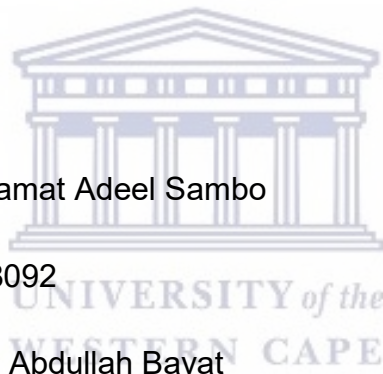# Employing developmental mentorship to enhance the livelihoods and entrepreneurial capabilities of waste pickers

This is a full-research dissertation presented in fulfilment of the requirements for the Doctor of Philosophy Degree (Management).

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Date: July 2022

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Declaration

I, Mogamat Adeel Sambo, hereby declare that the thesis titled "*Employing developmental mentorship to enhance the livelihoods and entrepreneurial capabilities of waste pickers''* is my own work, and I have not received any other assistance in completing the said work other than stated sources and citations. Furthermore, I declare that this thesis has not been submitted to any other university, college or institution of higher learning for any degree or academic qualification.

Mogamat Adeel Sambo

Student Number: 2908092

Signed:

Date: 25 October 2021

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Acknowledgements

In the Name of Allah, the Beneficent, the Merciful

All Praise belongs to Allah, my Creator, my Cherisher and the One who granted me the ability to complete this thesis, and peace and blessings upon Prophet Muhammad (Peace and Blessings be upon him) the last of all prophets.

I acknowledge my late parents, Yusuf and Amina, (may Allah have mercy on their souls), and may Allah grant them the highest place in paradise.

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Abstract

Waste pickers are individuals who collect waste from household and commercial bins as well as at landfills. The vast majority are unskilled with a low-level of education. Waste pickers find themselves in poverty for various reasons associated with the South African economy and their life trajectories, including a lack of skills. The consequence of this is that these individuals are unable to find secure employment in the formal economy. The income they obtain is from the recyclable items that they collect, which are then sold to buy back centres or parties who are interested in buying their valorised items.

This study focuses on landfill waste pickers in the Drakenstein municipality. The sustainable livelihood framework and the capability approach were used as theoretical approaches to address the research questions. Through a transformative paradigm and using a participatory action research to explore some methods that would help increase the livelihoods and entrepreneurial capabilities of the waste pickers. Qualitative data collection took place at the Wellington and Paarl site for two years with the permission of the Drakenstein municipality. Focus groups and personal interviews accompanied by joint decisions and reflections were used. This resulted in a better understanding of their social world and what could be done to help them improve their human capabilities.

The results of the study showed that waste pickers required an intervention that targeted the challenges that they faced in their lives to enabled them to convert their capabilities into achieved functionings (desired outcomes, or what an individual chooses to do or to be).The developmental mentorship intervention was integrated into the participatory action research activities which guided waste pickers in improving their livelihoods and capabilities. Waste pickers should first enhance their human capabilities which include improving their health conditions, social well-being and the freedom to understand their basic human rights. The data briefly demonstrates why cooperatives for waste pickers failed and how through intervention the waste pickers can be integrated into the solid waste management system.

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A contribution of this study is that developmental mentorship enhanced the efforts made by the Drakenstein municipality to assist waste pickers to improve their livelihoods. The study accentuates the important role of waste picking as a way of creating an income while helping the environment.

A key finding of this research study is that developmental mentorship can enable waste pickers to improve their livelihoods and entrepreneurial capabilities. The voices of the waste pickers are enhanced through developmental mentorship which enabled them to improve their quality of life and benefitted the municipality and the environment. The studyrecommends mobile incubators that are based on a developmental mentorship model to develop landfill waste pickers at their place of work.

Keywords: waste pickers, sustainable livelihood framework, capabilities approach, developmental mentorship, entrepreneurs, entrepreneurship

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Chapter 1: Introduction

"Two billion workers, representing 61.2 per cent of the world's employed population, are in informal employment (including the agricultural sector). Informal employment exists in all countries, but is far more prevalent in developing economies."

- *(International Labor Organization (ILO), 2019:13)*

It is estimated that the world's population could increase by 835 million by 2030. In 2019 the world population was estimated at 7.7 billion, having increased by one billion since 2007 (UN, 2019). South Africa's population is estimated to be at 59.62 million people, with approximately 30.5 million (51.1%) being females (Stats SA, 2020b). The increase in population would require substantial economic growth to sustain the global population as urbanisation continues to increase which leads to a greater demand for natural resources. Although urban growth has its advantages, the challenge is to ensure that the development of urbanisation provides resilient human settlements that would be safe and sustainable (UN, 2019). Presently, the world economy is experiencing slow economic growth, with many developing countries showing a steady increase in unemployment (OECD, 2020). For many, the informal sector offers a means of survival. Informal employment accounts for 67.4% of employment in emerging countries[1] and as much as 89.8% in developing countries[2] (ILO, 2019).

Historically, humanity only operated in the informal sector. Employment, businesses and other economic activities were conducted informally until the introduction of policies, procedures and regulations, which created a division between the formal and informal sectors (Chen & Carré, 2020). The informal economy comprises various segments that are prevalent in various sectors, economic entities and employment categories. This diversification produces many challenges, but permits opportunities for formal integration (ILO, 2019). The informal sector provides billions of individuals with some form of household income, resulting in the reduction of hunger and poverty

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[1] Emerging countries: Emerging countries have emerged with significant economic growth
[2] Developing countries: Developing countries are the countries that have not seen any significant growth in their economy

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(Chen & Carré, 2020). Many informal activities are in operation through the informal actor's entrepreneurial energy, yet these are stifled by government regulations (La Porta & Shleifer, 2014) undervalued, misconstrued and often denunciated (Chen & Carré, 2020). Those working in the formal sector enjoy the protection and full benefits of the law as opposed to those individuals in the informal sector who are in many instances constantly harassed by government officials and the public (Fourie, 2018). An individual that works in the formal agricultural sector would be classified as a commercial agricultural worker, whereas an individual who works in the informal agricultural sector would be deemed as a subsistence agricultural worker (Essop & Yu, 2006). It is estimated that more than 2.5 million individuals in South Africa earn an income in the informal sector, of which between 60 000 to 90 000 are waste pickers. Waste pickers are individuals who collect recyclable items to sell so that they may earn an income (Yu, Blaauw & Schenck, 2020).

The main purpose of the research study is to offer insightful information in improving the current livelihoods and developing entrepreneurial capabilities of the waste pickers. The notion of livelihoods offers a viable perspective to explore the practice of waste picking as it offers a broader understand than income generation alone. Specifically, earning a livelihood includes access to resources, capitalising on opportunities, dealing with vulnerable circumstances, and forming social networks through relationship building with other waste pickers, municipalities, institutions, other waste-related partners and communities. By focusing on livelihoods, the importance of human capabilities can be explored (Dias, 2016).

This chapter offers perceptivity into the research problem and provides the reasoning behind it. The chapter further deliberates the purpose and importance of the research, highlights the research objectives and research question, and provides a brief overview of the research methodology. The chapter concludes with a structure outline of the research study.

1.1. Background to the study

Developed countries comprise 19% of the population but are accountable for the production of 75% of the world's pollution and waste (Werman, 2016). Mass industrial production of products, electronic devices and other computer-related peripherals has caused a reduction in the lifecycle, with most redundant electronic products ending up at landfills (Glaubitz, 2011). Waste is accumulated daily from different activities and from various sources such as households, governments, and commercial and health care workers (Nwofe, 2014), with most waste ending up at landfills. It was estimated that human inhabitants in 2018 generated 1.2 kg of municipal solid waste (MSW) per person per day, and as forecasted this would increase to 1.4 kg of MSW per day by each person in 2025 (Coban, Ertis & Cavdaroglu, 2018). In 2004 China became the largest waste generator in the world, surpassing the United States of America. Most of its waste is generated from organic products as the Chinese prefer fruits and vegetables as opposed to Americans who are inclined to consume more processed and packaged products (Zhang, Tan & Gersberg, 2010). Each country's waste differs, but in most emerging countries waste ends up at landfills.

To reduce the amount of waste ending up at landfills, stakeholders are obligated to change their linear system of waste management to a more cyclical system that contributes to a more sustainable environment (Werman, 2016). Waste management is regarded as a human right and has been prevalent in human society with policies that differ in various developed, developing and emerging countries (Ndum, 2013). In developing countries solid waste management (SWM) has worsened environmental contamination and the spread of diseases (Ferronato & Torretta, 2019) and, as highlighted by the Energy and Resources Institute (2014), the World Bank acknowledged that a quarter of the diseases confronting humanity are the result of over-exposure to environmental pollution. Ferronato and Toretta (2019) further explain that those residing in low economic areas with a highly densified population are more likely to contract diseases and ill health. Despite this, waste management as a utility service is considered low in comparison to other utility services (Wilson *et al.*, 2015). Municipalities face a daunting challenge in collecting, transporting and disposing of solid waste (Dlamini, 2017), which is primarily the responsibility of the local

municipalities or local government in most developed countries. A problem with waste management systems in developing countries is the lack of adequate policies, legislation and public awareness (Nwofe, 2014) resulting in environmental problems through the improper manner of waste disposal (Marshall & Farahbakhsh, 2013). Improper disposal of waste could lead to health issues, especially if it is disposed of near water resources, populated areas and sewerage systems (Coban *et al.*, 2018). Cleaning up of waste not properly discarded can be costlier in the long term as compared to the prevention of the dumping of waste. Waste and waste management have changeable impacts on energy consumption, methane emission, carbon storage, and ecological and human health. For example, preventing waste from ending up at landfills will help to eliminate methane emission at landfills (Energy and Resources Institute, 2014). In Sweden, producers are responsible for the discarding of end-of-life products, which implies that suitable collection processes and recycling methods are implemented. Producers are also encouraged to produce products that are not harmful to the environment and which are easier to recycle. Municipalities on the other hand are required by law to have proper waste plans and abide by the regulations of waste management (Avfall Sverige, 2018). The need for effective waste management is motivated by increasing costs, limited space at landfills and the gradual decrease in natural resources currently facing South Africa (Larney & Van Aardt, 2010).

Waste in South Africa is primarily disposed of at landfills. In the past, waste was considered worthless, but over the years, recyclable waste has become a form of income to formal businesses and the informal person who is desperately trying to earn an income to survive (Mothiba, 2016). According to Godfrey and Oelofse (2017) the South African waste recycling sector has undergone various stages and is currently at the stage where producers are held accountable for their discarded products. The first phase is known as "The Age of Landfilling", which started in 1989 while South Africa was under apartheid rule. Municipal waste was sent to landfills with no intuitiveness of recycling. The second phase is known as "The Emergence of Recycling", which originated in 2001 and brought forth the banning of single-use plastic bags. "The Flood of Regulation" was the third phase, introduced in 2008 with the introduction of new legislation and regulations in controlling waste and secondary resources. In 2012 the

fourth phase originated, coined as "The Driver of EPR", with the aim being Extended Producer Responsibility (EPR) to mandate tyre producers to take responsibility for end-of-life tyres through producer responsibility organisations. According to the South African Government Gazette (Government of South Africa, 2021) based on the National Environmental Management: Waste Act 59 of 2008, EPR implies that it has become the responsibility of the producer to take responsibility for their product after the post-consumer stage of the identified product lifecycle. A report by IWMSA (2021) states that it has become mandatory for paper and paper packaging producers to register with Fibre Circle to comply with the South African government's EPR regulation. The Fibre Circle aims to divert paper products from ending up at landfills through the EPR fees that paper organisations must pay per ton of paper they import. Similarly, the plastic product companies are also complying with EPR regulations. The purpose of EPR is to contribute to the supply of recycling in the form of funding for the provision of incentives, subsidies and infrastructure (Godfrey, 2021). Many developing countries are fixated on applying EPR as a means of deriving additional funding that could assist with elementary waste management services that could lead to job creation and entrepreneurship in the secondary resources economy. However, neglecting recycling will have an adverse effect on the economy and the environment as waste disposal becomes more expensive, resulting in additional raw materials needed and leading to an increase in consumption and ultimately an increase in waste generation (Larney and Van Aardt, 2010). Part of the process of recycling is undertaken by the informal sector. Waste pickers are noted as informal workers who mostly work individually in collecting recyclable items which they sell for an income (Dias & Samson, 2016).

