIRE:
CONFIDENTIAL**

TARGET GROUP: WASTE PICKERS:

1. SOCIO-ECONOMIC CHARACTERISTICS

- 1.1. Gender: Female Male
- 1.2. Age:
- 1.3. Race: Black White Coloured Other.....
- 1.4. Working status: Full time Part time
- 1.5. Educational status: No formal education Primary
Secondary Tertiary
- 1.6. Marital status: Single Married Widowed
Consensual union
- 1.7. Job description: Unemployed Formally employed
Informally employed Scholar/student
House wife Temporary job Old age

2. RESIDENTIAL CHARACTERISTICS

2.1. Where do you live?

Self-constructed houses Outside the landfill site

Other (specify)

2.2. How long have you been staying there?

< 12 months 1 – 2 years 3-4 years 5-6 years 7-8 years

9-10 > 10 years

2.3. Where were you staying before?

.....
.....

2.4. Why did you leave?

.....
.....



3. INFORMAL ACTIVITY

3.1. Reason for joining the informal activity:

- Unable to find formal employment
- Formal jobs pay too little
- To save money for a specific need
- To supplement family income
- Lost formal job
- Other (specify)

3.2. How did you join this activity?

.....

3.3. Did you have any formal sector job before waste picking?

- Yes if yes, where?
- No

3.4. Period of employment in previous full time job:

- < 12 months
- 1 – 2 years
- 3-4 years
- 5-6 years
- 7-8 years
- 9-10 years
- > 10 years

3.5. Reason for landfill waste pickers to have leave their previous job?

- Contracted ended
- Laid off business/mine/factory closed
- Laid off business move
- Laid off business downsizing
- Disciplinary reason
- Quite the job
- Other



3.5. What equipment do the landfill waste pickers use to collect waste?

- Plastic bags
- Trolleys
- Other

3.6. How long do waste pickers engage in this activity on a daily basis?

.....

3.7. How long have you been involved in this informal waste collection activity?

- < 12 months
- 1 – 2 years
- 3-4 years
- 5-6 years
- 7-8 years
- 9-10 years
- > 10 years

3.8. Are you given identification?

- Yes
- No

3.9. Are you employed by the recycling collectors / dealers?

Yes

No

If yes, how did you become contracted by them?

.....

3.10. How is the livelihood?

.....

.....

3.11. What do you think about the activity?

.....

.....



3.12. What the major challenges that are affecting your activities?

.....



.....

3.13. What kind of relations do you have with the formal waste management system?

.....

.....

3.14. Do you like or feel secured of being part of this sector? Why?

.....

.....

3.15. What plans do you have for the future?

.....

.....

4. ITEMS RECOVERED

4.1. Types of items:

Cardboard Plastics Bottles Metals Tyres Textile/off-cuts
Other

4.2. If you separate recyclables, which ones do you commonly separate?

Plastics Metals Wood Paper

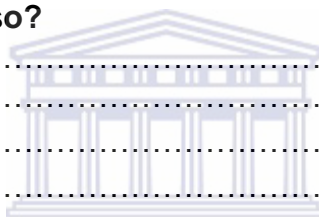
4.3. Use of materials recovered:

4.3.1. Resale: Yes No

4.3.2. Other:

4.4. To whom do the waste pickers sell the waste and what is the process involved in doing so?

.....
.....
.....
.....



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4.5. Do waste pickers collect waste for personal use?

.....
.....

4.6. How many days do your work per week?

.....

4.7. Which are the busiest days of the week for waste collection?

Monday Tuesday Wednesday Thursday Friday
Saturday Sunday

Why?

.....

4.8. What volume of waste do you collect per day?

.....

4.9. Have you ever had any training in relation to waste collection and sorting?

Yes No

If yes, please elaborate

5. INCOME FROM RECOVERED ITEMS:

5.1. How do you get paid?

Daily weekly monthly

5.2. How many hours do you work per day?

a) 4 – 8 b) 8-12 c) 12-16 d) 16-20

5.3. How much do you earn per day from the waste collection service you provide?

.....

5.4. Do you believe you earn enough when compared to the service you provide?

Yes No

5.5. Do you have regular buyer/s that you supply for?

Yes No

Please elaborate.....