Individuals who scavenge at landfills are known as landfill waste pickers and those who collect recyclable waste from garbage bins are referred to as street waste pickers (Mamphitha, 2012). Waste pickers currently contribute significantly to the recycling process by selling their collected items to buy-back centres. When these individuals salvage recyclable items from landfills they expose themselves to many health and safety issues, which has become a concern for governments. There have been debates and documentation in view of integrating waste pickers into the formal sector

through the creation of co-operatives, but the integration process has not yielded the anticipated success (Godfrey, Strydom & Phukubye, 2016). In South Africa, waste pickers have been included in co-operatives to ensure that they continue to contribute to the recycling process. However, Godfrey *et al.* (2015) report that co-operatives have indicated that waste pickers leave the co-operatives and pursue waste picking individually. Previous research results have shown that there are two options with regard to the role of the informal sector in municipal solid waste (MSW) management. Option one incorporates the informal sector into MSW management, with waste pickers becoming part of co-operatives or establishing small and medium-sized enterprises (SMEs). Option two infuses the recycling process as part of a formal structure that would result in the establishment of private recycling companies (Godfrey *et al.*, 2016). This research supports the notion of introducing waste pickers into the formal sector, but emphasises that waste pickers should prescribe a course of action that encompasses training through mentorship. The core aim of the training and mentoring programme is to facilitate a process whereby waste pickers can be more entrepreneurial and generate an income that would be more sustainable.

The research will focus on two groups of waste pickers residing and operating in the Western Cape Province of South Africa. The Drakenstein municipality allocated the waste pickers space in Paarl at a material recovery facility (MRF) and in Wellington near the landfill to collect discarded items for recycling purposes.

1.2. Problem Statement

The Department of Environmental Affairs (DEA, 2012) reports that about 90% of waste in South Africa are sent to landfills for disposal and only 10% of waste at landfills are recycled, in comparison to a report by Avfall Sverige (2018) that states that Sweden has reduced waste to 0.5% ending up at their landfills. This situation has caused concerns that landfills in South Africa are running out of space (Schenck *et al.,* 2018). Solid waste management (SWM) leads to health and safety as well as environmental issues (Ibrahim & Mohamed, 2016) which need to be addressed as landfills pile up. There are many opportunities that are affordable, and appropriate waste management systems can be achieved despite current the problems (Filho *et al.*, 2016) by

understanding the important contribution that waste pickers make to the recycling process. Reflecting on the value chain of the current waste management systems operating in South Africa, waste pickers play a key role in assisting with recycling of waste (Dias, 2016). Waste pickers who operate in the informal sector find themselves trapped in poverty with no way out as earnings remain low despite increased income during peak times. They are confronted with a lack of social protection, as well as being downtrodden by the public and other stakeholders that restrict them from collecting recyclable items to sell for an income (Yu *et al.*, 2020). The challenges of operating in the informal waste sector include the confrontation of low technology and labour-intensive activities (Marello, 2013).

Schenck and Blaauw (2011) report that in 2005, it was estimated that 37000 waste pickers earned an income from recycling. In 2014 it was estimated that more than 62000 waste pickers earned an income from selling recyclable items. About 36000 waste pickers collect items at landfills and the remaining 26000 operate with a push trolley working the streets to seek recyclable items (DEA, 2018). They are responsible for collecting up to 90% (by weight) of paper and packaging for recycling, saving South African municipalities close to R705 million in landfill space (Godfrey *et al.*, 2016). In a later report Godfrey (2021:3) provides evidence that "the mean estimate of total annual payments made to the informal waste sector in South Africa, via buy-back centres, is estimated to have increased from ZAR625 million in 2012 to ZAR872 million in 2017". Waste pickers are positioned at the bottom of the waste hierarchy (Linzner & Lange, 2013) followed by buy-back centres, and on top of the tier are the formal waste recycling companies (Schenck & Blaauw, 2011). Buy-back centres (BBCs) are more formal businesses that buy recyclable waste items from waste pickers (Schenck & Blaauw, 2011).

In an average month in South Africa, BBCs collectively sell about 17 100 tons of recyclables, with a cumulative financial value of about R25.7 million in material, saving a monthly landfill airspace of 41,800 m^3. BBCs support informal livelihoods and directly and indirectly contribute to the formal waste economy (Barnes *et al.*, 2021) In many South African cities, waste pickers earn a living by collecting recyclable items at

landfills and from households to sell to BBCs in order to make a living (Dias, 2016). Waste pickers help to reduce unemployment as they seek an income through recycling, and at the same time help to reduce the amount of waste ending up at landfills (Marello, 2013). In 2017, informal waste pickers were responsible for collecting 51% of all paper and packaging waste in South Africa (Godfrey, 2021).

Municipalities in South Africa have recognised the increase in the number of waste pickers and their contributions to the waste recycling sector through the introduction of co-operatives. A co-operative is defined as an independent association of individuals with similar business interests who unite voluntarily in an equitable manner to achieve sustainable economic, social and cultural needs (Godfrey *et al.*, 2015). The municipalities' strategic plan was to incorporate waste pickers into the formal sector through the creation of co-operatives. However, despite their vision of successful co-operatives, waste pickers did not have the support to capitalise on this opportunity where they could collectively purchase machinery (balers and compactors) to improve their recycling operations (Godfrey *et al.*, 2015). Amongst the reasons for the failure of co-operatives were the lack of structure, access to recyclables and markets (Godfrey *et al.*, 2016), lack of relevant training and the discipline needed by waste pickers to collectively undertake decision making (Godfrey *et al.*, 2015). To escalate the problem further, Dlamini (2017) states that a lack of co-operation exists between municipality delegates and waste pickers, as no official procedures were constructed on how to amalgamate waste pickers into the formal government structure (Schenck *et al.*, 2018. Godfrey *et al.* (2016) report that waste pickers remain a vital entity in the recycling economy and should be integrated into the value chain either as SMEs or as part of co-operatives, or should form part of private sector employment models. The problem with this strategy is that waste pickers cannot be forced to comply. Despite efforts by municipalities to offer training and other business support functions to co-operatives of waste pickers (Godfrey *et al.*, 2016), the cohort were reluctant to be formalised or create formal structures with any other group, instead preferring to work individually without stringent rules (Godfrey *et al.*, 2015). Robeyns (2016) clearly states that the capability approach (CA) can be measured through the wellbeing of a

person, known as functioning, or through the freedom of making a choice, herewith referred to as capability.

The research will focus on the needs identified needs by waste pickers that will encourage them to partake in a training and mentoring programme to facilitate them in becoming more sustainable and entrepreneurial. This approach is further supported by Hartmann (2018) who emphatically states that intervention programmes are required to help waste pickers obtain a sustainable and healthy livelihood. Waste pickers require mentoring and more handheld training programmes to become entrepreneurial (Godfrey *et al.*, 2017) and need to be included in the EPR programmes to fuse the formal and informal sectors (Godfrey, *et al.,* 2016). Before waste pickers can operate as co-operatives, their capabilities and skills need to be explored. Most waste pickers lack identity documents (Dlamini, 2017), which are required to open a bank account, which could provide access to credit to purchase equipment that would ease their recycling tasks (Marello, 2013). These individuals operate in vulnerable surroundings where injuries can easily occur as they disregard any health and safety regulations (Wilson, Velis & Cheeseman, 2006). Itinerant and landfill waste pickers expose themselves to various dangers during the operation process of salvaging recyclable items to sell as a means of survival (Ojeda-Benitez, Armijo-de-Vega & Ramirez-Barreto, 2002). This situation is largely attributed to a lack of education and skills which, if improved, could provide access to more sophisticated technology (Marello, 2013). To add further to the dilemma, Gunsilius *et al.* (2011) suggest that to uncover the full potential of the informal waste sector, it needs to be recognised, integrated and supported to develop more efficient processes. Waste pickers' integration is dependent on an intervention process that addresses their social, economic, cultural, legal and political stances, as these affect the work carried out by waste pickers (Samson, 2020). Through formalisation and the creation of co-operatives, waste pickers would be better equipped to have improved sustainable livelihoods, social acceptance and access to basic human necessities, and as Mvuyane (2018) recommends, the formulation of waste pickers would lead to less exploitation by society. The formalisation of co-operatives cannot adopt a universal standard approach but should be developed to address the needs of waste pickers in

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the different municipalities (Marello, 2013). It is further stated that waste co-operatives can only be reinforced if they receive proper training that relate to management and business skills that place emphasis on core values and principles relevant to co-operatives. A study conducted in seven African countries in the informal sector provides evidence that informal apprenticeships and vocational training are mostly used as training modalities. However, on the job training and self-training are more likely to occur in the informal sector, with on-the-job training more favoured in the manufacturing and farming sector (De Silva, 2015). Informal mentoring has proved to be more effective than formal programmes as an interpersonal relationship is developed (Singh, Bains & Vinnicombe, 2002).

Training and skills development that is mentored by members of the informal sector has proved to be more effective, as members who share similar experiences and knowledge acquisition are more likely to create enterprises (Walther & Filipiak, 2007). Gunsilius, Spies and García-Cortés (2011) posit that training waste pickers would most probably lead to increased income, but it should be tailored to cater for their educational level. Training those in the informal sector should include entrepreneurial training, literacy training and even on-the-job training for those already in the informal sector (De Silva, 2015). It is crucial to continuously support waste pickers when they become ready to form co-operatives, as their functionality should be in unison to operate as a viable business. It is important for waste pickers to realise that their income is dependent on the success of their business, and it is similarly important to other stakeholders to witness the integration of these co-operatives into the main waste management stream (Chengappa, 2013).

1.3. Purpose of the Study

The primary purpose of this research is to facilitate a process with waste pickers to develop their capabilities and improve their skills through mentorship with the possibility to ameliorate their livelihoods.

The aim of this research is to assist, in a participative manner, to develop waste pickers to improve their sustainable livelihoods and to assist them in becoming more receptive to our current economic ideologies by incorporating them into the formal economy.

Nussbaum (2011) emphasises that the capabilities approach holds a pertinent question when evaluating or assessing societies, namely "What is each person able to do and be?" (Nussbaum, 2011:18). In other words, it is not what the majority of waste pickers desire, but rather what opportunities are available for each person to freely choose if they want to pursue new prospects. Not all waste pickers would freely participate in training and mentoring programmes to improve their income, as some might not be ready for such a step. The decision should be voluntary and not forced.

Medina (2008) accentuates that if waste pickers are organised, this would enable them to strengthen their bargaining power with government and other stakeholders. They would be able to become agents in the development process and surmount poverty through basic developmental programmes. To develop waste pickers to become amenable to entrepreneurial thinking and practices, the researcher embarked on a bottom-up approach by working closely as a developmental mentor with the waste pickers to allow them to collaboratively identify relevant skills and mentoring requirements. By addressing the needs of the waste pickers through mentorship, the aim is to encourage them to voluntarily partake in informal training and skills development programmes that they find beneficial to their livelihoods.

1.4. Importance of the Study

The importance of this research is to provide the relevant guidance, through mentoring and training, to waste pickers who are interested in developing themselves, in order to enable them to acquire news skills that would facilitate a more sustainable income. Through developmental mentorship, this research aims to uncover what intervention activities work to encourage and enable waste pickers to voluntarily partake in the training and skills development programmes to become entrepreneurial. The research further aims to improve their working relationship with municipalities and other stakeholders. Mothiba (2016) comments that waste pickers are constantly harassed and are susceptible to unfair business practises by traders as they lack legal protection.

The research seeks to create awareness and implementation of health and safety issues that are neglected amongst waste pickers, while addressing concerns of previous research which suggest that training waste pickers to become entrepreneurs would effectively increase their ability to add value to the recycling sector (Wilson *et. al.*, 2006). In addition, the research approaches training from a bottom-up approach and not from a top-down approach. The top-down approach caused the downfall of co-operatives as training was not aligned to the perceptive needs of waste pickers (Godfrey *et al.*, 2015). The research applies strategies that enable more effective training to empower waste pickers (Dlamini, 2017). Issues relating to the capability development of waste pickers were identified, along with the best ways for them to use these capabilities to achieve the desired level of functioning.

Through the social and economic development of waste pickers, this research, due to its participatory nature, hopes to achieve a symbiotic relationship between waste pickers, municipalities and other stakeholders that would treat waste pickers as valuable contributors to the waste recycling sector.

In September 2015, the United Nations General Assembly came to consensus and approved the document titled "2030 Agenda for Sustainable Development". This document consists of 17 sustainable development goals (SDGs) which includes the eradication of poverty, improved health conditions and fighting inequalities (Filho, 2019). Although this study does not directly focus on the sustainable development goals (SDGs) it does provide evidence that address some of the Five Ps which form part of the SDGs The Five Ps consist of people, planet, prosperity, peace and partnership (STATS SA, 2019). The research demonstrates through the Sustainable Livelihood Framework and capability approach how the waste pickers and their waste picking activities contribute to the Five Ps of the SDGs.

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1.5. Research Questions

The following primary research question is constructed based on the aim of the study: What informal training and mentoring programme can be developed that will enhance the capabilities of waste pickers to improve their sustainability and entrepreneurial development?

To substantiate this pertinent question, the following secondary questions need to be answered:

- What are the current skills and capabilities that the waste pickers possess?
- How are the waste pickers' livelihoods affected by the internal and external elements?
- How do the waste pickers socially interact with other waste pickers, family and other stakeholders?
- How do current structures and policies, advocated by government and other stakeholders, impact on the waste pickers' livelihoods?
- How can developmental mentorship help the waste pickers to improve their current entrepreneurial capabilities to convert these into achieved functioning?

1.6. Research Objectives

The objectives of the research are to develop an understanding of the needs of waste pickers. Based on the primary research question, the primary objective is as follows:

This primary objective of this study is to enhance the livelihoods and entrepreneurial capabilities of waste pickers through developmental mentoring that could assist in establishing an informal training programme.

To achieve this objective, the following secondary objectives were constructed:

- To develop a knowledge base of the waste pickers and identify their current skills and capabilities to understand their current living conditions.
- To understand the current working conditions of the waste pickers by identifying the internal and external elements that affects waste pickers' livelihoods.

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- To explore the social relationships of the waste pickers by observing their interaction with other waste pickers, family and different stakeholders.
- To assess how structures and processes that the waste pickers must adhere to, as prescribed by government and other concerned parties, affect their livelihoods.
- To explore, through developmental mentorship, the waste pickers' entrepreneurial capabilities and how to convert these into achieved functioning.

The research employs the Sustainable Livelihood Framework and integrates the capability approach in terms of livelihood assets, a component of the sustainable livelihood framework, in determining the capabilities of waste pickers. This approach forms part of the conceptual framework that aims to address the research question. The research undertakes a participatory action research method as a qualitative research approach. The research iterates that waste pickers should have a choice in whether or not to become part of a co-operative. Godfrey *et al.* (2015) state that a large contributing factor to the failure of co-operatives was that it was a top-down approach where government's agenda were forced upon individuals who had no inclination of how to run a business.

1.7. Overview of the Research Design
This section provides an overview of the research methodology and the area where the research will be undertaken, and explores the participants in this study.

1.7.1. Overview of the research methodology
A qualitative research approach was applied with participatory action research (PAR) as the research philosophy and methodology. PAR was undertaken to engage with waste pickers by understanding their social, environmental, economic and health conditions. PAR provides a platform for knowledge development through reflective thoughts and action (Baldwin, 2012) to find solutions that would positively impact the lives of waste pickers. PAR is considered as a qualitative research methodology that integrates techniques of observation and the interpretation of human phenomena (MacDonald, 2012). However, it can be challenging as the researcher can easily be

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influenced by his/her own social, educational and cultural background while conducting PAR (Zhu, 2019). The core purpose of using this research methodology is to epistemologically understand the waste pickers and be able to interpret their lives. The researcher used a transformative paradigm and, through the application of PAR, was able to provide feedback based on the suggestions of the waste pickers that enabled them to become more aware of their current situation and how to best improve it. This methodology allowed for constant evaluation of the actions undertaken after the waste pickers had identified the problems they encountered. This research method also permitted continuous dialogue between the researcher and the waste pickers, resulting a better rapport. The PAR method considers participants not as objects but rather as subjects, resulting in the collection of relevant and contextual data.

1.7.2. Area where the research was undertaken

The research was conducted in the Drakenstein local municipality, which is one of the municipalities in the Cape Winelands district municipality within the Western Cape Province of South Africa. It is the second largest municipality after Cape Town in the Western Cape. The municipality lies adjacent to the Witzenberg and Breede Valley municipalities, which are situated to the east, with the Swartland municipality to the west. The Stellenbosch municipality and City of Cape Town are to the south with the Bergrivier municipality to the north (Drakenstein Municipality, 2010).

Figure 1: Map illustrating the area of interest to the research

Source: Google Maps

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http://etd.uwc.ac.za/
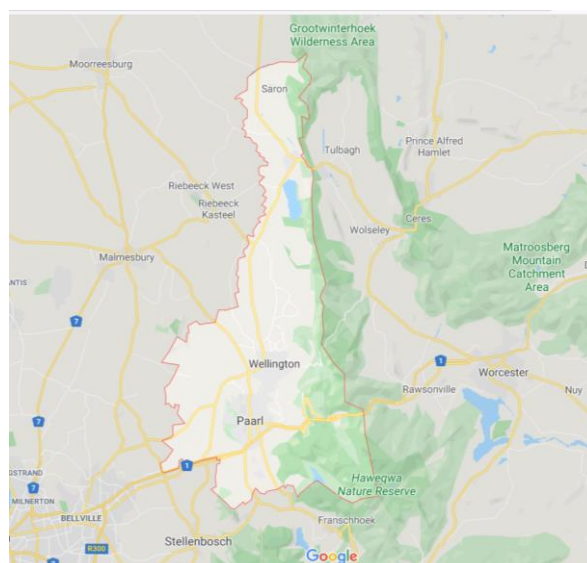
The Drakenstein municipality consists mostly of coloured people (64%), followed by black (21%) and white (12%) people, with a slight insignificant difference between males and females.

A contributing factor as to why the research took place in the Drakenstein municipality is that the municipal manager has permitted groups of waste pickers to work at the materials recovery facility (MRF) in Paarl and at a demarcated area at the Wellington landfill. This situation made it ideal to conduct research with these waste pickers, as they would diligently collect recyclable items daily and sell it to either of the two buy-back centres that operate within the area. Additionally, the Drakenstein municipality is one of the selected local municipalities for the Clean City/Town project funded by the Department of Science and Innovation (DSI)/Council for Scientific and Industrial Research (CSIR).

1.8. Structure of the Thesis

Chapter one provides background information to the research study; it defines the research problem and discusses the importance of this research. The chapter accentuates the research questions that guide the research study. The chapter also briefly discusses the application of the research methodology and addresses the aims and objectives of the research. Background information on the waste pickers and their contribution to the waste recycling economy are highlighted, and the sample of waste pickers from the Drakenstein municipality are introduced.

Chapter two consists of relevant literature on waste pickers and their role in the waste management system, and seeks to address the research questions.

Chapter three provides the conceptual framework that supports this research. The chapter encompasses the Sustainable Livelihood Framework and identifies relevant skills development that will drive waste pickers to improve their current conditions and economic stance. The chapter also incorporates the capability approach to the Sustainable Livelihood Framework, which is overarched by developmental mentorship.

Chapter four discusses the transformative paradigm as the research philosophy in conjunction with participatory action research as the research method. Due to the nature of the research method, the researcher opted to employ a non-probability sampling technique to collect data from two cohorts of waste pickers.

Chapter five applies the Sustainable Livelihood Framework as an analytical tool to present and discuss the findings of the research. This is done in collaboration with developmental mentorship and the capabilities approach to understand the current capabilities in order to develop it into achieved functioning.

Chapter six explore the entrepreneurial capabilities of the waste pickers and how developmental mentorship aided them in cultivating their functioning. The chapter discusses the role of the municipality as a capability input for the waste pickers and highlights some issues raised by them.

Chapter seven provides concluding remarks and a summary of the thesis. The chapter offers recommendations that could be explored to help waste pickers improve their current situation, and serves as a stepping stone for further research. Finally, the limitations of the research are identified and the chapter concludes with final comments.

It is now the appropriate moment to explore the assumptions of other researchers regarding waste pickers, their lives, environment and other precarious factors that affect their livelihood and ability to function coherently with the rest of the world.

Chapter 2: Literature Review

Waste, waste and more waste... As we consume products, we discard what we consider as inessential items, be it a furniture item or a plastic bottle. How many of us have ever wondered what happens to these items, which are mostly discarded unwittingly? This chapter aims to provide some insight into the lives and the environment of people who collect and filter through our discarded waste to sell as a means of survival.

The first part of this literature review provides a theoretical identification of the individuals who collect waste items to sell. Melanie Samson, a member of Women in Informal Employment: Globalizing and Organizing (WIEGO), identifies these individuals as reclaimers (Samson, 2019). Professor Catherina Schenck, the SARChI Chair in Waste and Society at the University of Western Cape, acknowledges these individuals as waste pickers (Schenck, Blaauw & Viljoen, 2016). She further delineates those who collect waste from garbage bins along street curbs, as street waste pickers and those individuals who collect waste on or near landfills, as landfill waste pickers. The researcher supports the definition proposed by Schenck, and therefore throughout this chapter and report, refers to these precarious individuals as waste pickers.

The next part provides the reader with an understanding of the environment and sector in which the waste pickers operate, as well as the challenges that they encounter and how stakeholders related to the waste sector are striving to integrate these hard-working individuals into some type of formal co-operatives. This approach provides the cornerstone for the implementation of training systems. Before any training programme can be instituted, various factors need to be considered. Smith and Perks (2006) state that some individuals lack education while others have a shortage of skills. Samson (2019) reports that many waste pickers (reclaimers) have criticised the training offered as well as the equipment provided. She further state that the waste pickers have commented on the failure to produce push trolleys that accommodate their needs.

It is therefore of paramount importance to explore the significance of mentorship as a developmental tool to guide waste pickers. Mentoring is the process whereby the mentor disseminates knowledge to the mentee who then applies it to improve his/her skills (Hollywood, Blaess & Santin, 2016). This research supports the definition that mentorship is a relationship that could be casual or professional, where an individual who has attained certain skills sets and knowledge (known as the mentor) disseminates that knowledge and skills sets to someone who is willing to learn and develop accordingly (known as the mentee). The relationship is based on honesty, integrity and trustworthiness, lasting for an undefined period. The ultimate objective is to ensure that both parties have benefited from this relationship.

The final part of this chapter briefly discusses the various components of the Sustainable Livelihood Framework as a means to help assess the environment and capabilities of waste pickers, as well as stakeholder engagements.

2.1. Introduction

"The occupation of waste picker has taken on new importance as a livelihood, especially since the last global economic downturn. Increasingly, waste pickers are being recognized for their valuable contributions to urban sustainability and development.

— *Sonia Maria Dias*

Millions of waste pickers globally grasp the opportunity to daily collect valorised waste in hopes of earning an income (Gutberlet, 2019). They have been instrumental in improving the environment and the economy. They have contributed to local governments, local communities and to the recycling economy but in many cases have not been formally recognised. They operate in the informal sector under precarious conditions with little support from local municipalities (Dias & Samson, 2016). Waste pickers are mostly involved in the collection and sorting of municipal solid waste. They execute these tasks in an unregulated manner that is often undertaken by individuals or family groups (Ramos *et al.*, 2013).

Solid municipal waste is an international problem, and the management of waste create even bigger problems for governments globally. Waste management entails the

collection, storage, separation and treatment of solid waste with little to no recyclable strategies included. The recycling of waste matter is mostly done by private agencies, with the informal waste sector being a major contributor (Marello, 2013). Waste pickers globally complement the recycling process of waste and in doing so, create a sustainable livelihood whilst making a positive contribution to the environment (Marello, 2013).

The aim of this chapter is to create a knowledge base of waste pickers and identify the different types of activities they undertake to earn an income. The chapter investigates the challenges they face and what options are available to assist them to overcome obstacles that they currently experience. As waste pickers operate informally due to lack of educational qualifications and skills to be employed in the formal sector (Schenck *et al.*, 2018), this chapter provides a synopsis of the informal sector. This chapter explores the ontological nature of the informal and formal waste management systems. The chapter also provides insight into training and skills programmes while exploring the importance of mentorship as part of a developmental process that could facilitate waste pickers to become more sustainable. Before providing concluding remarks, the chapter reviews the Sustainable Livelihood Framework as an introduction to the next chapter, the theoretical discourse.