5.6. Do you believe you get good price for the sorted materials?

Yes No



5.7. How much do you get for the items recovered:

| <u>Items</u> | <u>Kg/g</u> | <u>Rand</u> |
|------------------|-------------|-------------|
| Cardboard | | |
| Plastics | | |
| Bottles | | |
| Metals | | |
| Tyres | | |
| Textile/off-cuts | | |

5.8. How much income generated per week and by gender?

| Amount | Male | Female |
|-------------|------|--------|
| < R25 | | |
| R25 – R75 | | |
| R76 – R100 | | |
| R101 – R125 | | |
| R126 – R150 | | |
| R151 – R175 | | |
| R176 – R200 | | |
| >R200 | | |



6. SALE OF ITEMS:

6.1. Satisfaction with Payment.

- Very satisfied
- Satisfied
- Neither satisfied nor dissatisfied
- Dissatisfied
- Very dissatisfied

6.2. Reason for chose above

.....

6.3. The number of people who depends on a waste picker's income:

.....

6.4. Other sources of income:

- Another job
- Child-support grant
- Disability grant
- Old-age grant
- Pension from a previous job
- Other grant (not mentioned above)
- Financial assistance from family members /relatives or friends

7. Health and injury risk:

7.1. Do you use any protective accessories eg. gloves, masks, booths?

- Yes if yes, who supplies them?
- No

7.2. Health and injury risks for landfill waste pickers

- Broken glass
- Dust
- Chemicals
- Sharp objects
- Bad smells
- Smoke
- Rotten/toxic/hazardous material
- Fire
- Nails
- Animal carcasses
- Noise
- Insects
- Snakes
- Attack/ stealing from criminals
- Poison
- Other

.....

7.3. Have you contacted any illnesses or injuries whilst operating in the disposal site?

- Yes
- No



7.4. What type of injuries or illnesses?

- Nail injury
- Chest pain
- Back pain
- Allergy
- Asthma
- Lung problems
- Cuts
- Vehicle injury
- Sick due to spoiled food
- TB
- Insect bites
- Skin disease
- Sunburn
- Injuries by sharp objects
- Other

8. PERCEPTION:

8.1. How do you feel about the following statement? “It is necessary to formalize our activities”

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly Agree



8.2. How do you feel about the following statement? “It is possible to formalize our activities”

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly Agree

8.3. How do you feel about the following statement? “The current privatization and re-zoning (formal companies) activity affect our activities”

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly Agree

8.4. How do you feel about the following statement? "I feel exploited for joining the informal waste collection activity"

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly Agree

8.5. Do you think sorting and recycling waste is important for the environment?

- Yes No I have no Idea

8.6. Are you involved in a group / network with other fellows engaged in similar activity?

- Yes No

Please elaborate -----

8.7. What is affecting your activity mostly? (Please rank)

1. Formal companies.....
2. Perception of the society
3. Government laws
4. Police



8.8. Do you believe you are contributing to the waste management of Cape Town?

- Yes No

Please Elaborate -----

8.9. Do you believe that your role is considered as important for waste management by the government?

- Yes No

Appendix 2: Questionnaire Administered To Formal Recyclers/Dealers



**UNIVERSITY OF THE WESTERN CAPE
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES
RESEARCH PROJECT: WHEN NECESSITY BEGETS INGENUITY: A
STUDY OF INFORMAL WASTE RECYCLING AT STELLENBOSCH AND
BELLVILLE IN CAPE TOWN**

THE CONTEXT OF MUNICIPAL LANDFILL SITES
QUESTIONNAIRE: CONFIDENTIAL

TARGET GROUP: FORMAL RECYCLERS / DEALERS:

1. FORMAL ACTIVITY

1.1. **Why did you decide to get into this business?**

.....

1.2. **How did you join this business?**

.....

1.3. **Did you have any other job before entering this sector?**

Yes No

If yes, where?

.....

1.4. **Period of employment in previous full time job:**

Less than as year 1-5 years 6 -10 years 11–15 years 1

6 -20 years < 20 years

1.5. **Is your company registered?**

Yes No

1.6. **What does your business do?**

.....

1.7. How long have you been doing this business?

Less than as year 1-5 years 6 -10 years 11–15 years 1

6 -20 years < 20 years

2. ITEMS RECOVERED:

2.1. How do you buy the material?

.....
.....

2.2. What material do you mostly buy from the waste pickers?

Plastics Metals Paper Wood Other.....

Why?

.....



2.3. Do you have an agreement with the waste pickers?

.....

2.4. Do you have a contract with the waste picker or a verbal agreement?

.....

2.5. How do they get paid?

Daily Weekly Monthly Other

2.6. If they failed to collect waste material, what will happen?

.....
.....