2.2. The Waste Picker

Waste picking is an activity of survival for many who are unemployed and who live in poor communities where they are prone to diseases (Pandey, 2004). Most suburban areas have experienced the sound of individuals pushing their carts and scratching in their bins in search of items of value. Similarly, poor people of all races, ages, genders and nationalities forage on landfills seeking recyclable items, discarded food or valuable items that would provide some sustenance and economic relief (Marello, 2013; Mumuni, 2016; Mvuyane, 2018; Schenck & Blaauw, 2011). These people are "branded" as scavengers, reclaimers, street waste pickers and landfill waste pickers (Samson, 2019; Schenck & Blaauw, 2011; Pandey, 2004).

2.2.1. Defining waste pickers and waste picking

At the first world conference of waste pickers held in Bogota, Colombia in 2008, one of the discussions centred around what to call people who collect waste. After much deliberation it was decided that those involved in the collection, sorting and selling of valorised waste to earn an income would be referred to as waste pickers in English; *cartonero, clasificador, minador* or *reciclador* in Spanish; and *catador de materiais recicláveis* in Portuguese (Samson, 2009). In Brazil, individuals who sift through waste and who, with the help of local community workers, transform the waste into furniture, jewellery or work of art, are referred to as *catadores* (Pow, 2013). Marello (2013) defines poor people who forage through trash in search of items to sell for a living as waste pickers. Waste pickers, otherwise known in other economically developed countries as scavengers, usually live near landfills in shacks constructed from reused construction materials (Wilson *et al*., 2006). According to Medina (2005) the English term for those who collect waste is waste pickers or "rag pickers". In other parts of the world, these people are named according to the type of waste they collect or the area in which they collect it. In Mexico, cardboard collectors are known as "cartoneros", while "traperos" are rag collectors, dumpsite waste pickers are called "pepenadores", and "buscabotes" refer to the collectors of aluminium cans. In Colombia, the common term used is "basuriegos", while glass bottle collectors are called "frasqueros" and scrap metal collectors are referred to as "chatarreros".

In South Africa, the literature identifies two types of waste pickers: Firstly, those who scavenge through garbage in the rubbish bins, visible to residents, working the streets to collect recyclable waste from households and businesses are known as street waste pickers or street reclaimers. The second group are poor individuals who earn a living collecting recyclable waste from landfills, who hardly interact with the suburban person, and are referred to as landfill waste pickers or landfill reclaimers (Samson, 2019; Schenck & Blaauw, 2011). Figure 2 illustrates street waste pickers who use improvised trolleys to cart their valuable collections of waste.

Figure 2: Street waste pickers with modified trolleys

Source: Schenck & Blaauw (2011)

Figure 3 depicts s makeshift shelter constructed by waste pickers on a landfill. In many cases, these individuals are exposed to harmful environmental conditions, with no proper sanitation (Schenck & Blaauw, 2011).

Figure 3: Landfill waste pickers' temporary structure to protect themselves from the sun

Source: Schenck *et al.* (2018)

Despite their ingratiated efforts within communities where they seek valorised waste from garbage bins, waste pickers in many cases are frowned upon. Their existence and activities, despite the stigmatisation associated with waste picking, are symbolic

to pursuing an honest living (Samson, 2009). The term waste picker is the most generic term used and will therefore be applicable in this research study.

2.2.1.1. Brief demographic overview of waste pickers

It is not possible to count the exact number of individuals operating globally in the informal sector, more specifically those involved in waste-picking activities. It is estimated that approximately 2% of the global urban population earn an informal living from informal waste picking (Dias & Samson, 2016). In Latin America there are an estimated 3.8 million individuals involved in informal waste-picking activities (Sing, 2018). The International Labor Organization (ILO, 2019) estimates that there are 800 000 Brazilians working as waste pickers. In South Africa, 0.6% of the urban population are involved in informal waste-picking activities, which could amount to approximately 215 000 informal waste pickers (Godfrey *et al.*, 2017) seeking an income in a country where the unemployment rate is 36.3% (Stats SA, 2021). As mentioned previously, waste picking is performed by poor people with no or little formal work experience, who collect recyclable goods and sell them to intermediaries in order to secure some economic relief (Ramos *et al.*, 2013).

It may appear that waste picking is gender neutral, but the gender of waste pickers may vary in different countries and areas. In Kampala, Uganda 60% of waste pickers are female and 40% male. In Bogotá, Colombia, 55.5% of waste pickers are male (Kariuki, Bates & Magana, 2019). Schenck *et al.* (2016) report that in South Africa, there are more male than female waste pickers active on the landfills. This is further supported by Viljoen (2014) who reports that in Cape Town, as illustrated in Table 1, there are just over 90% male compared to just under 10% female street waste pickers. In Kimberley there are 100% male street waste pickers. Her report further reveals that in South Africa there are about 91% male street waste pickers compared to almost 9% female street waste pickers.

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Table 1: Gender breakdown of street waste pickers in South Africa

Area	Male		Female		Total	
	f	%	*f*	%	*f*	%
Bloemfontein	48	82.8	10	17.2	58	100
Cape Town	139	90.3	15	9.7	154	100
Durban	58	71.6	23	28.4	81	100
East London	33	91.7	3	8.3	36	100
Johannesburg	276	94.8	15	5.2	291	100
Kimberley	15	100	0	0	15	100
Mafikeng	6	85.7	1	14.3	7	100
Nelspruit	1	50	1	50	2	100
Pietermaritzburg	2	40	3	60	5	100
Polokwane	10	90.9	1	9.1	11	100
Port Elizabeth	18	85.7	3	14.3	21	100
Pretoria	221	97.4	6	2.6	227	100
Upington	6	100	0	0	6	100
South Africa	833	91.1	81	8.9	914	100

Source: Viljoen (2014)

In Lahore, Pakistan, the majority of waste pickers are female whereas in some African countries such as Ghana, Nigeria and Congo most waste-picking activities are carried out by males (Kariuki *et al.*, 2019). Medina (2005) reports that in most Third World countries, waste picking is undertaken by women, children and physically challenged individuals. In Indonesia it has been reported that children as young as 15 years are engaged in waste-picking activities, with many children assisting their parents during school vacations (Kariuki *et al.*, 2019).

Since waste picking requires no formal academic education, it is evident that the majority of waste pickers have a low level of education. In India and Pakistan, most waste pickers are illiterate, whereas in Kinshasa (36%), Kampala (40%) and Tafila (21%) illiteracy levels are lower. Kariuki *et al.* (2019) report that in Kenya, most waste pickers have at least a primary school education. Similarly, in South Africa, the majority of these individuals have completed primary school (Schenck *et al.*, 2016). They further emphasise that financial literacy and skills development will not necessarily improve the waste pickers' current income, but such training could help them manage their small entrepreneurial businesses.

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Table 2: Age of street waste pickers in South Africa

Areas	Age groups						Total
	14-24	25-34	35-44	45-54	55-64	65+	
	%	%	%	%	%	%	
Bloemfontein (57)	19	23	16	19	16	7	100
Cape Town (153)	8	22	27	25	14	3	100
Durban (78)	28	28	19	18	5	1	100
East London (36)	11	14	25	36	14	0	100
Johannesburg (289)	14	39	24	12	11	0	100
Kimberley (15)	27	20	27	27	0	0	100
Mafikeng (7)	0	0	29	43	29	0	100
Nelspruit (2)	0	50	0	50	0	0	100
Pietermaritzburg (5)	20	20	40	20	0	0	100
Polokwane (11)	0	45	36	0	9	9	100
Port Elizabeth (21)	5	14	48	24	10	0	100
Pretoria (226)	13	25	25	21	13	3	100
Upington (5)	40	0	20	20	0	20	100

Source: Viljoen (2014)

Based on the above table, the vast majority of street wasted pickers in South Africa are between the ages of 25 to 54 years, with Nelspruit having the highest number of street waste pickers aged 45 to 54 years.

2.2.2. Waste pickers' contribution to recycling

Waste pickers may operate in the informal sector but they are contributors to the economy. They sell their valorised waste to formal buy-back centres, which in turn sell it to the producers of recycled materials for a profit (Dias, 2016). This makes waste pickers valuable to the economic system as they offer a unique kind of labour. They are the mechanism that transforms environmental and social value into industrial value (Güğüş, 2019). Godfrey *et al.* (2016) discuss the waste pickers' integral role as a linkage from the waste service chain to the waste value chain with minimal cost, as they contribute valuably to the recycling process. Based on the diagram below (Figure 4), this places waste pickers at an integral part of the waste value chain, and they have the support of those responsible for the implementation of Extended Producer Responsibility (EPR).

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Figure 4: Role of waste pickers in the waste value chain
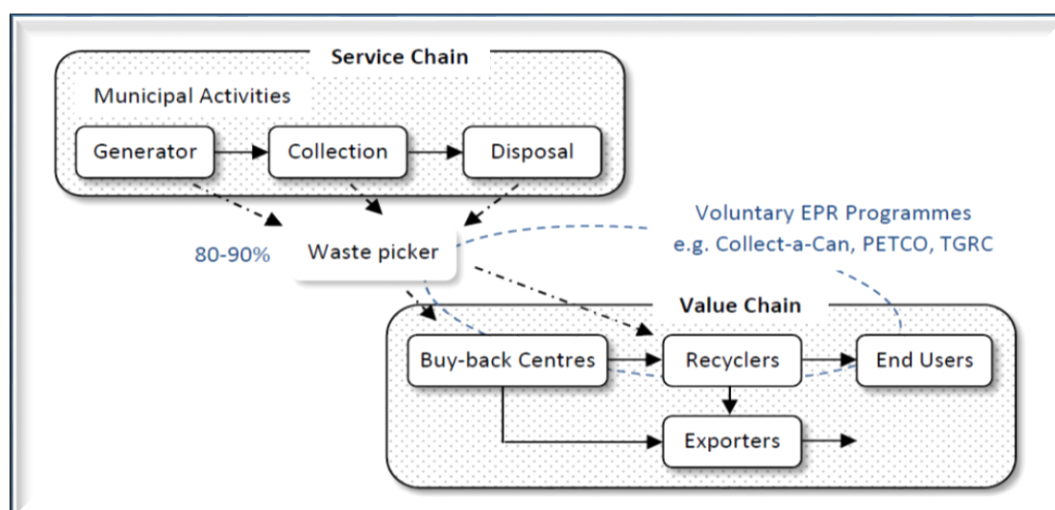
Source: Godfrey *et al. (*2016)

It is estimated that the informal waste sector provides subsistence to more than 15 million individuals globally with limited technology. They are engaged in the recycling process of waste ranging from food to heavy metal and as such can play a pivotal role in the formal recycling sector with the proper support (Yang *et al.,* 2018). In several countries, no formal waste collection activities are prevalent except for waste pickers who collect solid municipal waste, which benefits the environment, municipal costs and public health (Dias & Samson, 2016). Informal recycling systems are localised by waste pickers who salvage material to sell for an income (Samson, 2015). Undoubtedly, waste pickers contribute to society by removing garbage they perceive as valuable, but which society deems as rubbish (Shogole, 2019). The recycling of inorganic waste by waste pickers help saves energy. Recycled aluminium requires only 3% to 5% of the energy from bauxite to produce aluminium. Recycled aluminium is collected by waste pickers (Medina, 2008). In low- to middle-income countries, waste-picking activities constitute the only process of recycling (Dias & Samson, 2016; Sing, 2018). In many areas where municipal waste services are not active, waste pickers provide the only service in terms of the collection of solid waste from households. Medina (2008) further accentuates that in Jakarta, waste pickers have reduced the volume of waste by 30%, thereby contributing to reduced operational expenses by municipalities. Waste pickers have contributed positively to the ecosystem of the country. Dias (2016) reports that waste pickers contribute to pollution

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reduction, municipal cleanliness and the prevention of the transmission of diseases. Waste pickers in Bogotá claim to be "the lungs of the earth" due to their meritorious contribution to the ecosystem.

It should be noted that it can be extremely arduous to estimate the amount of waste collected for recycling purposes by informal waste pickers (Seow, 2005). Nonetheless, the literature provides the following quantified information on the contributions of waste pickers in certain countries.

Table 3: Waste recycled by waste pickers

Country	Contribution to recycling	Researcher	Year
Mexico	10% of municipal waste	(Seow, 2005)	2005
Brazil	80% cardboard	(Dias, 2016)	2008
India (Bangalore)	15% of municipal waste	(Seow, 2005)	2005
Brazil	92% aluminium	(Dias, 2016)	2008
China (Shanghai)	17 – 38% of municipal waste	(Yang et al., 2018)	2018
Pakistan (Karachi)	10% of waste	(Seow, 2005)	2005
Egypt (Cairo)	66% of all waste	(Dias, 2016)	2016
Indonesia (Jakarta)	30% of municipal waste	(Medina, 2008)	2008
Tunisia	63% of PET plastic	(Dias, 2016)	2016

Sources: DEA (2012), Dias (2016), Medina (2008), Seow (2005) and Yang *et al.* (2018)

In Table 4, Linzner and Lange (2013) provide additional information on waste recycled by the informal and formal sectors. From the table, Karachi in Pakistan recycles the most waste (45%), while Belo, a city in Brazil, only recycles 1% of its waste.

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Table 4: Waste recycled by informal and formal waste pickers

City (Country)	Mass percentage of waste recycled by informal sector: % of total waste generated	Mass percentage of waste recycled by formal sector: % of total waste generated	Source
Wuhan (CN)	21	0	Wilson *et al.* (2009)
Delhi (IN)	17–27	7	Agarwal *et al.* (2005); Scheinberg (2011)
Bangalore (IN)	13	1	Scheinberg (2011)
Dhaka (BD)	18	0	Scheinberg (2011)
Bandung (ID)	13	na	Sembiring and Nitivattananon (2010)
Manila (PH)	6	0	Wilson *et al.* (2009)
Quezon City (PH)	31	8	Scheinberg (2011)
Ormoc (PH)	22	na	Hetz *et al.* (2011)
Phnom Penh (KH)	9	na	Sengh *et al.* (2011)
Karachi (PK)	45	0	Wilson *et al.* (2009)
Ghorahi (NP)	9	2	Scheinberg (2011)
Lusaka (ZM)	2	4	Scheinberg (2011)
Moshi (TZ)	18	0	Scheinberg (2011)
Belo Horizonte (BR)	1	10	Scheinberg (2011)
Cañete (PE)	11	1	Scheinberg (2011)
Varna (BG)	2	26	Scheinberg (2011)

Table 5. Mass percentage of waste recycled by formal and informal sector

Source: Linzner & Lange (2013)

Although waste pickers earn an income from their collected recyclable items, they also contribute to industry competitiveness as well as the economy. Waste retrieval is generally less costly than virgin material and uses less energy than virgin material, thus lowering operational expenses in the industry (Medina, 2008).

In South Africa, informal waste pickers operate at the periphery of the formal waste management structure. There are estimated to be between 18 000 and 100 000 waste pickers in South Africa, with more than 15 million waste pickers globally (Dlamini, 2017). Waste-picking activities play a crucial role in diverting waste from ending up at landfills (GreenCape, 2020). Waste pickers are visible at landfill sites foraging for valuable waste to sell to buy-back centres in order to make a living (Dias & Samson, 2016; Mamphitha, 2012; Mvuyane, 2018; Schenck & Blaauw, 2011; Schenck *et al.*, 2018) and thus reducing the amount of waste ending up at landfills. As depicted in Table 5, Godfrey (2021) reports that informal waste pickers contribute 51% to the recycling process.

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Table 5: Estimated payment to informal waste pickers in South Africa from BBCs

Recyclable waste type	Apparent South African consumption (ASAC) (t)	Total collected†		Range in prices paid to informal reclaimers at buy-back centres (ZAR/t)	Estimate of waste quantities collected by informal reclaimers		Estimate of total money paid by business (via buy-back centres) to informal waste reclaimers		
		Tonnes (t)	% ASAC		% Collected informally	Tonnes collected informally	Minimum (ZAR)	Maximum (ZAR)	Average (ZAR)
Plastic	867 800	395 077	45.5			284 496	144 116 771	742 841 126	379 118 608
PE-LD/LLD		129 088		460–2000	68%	87 780	40 378 695	175 559 541	88 782 968
PE-HD		77 747		450–2880	68%	52 868	23 790 693	152 260 434	57 626 345
PP		58 112		600–3130	68%	39 516	23 709 679	123 685 491	41 887 099
PET		93 200		580–3570	85%	79 220	45 947 600	282 815 400	166 927 857
PS		6 609		–	68%	4 494	–	–	–
PVC		21 905		350–3880	68%	14 896	5 213 445	57 794 759	19 087 592
Other		8 415		680–1360	68%	5 722	3 891 176	7 782 352	4 806 747
Paper	2 255 075	1 282 120	56.9			496 391	119 257 365	542 482 585	295 141 611
Newspapers		146 509		100–640	50%	73 255	7 325 450	46 882 880	25 220 478
Magazines		30 955		300–930	50%	15 478	4 643 250	14 394 075	7 075 429
Corrugated		850 992		200–890	33%	280 827	56 165 472	249 936 350	150 844 411
Office, graphic papers		139 421		450–1900	50%	69 711	31 369 725	132 449 950	79 768 729
Mixed and other		114 242		100–1730	50%	57 121	5 712 100	98 819 330	32 232 564
Metal	183 252	138 939	75.8			55 576	78 188 804	242 708 740	143 372 195
Steel/tinplate	133 896	98 773		390–830	40%	39 509	15 408 588	32 792 636	19 867 483
Aluminium	49 356	40 166		3760–14 000	40%	16 066	60 409 664	224 929 600	123 504 712
Glass	758 817	330 700	43.6	100–350	80%	264 560	26 456 000	92 596 000	54 045 829
Total	4 064 944	2 146 836	52.8	–	51%	1 101 023	423 137 396	1 537 636 907	871 678 242

PE, polyethylene; LD/LLD, low density/linear low density; HD, high density; PP, polypropylene; PET, polyethylene terephthalate; PS, polystyrene; PVC, polyvinyl chloride
†The tonnages collected and the collection as a percentage of consumption, as reported here, are lower than the official published figures, due to the focus here on what waste is likely to be collected by the informal sector (e.g. excludes imports where available).

Source: Godfrey (2021)

It is estimated that 42% of urban residents in Johannesburg are actively participating in informal waste collection activities. They have become part of the city's landscape, pushing their trolleys filled with cardboard, scrap metal, glass and other valuable recyclable items to sell (Mvuyane, 2018). In 2017, South Africa generated about 38 million tons of hazardous waste in terms of mineral waste, fly ash, dust and bottom ash, mainly from coal-fired power stations, of which only 7% was recycled or reused. The remainder of this waste was either treated or sent to landfills (DEA, 2018).

Waste collection activities offered by these individuals provide evidence of their contribution to the solid waste management system (Dias & Samson, 2016). It should be noted that South Africa has about 204 active plastic recyclers that support 6140 staff members, as well as 51 500 waste pickers and collectors (GreenCape, 2018).

Many municipalities have realised waste pickers' contribution to the recycling sector (Seow, 2005) and have altered their policies to accommodate them. In South Africa, although the Johannesburg Pickitup waste management utility has set the pace for many other municipalities to integrate waste pickers through a developmental programme, it has resulted in new challenges for the waste pickers (Samson, 2019). Waste pickers are not in favour of the integration plans as ascribed by government and industry, causing these projects to fail and creating an outcome contrary to that which the projects intended (Samson, 2020). The author further postulate that if waste pickers were to play a participatory role in the integration process, it would be successful.

Mamphitha (2012) reports that waste pickers are the cornerstone of most recycling activities. Municipalities and other stakeholders should assist waste pickers to continue their activities by providing safety wear and other support (Dias, 2016; Yang *et al.*, 2018; Yu *et al.*, 2020).

There are other factors apart from the waste pickers' contribution to the waste recycling sector. Waste pickers also receive an income from the valorised waste, and they find food, clothing and even furniture that they personally use and consume (Shogole, 2019). However, they are constantly faced with many challenges such as health and safety risks, as well as exploitation (Mamphitha, 2012; Mvuyane, 2018). The literature will further explore the challenges faced by waste pickers.

2.2.3. Challenges encountered by waste pickers

Due to the types of activities that waste pickers undertake, they are exposed to various forms of vulnerability and dangers. They are perceived as sordid, disease-carrying

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criminals who signify backwardness (Medina, 2005) and to most of the public they are considered an annoyance and a hindrance.

Waste pickers transport their valuable items either by hand or by trolley to sell to buy-back centres (Dias, 2016; Ralfe, 2007; Schenck *et al.*, 2018). Consistently, recycling activities are undertaken by low-income individuals (waste pickers) who collect, sort, transport and commercialise recyclable waste to earn an income. In most low- to middle-income countries, waste picking is the only recycling activity, but recently, with the increase in formal recycling organisations, waste pickers find it challenging to continue to provide a sustainable income for themselves (Sing, 2018). These people have decided to earn an income by exposing themselves to hazardous and unhealthy conditions to sell to the middleman who exploit this cohort for higher profits (Medina, 2008). Some of them are constantly harassed and even put up a fight to gain access to garbage dumps despite the weak waste management systems whose focus lies in the collection and disposal of waste (Samson, 2015). Despite trying to make an honest living, they are discriminated against by the community and local authorities because of their work activities (Schenck & Blaauw, 2011). They are also exposed to health risks and lack of social services, and have no economic security (Sanchez & Maldonado, 2006). Dias and Samson (2016) assert that waste pickers are exploited by the agents of recyclers that form part of the waste recycling supply chain. Waste pickers form part of the informal sector and are self-employed with very little use of technology (Güğüş, 2019; Schenck & Blaauw, 2011). They lack access to passable equipment and have to execute their collection and sorting activities using their bare hands, or sometimes using sticks or hooks, which exposes them to various health hazards (Sanchez & Maldonado, 2006).

In Colombia, one of the most horrific events suffered by waste pickers occurred between 1992 and 1994 when the Colombian government initiated what was known as a "social cleansing" campaign carried out by its military. Waste pickers along with prostitutes and beggars were beleaguered and ousted from certain areas. Horrifically, the corpses of 40 waste pickers were discovered at a university in Colombia. Their organs had been removed and sold for transplant purposes, and the remainder of their

bodies were used by medical students for dissecting purposes. Near the end of 1994, approximately 2000 individuals were killed as part of the "social cleansing" campaign (Medina, 2005). Table 6 illustrates some issues (challenges) faced by waste pickers. Most waste pickers suffer from health-related problems and discrimination (Ferronato & Torretta, 2019).

Table 6: Activities and issues of waste pickers in seven different countries

City	Country	No. of Waste Pickers	Organization/ Formalization	Source of Recyclables	Kg d^{-1} Per Waste Picker	Waste Fractions	Issues
Kathmandu	Nepal	7000–15,000	No	City streets/landfill	60	Plastic bottles, plastic bags, paper, glass, iron, HW	Illnesses, lack of financial resilience, occupational risks
Balantyre	Malawi	N.A.	No	Open dumps in urban areas	20–30	PET, HDPE, LDPE, metals	Negative public perception, lack of capital, fluctuation of the price
Harare	Zimbawe	220	Licensed	Open dumps	70	Plastic, paper, rubber, metals, glass, tires	Competition with others waste pickers safety issues, discrimination, climate conditions
Ulaanbaatar	Mongolia	5000–7000	No	Dumpsites, public areas, streets	N.A.	Plastics, cans	Alcohol addiction, no ID card, homeless, discrimination, diseases
Beijing	China	150,000	Prohibited by regulation	Households, public bins, small enterprises	14–16	WEEE, paper, metals, plastics	Minimum wage standards, discrimination
Great Accra region	Ghana	N.A.	No	Landfills, open dump sites	N.A.	Metals, plastics, PET, WEEE	Health hazards, cuts & injuries, insects bites, lack of respect, unstable prices
Bogotá	Colombia	20,000	Cooperatives	Trash bags, public bins	25	Plastics, metals, paper, glass	Lack of public acceptance, health, cleanness of operation.