2.7. What happen if they are sick and can't collect waste?

.....

.....
2.8. How do you determine how much you will pay for the waste collected?

.....
.....

2.9. How do you decide on the buying and selling price of the materials?

.....
.....

2.10. What do you do with the material?

Sell Reuse Other

2.11. To whom do you sell the materials to?

.....

2.12. How many days do your work per week?

.....

2.13. Which are the busiest days of the week for waste collection?

Monday Tuesday Wednesday Thursday Friday
 Saturday Sunday

Why?.....

2.14. How much volume of waste do you buy/collect per day?

.....

2.15. Have you ever had any training in relation to waste collection and sorting?

Yes No

If yes, please elaborate

3. INCOME FROM RECOVERED ITEMS:

3.1. How much do you earn per day from the waste collection service?

.....

3.2. Do you believe you earn enough when compared to the service you provide?

Yes No

3.3. Do you have regular buyer/s that you supply for?

Yes No

Please elaborate -----

3.4. How much do you pay for these items recovered?

| <u>Items</u> | <u>Kg/g</u> | <u>Rand</u> |
|------------------|-------------|-------------|
| Cardboard | | |
| Plastics | | |
| Bottles | | |
| Metals | | |
| Tyres | | |
| Textile/off-cuts | | |

3.5. For how much do you sell these items?

| <u>Items</u> | <u>Kg/g</u> | <u>Rand</u> |
|------------------|-------------|-------------|
| Cardboard | | |
| Plastics | | |
| Bottles | | |
| Metals | | |
| Tyres | | |
| Textile/off-cuts | | |

4. OPERATION:

4.1. Are you guided by by-laws?

.....
.....

4.2. What do you think of the operation of the landfill site?

.....
.....

4.3. What do you think about the recycling operations?

.....
.....

4.4. What do you think about the management of the landfill site?

.....
.....

4.5. What do you think should be done to make it more viable?

.....
.....



4.6. What are the major challenges that you encounter?

.....
.....

4.7. Do you like or feel secured of being part of this sector?

.....
.....

4.8. What plans do you have for the future?

.....
.....

Appendix 3: Questionnaire Administered To Stellenbosch Municipality



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DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES
RESEARCH PROJECT: WHEN NECESSITY BEGETS INGENUITY: A
STUDY OF INFORMAL WASTE RECYCLING AT STELLENBOSCH AND
BELLVILLE IN CAPE TOWN

THE CONTEXT OF MUNICIPAL LANDFILL SITES

QUESTIONNAIRE: CONFIDENTIAL

STELLENBOSCH MUNICIPALITY INTERVIEW:

1. **What do you think of the informal recycling activity?**

.....
.....
.....

2. **Are you supporting the informal recycling activity?**

.....
.....
.....

3. **Does this activity contribute to waste management?**

.....
.....
.....

4. **What do you think about formalizing the informal recycling activity?**

.....
.....
.....

5. Do you think it is possible to formalize the informal recycling activities?

.....
.....
.....

6. Do you think the current privatization and re-zoning (formal companies) activity affect the informal recycling activities?

.....
.....
.....

7. What do think about integrating the informal recycling activity into solid waste management?

.....
.....
.....

8. Do you think sorting and recycling waste is important for the environment?

.....
.....
.....



9. Do you think informal recycling contribute to the waste management of Stellenbosch?

.....
.....
.....

10. Do you think that the role of informal recycling is important for waste management by the municipalities?

.....
.....
.....

11. What future plans does Stellenbosch Municipality have for waste minimisation?

.....
.....

.....
.....

12. **Who manages the Devon Valley Landfill Site?**

.....
.....
.....

13. **How many tons of waste does the DVLS get monthly?**

.....
.....
.....

14. **How many tons of waste get recycled monthly?**

.....
.....
.....



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Appendix 4: Questionnaire Administered To City Of Cape Town



**UNIVERSITY OF WESTERN CAPE
DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES
RESEARCH PROJECT: WHEN NECESSITY BEGETS INGENUITY: A
STUDY OF INFORMAL WASTE RECYCLING AT STELLENBOSCH AND
BELLVILLE IN CAPE TOWN**

**THE CONTEXT OF MUNICIPAL LANDFILL SITES
QUESTIONNAIRE: CONFIDENTIAL**

CITY OF CAPE TOWN INTERVIEW:

1. What do you think of the informal recycling activity?

.....
.....
.....

2. Are you supporting the informal recycling activity?

.....
.....
.....

3. Does this activity contribute to waste management?

.....
.....
.....

4. What do you think about formalizing the informal recycling activity?

.....
.....
.....

5. Do you think it is possible to formalize the informal recycling activities?

.....
.....

.....
6. **Do you think the current privatization and re-zoning (formal companies) activity affect the informal recycling activities?**

.....
.....
.....

7. **What do think about integrating the informal recycling activity into solid waste management?**

.....
.....
.....

8. **Do you think sorting and recycling waste is important for the environment?**

.....
.....
.....



9. **Do you think informal recycling contribute to the waste management of Bellville?**

.....
.....
.....

10. **Do you think that the role of informal recycling is important for waste management by the municipalities?**

.....
.....
.....

11. **Why was waste picking discontinued by CoCT?**

.....
.....
.....

12. What future plans does CoCT have for waste minimisation?

.....
.....
.....

13. How many tons of waste does the Bellville South Landfill Site (BSLS) get monthly?

.....
.....
.....

14. How many tons of waste is recycled monthly?

.....



Appendix 5: Identification Of Recovered Plastics

| IDENTIFICATION | PRODUCTS | RECOVERED PLASTICS RECYCLED INTO PRODUCTS SUCH AS: |
|---|--|--|
|  | <ul style="list-style-type: none"> • Cool drink bottles • Juice and water bottles • Jars - peanut butter, salad dressing, oils, cosmetics and some household cleaners • Some food trays | <ul style="list-style-type: none"> • Fibre for polyester carpet, fabric for T-shirts • Fibrefill for sleeping bags and winter coats • New PET products for both food and non-food containers • Geotextiles • Plastiwood  |
|  | <ul style="list-style-type: none"> • Milk bottles • Bags • Film • Juice bottles • Household containers • Shampoo | <ul style="list-style-type: none"> • Refuse bins and bags • Irrigation pipes • Buckets • Garden furniture • Shopping bags  |
|  | <ul style="list-style-type: none"> • Bottles • Clear trays (toiletries and food) | <ul style="list-style-type: none"> • Shoe soles • Door mats • Hoses • Garden Fencing • Car mats • Window frames  |
|  | <ul style="list-style-type: none"> • Frozen vegetable bags • Soft squeezable bottles • Bags • Milk sachets • Consumer bags - boutique | <ul style="list-style-type: none"> • Refuse bin liners • Bags • Building film • Irrigation pipes • Outdoor furniture • Containers  |
|  | <ul style="list-style-type: none"> • Bottles - detergents and toiletries • Bottle tops and closures • Yoghurt cups • Margarine tubs • Ice-cream containers | <ul style="list-style-type: none"> • Bottles and containers • Paint trays • Buckets • Garden Furniture • Crates and boxes • Ropes  |
|  | <ul style="list-style-type: none"> • Cutlery, cups • Yoghurt and cottage cheese containers • Clear salad containers • Television sets • Computer casings • CD boxes • Make-up containers • Cups, bowls, plates • Trays • Clamshells, meat trays • Egg cartons • Protective packaging | <ul style="list-style-type: none"> • Picture frames • Cornices • Curtain rods • Seedling trays  |

Appendix 6: Information Sheet



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FACULTY OF ARTS INFORMATION SHEET

Research Project Title: When Necessity Begets Ingenuity: A study of informal waste recycling at Stellenbosch and Bellville, Cape Town

I am Monique Muller, a postgraduate student at the University of the Western Cape. I am doing research on waste recycling at Stellenbosch and Bellville landfills and would be most grateful if you were to participate in my research project.

This study is about the linkages between informal and formal waste recycling activities in selected areas of Cape Town. Waste recycling in most developing country cities is a response to limited municipal resources, the inability of the formal economy to absorb a growing urban population, and the value placed on recyclable materials in the modern globalized economy. The study focuses on the interactions between informal and formal resource recovering on landfill sites in Stellenbosch and Bellville. It aims to explore the role and linkages of informal sector and formal sector in the recycling industry, who are involved in informal sector activities at the bottom end of the waste recycling chain. It also examines how waste pickers have developed livelihoods based on resource recovery activities at landfill sites. Most of the primary data will be collected during field visits between October and December 2014. Interviews will be carried out with waste pickers, merchants and recycling companies. Observations will be made at their working and living places on and next to the landfill sites of Stellenbosch and Bellville. Successful completion of this project will result in award of a master's degree from the University of the Western Cape.

Please contact the following persons in case of any questions.

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