Source: Ferronato and Torretta (2019)

Medina (2005) indicates that in Mexico, the average life expectancy of the population is 67 years, but a waste picker's life expectancy is 39 years. One in four babies of waste pickers die within their first year in Cairo. In South Africa, Schenck *et al.* (2018) report that waste pickers complain about chest problems, which are caused by dust, cold weather, smoke, pollution, and inhaling fumes from rotten objects.

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Waste pickers are exposed to unhealthy and poor environmental conditions as they sort and clean waste that can be recycled, as they see value in items that could have entered the waste stream, thus adding value to the recycling value chain (Marshall & Farahbakhsh, 2013; Mothiba, 2016). Generally, waste pickers are difficult to manage due to lack of formal education and they need to develop themselves to confront issues of discipline (Godfrey *et al.*, 2017). Emery *et al.* (2007) mention that before a viable waste management system can be constructed, the correct balance between social, economic, technical and regulatory factors must be determined.

2.2.4. Proposed alternatives for waste pickers

It is important to encourage change whereby waste pickers can be moved up the social ladder by assisting them to become micro recycling organisations. This process will create communities that respect waste pickers as individuals who contribute to recycling and help the environment (Ojeda-Benitez *et al.*, 2002).

Three billion people globally lack access to solid waste management (SWM) systems, resulting in an environmental and sanitation dilemma. Waste pickers provide a spontaneous and cost-effective service by collecting waste to sell, which creates employment for those in precarious positions. Through government support, waste pickers would be able to become more sustainable and, with local government collaboration, this could ignite better working conditions for these precarious workers (Navarrete-Hernandez & Navarrete-Hernandez, 2018). The inclusion of the informal waste sector into the SWM structure will increase recycling and reduce the waste ending up at landfills. Incorporating waste pickers into co-operatives has proved successful in Latin America (Ferronato & Torretta, 2019) but informal waste pickers need to partake in some financial and administrative training in order to make them less vulnerable to exploitation by other co-members and stakeholders (CSIR, 2015). Creating alliances with waste pickers locally and globally would provide a platform for waste pickers to vent their frustrations against policies that undermine them. This approach has proven to be effective in Colombia where policies have changed in recognition of waste pickers (ILO and WIEGO, 2017). However, the report further states that based on a study conducted in three countries, namely Brazil, Egypt and

India, informal integration into the SWM is considerably dependent on the political will to integrate. To iterate this, policies must cohere to support social transformation through the inclusion of waste pickers in determining policies, from government policies to municipal policies (ILO and WIEGO, 2017). Policymakers should endeavour to establish democratic waste governance by inviting waste pickers to participate in negotiating, planning and implementing waste management. Through this process, they will concede to the skills that waste pickers have developed in collecting and recycling waste items (Gutberlet, 2019). Ojeda-Benitez *et al.* (2002) suggest that collaboration needs to be developed between waste pickers and municipalities. Such collaboration would induce better relations as waste pickers would be acknowledged for their contribution to the environment and for preventing waste from being deposited in landfills.

The formulation of organisations will enhance waste pickers' stance when it comes to addressing the financial and health issues encountered by their members. This approach will create empowerment amongst waste pickers to develop better bargaining and negotiating power. They will be able to negotiate improved working conditions and recognition for their contribution to the environment and economy (Sing, 2018). Navarrete-Hernandez and Navarrete-Hernandez (2018) report that if government were to amend policies to incorporate waste pickers in regulating waste collection, co-ordinate with waste trucks to work with waste pickers, and promote waste collection at household level, there would be a more efficient and less expensive waste strategy in place. (Ojeda-Benitez *et al.*, 2002) advocate that waste pickers should be provided with a facility where they can collect and sort through recyclable items. The facility should be furnished with the relevant equipment and tools (bags and boxes), as well with proper sanitation facilities equipped with showers. These facilities can be managed by municipalities or non-governmental originations (NGOs) or waste pickers' associations. These organisations can simultaneously provide relevant training to waste pickers to improve their skills.

Waste pickers want recognition for the work they do, rather than being integrated into the formal waste management sector (Mumuni, 2016). They are not individuals who

are sitting around waiting for hand-outs but are proactively partaking in earning an honest living. With government support, waste pickers will be less discriminated against and will feel more human (Shogole, 2019).

2.3. Solid Waste Management

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) – the "Waste Act" as reported by the Department of Environmental Affairs (DEA, 2012) – defines waste as follows:

> "waste" means any substance, whether or not that substance can be reduced, re- used, recycled and recovered –
>
> (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of; (b) which the generator has no further use of for the purposes of production; (c) that must be treated or disposed of; or
>
> (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector; but –
>
> (i) a by-product is not considered waste; and
>
> (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;
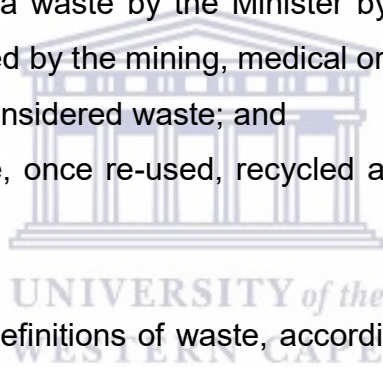
Table 7 provides additional definitions of waste, according to Pongrácz and Pohjola (2004):

Table 7: Additional definitions of waste

European Union (EU)	Waste shall mean any substance or object in the categories set out in Annex I which the holder discards or is required to discard (European Council, 1991)
Organisation for Economic Co-operation (OECD)	Wastes are materials other than radioactive materials intended for disposal, for reasons specified in this Table (OECD, 1994)
United Nations Environment Programme (UNEP)	Wastes are substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law (European Council, 1993)

Source: Pongrácz & Pohjola (2004)

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Van Jaarsveld (2016) states that waste can be divided into two categories based on the risk it holds, namely general waste and hazardous waste, as defined by the National Environmental Management: Waste Amendment Act (Act No. 26 of 2014). General waste is waste that is not an immediate threat to an individual's wellbeing or completely hazardous to the environment. General waste includes:

- domestic waste;

- building and demolition waste;

- business waste;

- inert waste; or

- any waste categorised as harmless waste as per regulations defined under section 69. This comprises non-harmful elements, materials or objects inside the business, as well as domestic, inert or building and demolition waste.

Hazardous waste is any waste that encompasses organic or inorganic components or mixtures that may have a harmful impact on an individual's wellbeing and the environment.

Waste is an international problem that needs to be dealt with in order to avoid health and environmental issues. Waste is connected to what societies produce and consume and therefore waste management is as important as water, shelter and energy, as it impacts on society and the economy in general. However, governments, municipalities and other stakeholders do not always pay waste as much attention as other basic human rights (Wilson *et al.*, 2015). Every year there is a rapid increase in the amount of waste generated and, according to Coban *et al.* (2018), by 2025 there could be more than 4.3 billion tons of solid waste generated internationally by inhabitants. This could have an enormous impact on the global environment, health and economy if not properly managed. It is imperative that municipalities develop effective and efficient waste management systems for the ever-growing solid waste.

Godfrey and Oelofse (2008) contend that waste management is an intricate system that encompasses interconnected activities that require various sectors to partake in

the collection, storage, handling, treatment, recycling and disposal of waste in various ways. A constructive and productive waste management system should guarantee improved human health and better safety through the prevention of the spreading of diseases. The system should also promote better working conditions. Generally, a waste management system should stimulate environmental and economic sustainability (Ndum, 2013). A schematic waste management approach that incorporates waste production, collection and disposal should operate as a dependent unit as each component affects the others despite the independence of each of these elements (Seadon, 2010). Ndum (2013) emphasises that not all of these activities, as highlighted by Godfrey and Oelofse (2008) and Seadon (2010), are implemented in low- to mid-developed countries despite them being interconnected. Some activities are excluded in different municipalities. Figure 5 depicts the general waste management system which is currently applicable to South Africa (Godfrey *et al.*, 2015).

Figure 5: Waste value chain
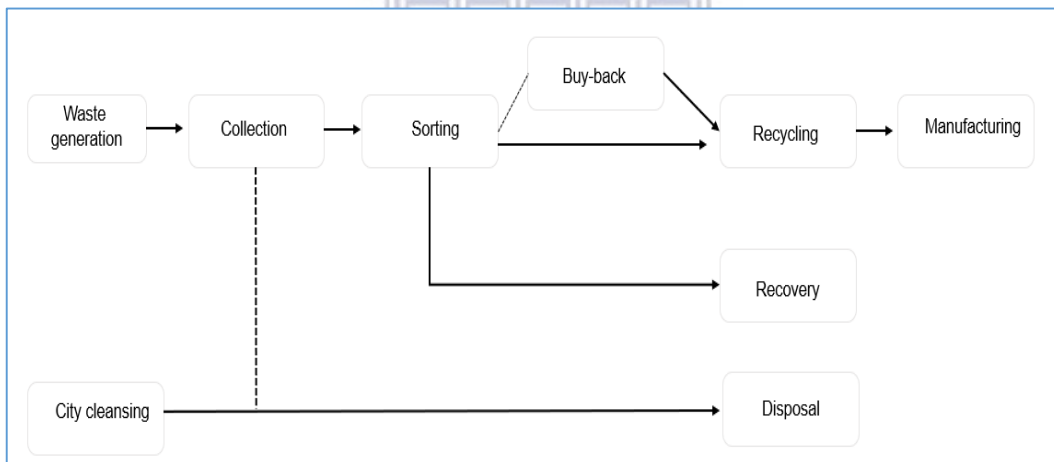
Source: Godfrey *et al.* (2015)

At present, not all waste can be discarded in the same way, as its composition differs in nature and therefore different types of waste require different waste management systems. Customarily, solid waste is sent to landfills for disposal, and this form of disposal is regarded as the most cost-efficient method of discarding solid waste. Landfills are in essence sealed containers that supposedly protect degraded components from causing environmental harm (Demirbas, 2011). Only 66% of South

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Africans benefit from waste collection services, either from municipalities or private contractors. This proves that solid waste is of huge concern, especially in sub-economic urban areas (Kubanza & Simatele, 2020).

Some developed countries have converted their solid waste into recyclable energy with the help of their residents. In Sweden, each municipality is required by law to have its own waste management plan and to provide regulations for the recycling of waste. Producers are responsible for the collection and disposal of end-of-life products while households are responsible for the separation of their waste and the disposal thereof at the nearest or most convenient waste depot. Businesses are responsible for the disposal of non-household waste and waste that is not part of the producer's responsibility. Efficient waste management has resulted in only 0.5% of waste being sent to landfills and the rest being recycled through reuse, and as energy and nutrients for vegetation (Avfall Sverige, 2018). Germany was the first country in the European Union (EU) to introduce producer responsibility. Each of its 16 federated states are responsible for the development of a waste management plan (Fischer & Petschow, 2000). The waste management sector has become a significant sector in the German economy. The sector is responsible for employing more than 200 000 individuals in 3000 companies, which generate an annual turnover of almost 40 billion euros. These companies adhere to a five-tier waste hierarchical system as illustrated in Figure 6, with the top-level tier denoted as prevention, followed by preparation for re-use, recycling, other recovery, and finally disposal.

Figure 6: Waste hierarchy according to the German and European system
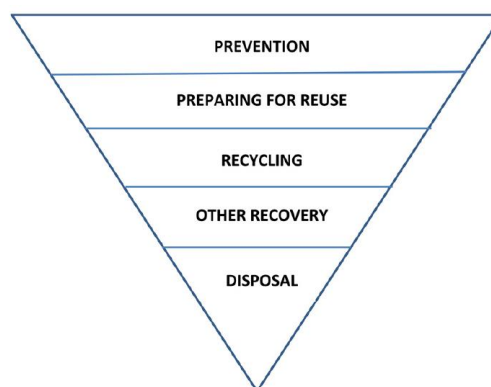
Source: Nelles, Grünes & Morscheck (2016)

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Priority is given to each tier based foremost on environmental gain as well as economic and social benefits. The German economy places high priority on waste recycling and prevention through environmentally conscious and efficient waste management systems, which lead to 68% of household waste being recycled. Recovery of waste in Germany increased to 79% while disposal of waste decreased to 21% in 2015. Before waste can be sent to landfills, it undergoes treatment as legislated by law in mid-2005 (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2018). Figure 7 provides an illustration of how solid waste is treated in selected EU countries.

Figure 7: Municipal solid waste treatment in selected EU countries
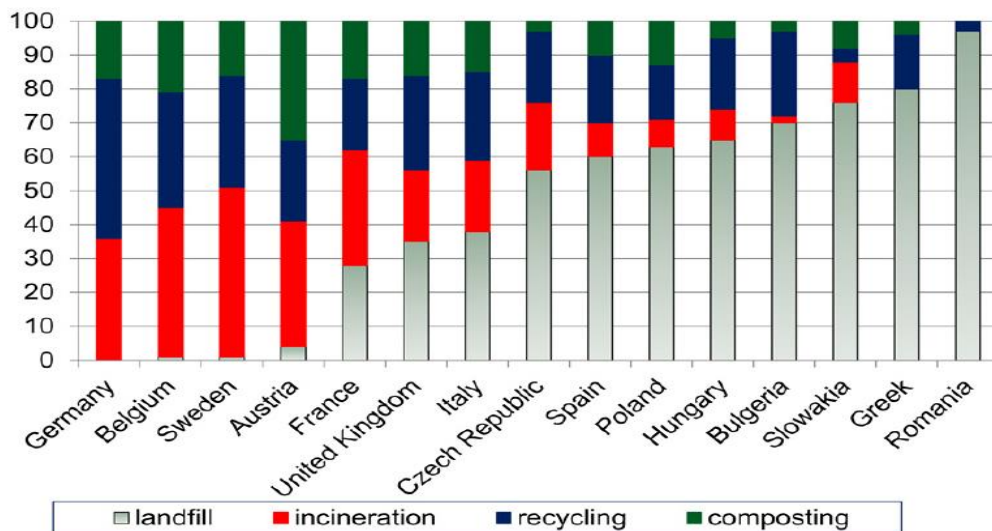
Source: Nelles *et al.* (2016)

In the less-developed country of India, solid waste increased from 7 million tons in 1947 to 48 million tons in 1997 and is expected to increase to 300 million tons by 2047. This is largely due to an increase in population, economic growth and growth in community standard of living. Ninety percent of solid waste is dumped on land without much consideration for environmental concerns (Sharholy *et al.*, 2007). Chandigarh is the first city in India to implement an SWM plan and has improved waste management compared to other cities in India. Studies have shown that waste pickers in India contribute to the recycling of 300 million tons of waste (20% of waste generated) and

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should be included in SWM systems (Kumar *et al.*, 2017). According to Ferronato and Torretta (2019) the mismanagement of solid waste has become a global crisis in terms of environmental contamination through the spread of diseases caused by uncontrolled dumping in open spaces, as well as the burning of waste fractions and water pollution. Dumpsites created near densely populated areas contribute to health issues arising from burning debris, which ultimately affect the quality of life. Municipalities are lagging in providing efficient services in the proper discarding of SWM (Guerrero, Maas & Hogland, 2013), due to lack of financial support by households that are unwilling to pay for such services, as well as limited resources and lack of proper management systems. It has become apparent that municipalities require the involvement of the private sector to facilitate in creating a more effective SWM system.

Due to poor SWM systems that are under the control of municipalities, there is a great deal of illegal dumping in many sub-Saharan cities, as can be seen along rivers and roadways and in public spaces. This dumping is a catalyst to environmental deterioration and health issues brought about by inefficient SWM policies and regulations (Kubanza & Simatele, 2020). Chitechi (2018) reports that in Nairobi, the capital city of Kenya, discarded garbage is visible on every street. Residents contract their garbage disposal to private firms that dump the waste in an unsatisfactory manner. Some firms dump the household refuse in nearby rivers, which can be deleterious to the environment and wellbeing of the community, as depicted in Figure 8. According to Henry, Yongsheng and Jun (2006), laws that govern SWM in terms of disposal, revenue collection and management are not adhered to, resulting in lack of funds to expand and improve the current SWM infrastructure. Nonetheless, community solid waste management is underway, as stated by Chitechi (2018), with unemployed youths forming part of a community-based organisation (CBO) in the collection of waste to recycle. More than 6000 tons of waste has thus far been collected for recycling. The organisation has trained more than 35 000 individuals in solid waste management since 2009.

Figure 8: Poor environmental conditions caused by improper waste disposal

Source: NEMA (2015)

In South Africa, the poor economic conditions, high unemployment and an increase in poverty have made waste management a daunting task (Dlamini, 2017). Kubanza and Simatele (2020) state that according to the Department of Environmental Affairs (DEA, 2012), 59 million tons of general waste was generated by South Africans in 2011, of which 44 million tons consisted of household solid waste. A report by GreenCape (2018) states that 4.1 million tons of solid waste is generated by the Western Cape in South Africa every year. Fifty percent of recycled waste is general waste, 44% is unclassified waste (electronics, sewerage sludge, ash and dust) and 0.93% is harmful waste consisting of toxic chemicals and batteries. Figure 9 highlights that in 2011, 35% of waste was non-recyclable, with demolition and construction waste comprising 20% of waste, while general waste (18%) consisted of paper (8%), glass (4%) and plastic (6%).

Figure 9: General composition of waste (2011)

Source: DEA (2012)

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http://etd.uwc.ac.za/
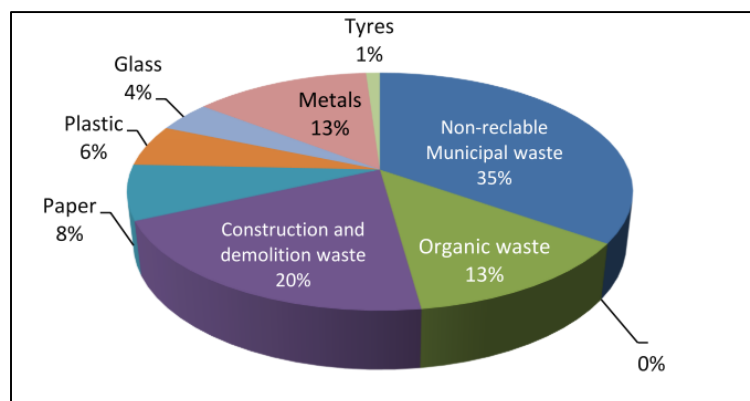
In 2011 South Africa produced 59 million tons of general waste, of which 10% (5.9 million tons) was recycled, implying that 90% of general waste ended up at landfills (DEA, 2012). There is a need to develop South Africa's recycling sector as it could vastly contribute positively to social, economic and environmental issues. The increase in solid waste prescribes an improved waste collection system that should be flexible to accommodate the needs of the various urban communities (Kubanza & Simatele, 2020). Rasmeni and Madyira (2019) further accentuate that the increase in population, resulting in an increase in waste, requires an investigation into waste management systems that are economically feasible, socially acceptable and environmentally safe.

The informal sector provides many unemployed individuals with a means of income. The World Bank predicts that close to 20% of the world's population participates in the collection of recyclable goods. In Jakarta, Bangkok, Mexico and Sao Paulo it is estimated that there are 30 000 to 40 000 waste pickers (Ndum, 2013) operating in the informal sector. In South Africa, between 80% and 90% of packaging waste is recycled by the informal sector (waste pickers), and their contribution to the value chain cannot be ignored (Godfrey *et al.*, 2016). The literature provides some insight into the significant role the informal waste sector plays in waste management.

2.4. The Informal Sector

Business, employment and economic activities have in the past operated without the recognition of a formal or informal sector until the introduction of policies and systems (Chen & Carré, 2020). The term "informal sector" was brought about by Keith Hart in the 1970s who conducted research amongst low-income earners in Northern Ghana who were unable to obtain wage employment (Chen, 2012). In 2003, then-President Thabo Mbeki reintroduced the concept of two economies – the first economy as the formal sector and the second economy as the informal sector (Aliber *et al.*, 2006). The free market economy is largely used by most countries, generating inequality, unemployment, poverty and social disruptions (Helland & Lindgren, 2016). Some unemployed individuals have opted to create a sustainable business or secured

employment in the informal sector (Essop & Yu, 2006). With the creation of the informal sector in the 1970s, many thought that it would be a temporary sector, but with low economic growth, the informal sector remains a permanent sector (Becker, 2004). The author further elaborates that the informal sector will not cease to exist as long as income inequality is prevalent and the level of employment remains weak.

In 1954, Arthur Lewis introduced a two-sector model of development known as the Lewis model. One sector was comprised of capitalists that strive to maximise profit, known as the formal sector, while the other sector, known as the informal sector, consisted of poor households who had a different set of economic rules (Guha-Khasnobis, Ravi & Ostrom, 2006). Some economists and politicians perceive the informal sector as parasitical by enjoying the advantages of not paying taxes and competing unfairly with formal law-abiding organisations. However, there are other economists who acknowledge the informality as a secondary tool to combat poverty (La Porta & Shleifer, 2014). Becker (2004) discusses three different viewpoints relating to the relationship between the formal and informal economies, namely the viewpoints of the dualists, the structuralists and the legalists.

1) The dualists express that the informal economy is completely separate from the formal economy that serves as a providing tool to the poor. Viljoen (2014) mentions that the informal economy exists as disparity is prevalent due to population growth and the employment rate.

2) The structuralists believe that the formal economy enjoys superiority over the informal economy and controls small producers and traders in order to maintain cost reduction. Viljoen (2014) emphasises that the formal and informal economies are intrinsically linked, with the informal economy being perceived as a sub-sector secondary to the formal economy.

3) The legalists consider the informal sector as being micro-entrepreneurs whose existence is based on avoiding certain regulations and payments required by the state and other legal entities (Viljoen, 2014).

La Porta and Shleifer (2014) claim that the informal economy accounts for half of the economic activities that provide billions with an income, yet it remains a controversial

issue in terms of economic development. Chen and Carré (2020) further iterate that 67% of those in evolving economies and 90% in developing countries are employed informally. Formal employment with income is an economic status afforded to an exclusive segment of individuals.

2.4.1. Defining the informal sector

Fourie (2018) postulates that Keith Hart, who introduced the term "informal sector", was very optimistic about the informal sector, as the informal workers are able to independently generate increased income despite the challenges of external constraints and capitalistic ideologies. To clarify the difference between the informal sector and informal economy, "the informal sector is a component of the informal economy". Additionally, "the informal economy is comprised of all persons (whatever their employment status) working in informal enterprises, plus all persons working informally in other sectors of the economy, that is, formal enterprises, households with paid employees (domestic workers) or own- account workers producing goods (primary goods or manufactured goods) for the household's own final use" (Charmes, 2012:108).

The informal sector can be defined as household entrepreneurs that differ from corporations and semi-corporations in that they do not keep a detailed account of their finances and do not always engage in legal entities (Walther, 2011). Amin (1982) describes the informal sector as a group of individuals or entrepreneurs who operate outside the bounds of the social security systems offered by governments or institutions, as opposed to organisations who enjoy recognition, support and protection as part of the formal sector. The labour market constitutes all individuals who are employed, as well as those who are unemployed. Essop and Yu (2006) explain that the informal sector incorporates informal employment that excludes work contracts and benefits as well as social protection. Those who are employed in the informal sector are comprised of "small unregistered or unincorporated enterprises), including employers, employees, own account operators and unpaid family workers in informal enterprises".

Stats SA (2018) characterises the informal sector as consisting of two components, namely:

> i) Individuals working in an organisation that employs fewer than five employees and which does not deduct income tax from their salaries/wages; and
>
> ii) Employers, own-account workers and persons helping (unpaid) in their household businesses who are not registered for either income tax or value-added tax.

The informal sector is at times proclaimed as the "shadow economy, unrecorded economy, underground economy or hidden economy" due to its limitations in terms of government regulations (Mohr, 2015). The author further implies that individuals usually enter this economy based on three primary reasons:

1. They cannot find employment in the formal sector
2. They are participating in illegal activities
3. They are avoiding the payment of taxes

Fourie (2018) describes the informal sector as the collection of informal enterprises with all its employers and employees who are paid and unpaid in the entire economic sector, excluding domestic workers and subsistence agriculture. To clarify, Fourie (2018) further defines informal enterprises as organisations that have or do not have employees who are not included or registered for tax.

Chen (2012) delineates that production and employment in the informal sector is provided by small, unorganised and unregistered entrepreneurs. The International Labor Organization (ILO, 2019) states that the informal economy refers to all non-illicit economic activities by employers or employees that are active within the law, and who are either protected or partially protected by formal agreements. Informal businesses seldom convert to formal businesses, notwithstanding support from governments and other agents. Instead they prefer to operate informally despite little growth, if any, for longer periods. They perceive government to be a deterrent with its policies, but they are largely perceived by formal enterprises as impediments (La Porta & Shleifer, 2014) to economic growth and development. Businesses that operate informally are seen to have an unfair advantage over those businesses that comply to fiscal regulations and

labour law. Informal business infers a reduction in government revenues, leading to a lack of social cohesion and development (ILO, 2019).

Over the years the perception of the informal sector has somewhat changed, as shown in Table 8 (Chen, 2005). An interesting observation from Table 8 is that the old-view economists viewed the informal sector's existence as being unrelated to the formal economy, whereas the new-view economists consider it to be an integrated sector in the formal economy.

Table 8: Classical to contemporary view of the informal economy

The old view	The new view
The informal sector is the traditional economy that will wither away and die with modern industrial growth.	The informal economy is 'here to stay' and expanding with modern industrial growth.
It is only marginally productive.	It is a major provider of employment, goods and services for lower-income groups. It contributes a significant share of GDP.
It exists separately from the formal economy.	It is linked to the formal economy – it produces for, trades with, distributes for, and provides services to the formal economy.
It represents a reserve pool of surplus labour.	Much of the recent rise in informal employment is due to the decline in formal employment or to the informalisation of previously formal employment relationships.
It is comprised mostly of street traders and very small-scale producers.	It is made up of a wide range of informal occupations – both 'resilient old forms' such as casual day labour in construction and agriculture, as well as 'emerging new ones' such as temporary and part-time jobs plus homework for high-tech industries.
Most of those in the sector are entrepreneurs who run illegal and unregistered enterprises in order to avoid regulation and taxation.	It is made up of non-standard wage workers as well as entrepreneurs and self-employed persons producing legal goods and services, albeit through irregular or unregulated means. Most entrepreneurs and the self-employed are amenable to, and would welcome, efforts to reduce barriers to registration and related transaction costs and to increase benefits from regulation; and most non-standard wage workers would welcome more stable jobs and workers' rights.
Work in the informal economy is comprised mostly of survival activities and thus is not a subject for economic policy.	Informal enterprises include not only survival activities but also stable enterprises and dynamic growing businesses, and informal employment includes not only self-employment but also wage employment. All forms of informal employment are affected by most (if not all) economic policies.

Source: Chen (2005:12)

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Most governments do not acknowledge the legitimacy of the informal sector and exclude it from their economic plans. As such the informal sector receives little if any protection from the government and is treated punitorily (Fourie, 2018). By permitting the informal sector to operate without government interference in terms of policies and regulations, it has the ability to create local economies that would adapt to the needs and wants of the communities it serves (Ruzek, 2015).

Despite negative connotations towards the informal sector, Chen and Carre (2020) report that globally more than half of the population is informally employed, comprising about two billion workers representing 61% of all workers including the agricultural sector. The informality is most prevalent in the agricultural and industrial sectors. Bonnet, Vanek and Chen (2019) report that, as illustrated in Table 9, informal employment in non-agricultural sectors in developing countries stands at 73%, while in emerging countries it is 59%, and 17% in developed countries.

Table 9: Percentage informal employment and its components in total and non-agricultural employment

	Total employment				Non-Agricultural employment			
	World	Developed	Emerging	Developing	World	Developed	Emerging	Developing
Informal employment	61	18	67	90	51	17	59	73
Men	63	19	69	87	53	18	61	70
Women	58	18	64	92	46	17	55	78
In the informal sector	52	15	57	81	41	13	48	59
Men	54	16	59	78	44	15	51	53
Women	48	13	52	85	36	12	42	66
In the formal sector	7	3	8	5	8	3	9	10
Men	7	3	7	6	8	3	9	13
Women	7	4	8	3	8	4	9	6
In households*	2	0	3	3	2	0	2	5
Men	2	0	2	3	1	0	1	3
Women	3	0	4	4	3	0	3	6

*Includes paid domestic workers that are in the employ of households and those who produce goods for own consumption.

Source: Bonnet *et al.* (2019)

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The informal sector is not included the country's Gross National Product (GNP) (Ruzek, 2015). The GNP is also known as the Gross National Income (GNI) and economists use this to measure the income or standard of living of its citizens (Mohr, 2015). However, the informal sector contributes 42% to the country's GDP as it currently employs 86% of workers (Mahadea & Zogli, 2017).

In South Africa in 2014 the National Development Plan (NDP) acknowledged the informal sector by offering initiatives to support this sector (Fourie, 2018). Fourie (2018) comments that the informal sector is heterogeneous in nature, encompassing various sub-sectors, including construction labourers, domestic workers, street vendors and waste pickers, to name a few. Since waste pickers are recognised as informal workers, the sector in which they operate is known as the waste management sector and this sector does not fully acknowledge informal workers (Dlamini, 2017). Although domestic workers and labour workers receive daily, weekly or monthly income, they are considered to be part of the informal employment sector because they do not receive any remuneration in terms of sick leave, annual leave or even social protection. Those who are informally employed are part of the informal sector (Bonnet *et al.*, 2019).

2.4.2. Waste management and the informal sector

In many developing countries, informal waste recycling provides an income to millions of individuals (Medina, 2008) and in some cities these people collect solid waste where municipalities do not provide a service (Wallace, 2013).

The informal sector within the waste division is often excluded in the planning process within the waste management sector despite its integral role in the recycling process at landfills. Many waste management projects have been unsuccessful as they have excluded the informal sector, which is driven by the need to survive (DEA, 2018). The informal waste sector plays an integral part in the recycling and collection of waste, as municipal waste management systems lack effectiveness (Dlamini, 2017). The informal waste sector consists of unemployed individuals who collect and process waste for a measly income in order to sustain their families. If they are integrated into

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the formal waste management sector, this could result in more jobs and improve efficiency in the solid waste management system (Wallace, 2013).

Municipalities and formal waste management systems perceive the informal waste sector as an ancient system of collecting waste as those collecting waste expose themselves to health risks and their children are used to collect recyclable items instead of being in school (Agamuthu, 2010). Medina (2008) states that in some countries like Egypt and Mexico, those in the informal waste sector create additional costs for municipalities as the streets are left strewn with unwanted items and manure from the donkeys or horses that pull their carts. Authorities in Cairo has started banning the use of donkey carts for waste collection. It is therefore imperative that the informal waste sector be integrated into the formal solid waste management system to reduce their vulnerability to work environments and empower them through development (Agamuthu, 2010; Medina, 2008; Mothiba, 2016; Wilson *et al.*, 2006; Yu *et al.*, 2020).

Integration of waste pickers into local waste management systems implies the involvement of multiple stakeholders and activists, including national government, local government, academics, waste-picker organisations, other affected groups and non-governmental organisations to create a good working relationship (Medina, 2008). Samson (2020) explains that integration from a municipality perspective into the world of the waste pickers requires transformational political work. Samson (2020) further explicates that based on the term of "inclusive recycling" the integration process is not about integrating the waste pickers but about equality among all those involved.

2.5. Training and Mentoring

Training has changed and developed over the past few decades. In contemporary times, organisations believe that training is key to competitive success. The attainment of knowledge and skills through training bears little consequence if is not structured and aligned to job setting, and it should be maintained over time (Yamnill & McLean, 2001). Organisations need to depend on on-the-job training and continuous development to maintain a competitive advantage (Salas & Cannon-Bowers, 2001).

2.5.1. Describing training

"Training is often seen as a planned and systematic process of learning in the sense of acquiring, modifying, and/or developing knowledge, skills, and abilities (KSA) in order to achieve and/or improve the employees' performance in the current job and prepare them for an intended job" (Ferreira, 2016:3). Smith and Perks (2006) cite De Cenzo and Robbins (1996:237) who delineate training as a learning experience that aims to permanently modify an individual's skills, approach, and cognitive and social demeanour. Similarly Kraiger and Ford (1993) emphasise that learning is conceptualised as a causal determinant of positive reaction towards training. Learning outcomes are multi-dimensional, which implies that through training an individual will undergo changes that affect their knowledge and skills. Over the years a plethora of training definitions have been provided by numerous authors. Somasundaram and Egan (2004) provide a compilation of definitions of training gathered between 2000 and 2002.

Table 10: Training definitions

2000	Kleiman	Training and development are planned learning experiences that teach workers how to perform their current or future jobs effectively.
2001	Armstrong	Training is the formal and systematic modification of behaviour through learning which occurs as a result of education, instruction, development and planned experience. Development is improving individual performance in their present roles and preparing them for greater responsibilities in the future.
2001	Gomez-Mejia Balkin and Cardy	Training is the process of providing employees with specific skills or helping them correct deficiencies in their performance and development in an effort to provide employees with the abilities the organisation will need in future.
2001	Kremple and Pace	Training and development is defined as managing knowledge to develop the organisation's culture, to enhance individual performance and to strengthen the organisation's capability.
2001	Swanson and Holton	Training and development is defined as a process of systematically developing work-related knowledge and expertise in people for the purpose of improving performance.
2002	Goldstein and Ford	Training is defined as the systematic acquisition of skills, rules, concepts or attitudes that result in improved performance in another environment.

Source: Somasundaram and Egan (2004:854)

Based on some of the definitions provided in Table 10, most authors relate training to improving current roles as employees or organisational relationships. These definitions are more organisation-centric and not focused on the individuals' disposition that requires consideration when exercising some sort of training.

For the purpose of this research study, training is defined as a mode to help individuals improve their knowledge and develop skills based on their capabilities that could culminate in improved sustainability through continuous efforts.

Training is a continuous process that duplicates various stages of a task with the aim to achieve the desired outcome (Abushamsieh, 2014). Salas and Cannon-Bowers (2001) underline that organisations need to depend on on-the-job training and continuous development to maintain a competitive advantage. Learning can take place formally and informally, and people learn through community of practices in their place of employment. Attributes that affect learning confidence are trust, social relations and levels of power sharing. Trainees learn best when they feel supported, encouraged and challenged. Mentoring as a support structure is also strongly recommended when learners are confronted with literacy or numeracy learning (Holland, 2009).

2.5.2. Describing mentoring

Over the years, mentoring has become a tool in facilitating the creation and acquisition of knowledge effectively (Karkoulian, Halawi & McCarthy, 2008). Kobeleva and Strongman (2010) elucidate mentoring in a contemporary context that encompasses the establishment of relationships between a teacher and a learner with the aim to improve educational outcomes. A more precise definition is provided by Lagacé-Roy and Knackstedt (2020:5) who concisely state: "Mentoring is a professional relationship in which a more experienced person (a mentor) voluntarily shares knowledge, insights, and wisdom with a less-experienced person (a mentee) who wishes to benefit from that exchange. It is a medium- to long-term learning relationship founded on respect, honesty, trust and mutual goals." Mentorship can be defined as a connection between an experienced person (mentor) and a less experienced person (mentee) for

professional or personal gain. The mentor can be characterised as a peer, supervisor, or someone in a higher chain of command in or outside an organisation (Moleko, 2012). Kobeleva and Strongman (2010) cite Buers (1992) who defines mentoring as guidance offered by a mentor (usually someone older and more experienced) within an organisation to a younger naive individual (protégé) who requires the guidance for an undetermined period (Swanepoel, 2012).

Table 11: Definitions of mentoring

Definition of Mentoring	Authors	Year
Mentoring assists, directs, and inspires continuous creative learning and growth.	Johnson	2002
Mentoring facilitates an organisation's top performers to apply their capabilities to their own and to the organisation's advantage.	Stone	2002
Mentoring is a procedure of conveying explicit knowledge from one person (the mentor) to another (the protégé).	Janse van Rensburg and Roodt	2005
Mentoring provides mental direction and is inspirational and influential.	Blunt and Conolly	2006
Mentoring is a tool for disseminating vital job-related skills, attitudes and behaviours from a mentor to a mentee.	Van Dijk	2008

Source: Swanepoel (2012)

Table 11 highlights many definitions that are indistinguishable, furnished by an abundance of authors. Based on copious explanations, the researcher defines mentorship as follows:

Mentorship is a relationship that could be casual or professional where an individual who has attained certain skills sets and knowledge (known as the mentor) disseminates that knowledge and skills sets to someone who is willing to learn and develop accordingly (known as the mentee). The relationship is based on honesty, integrity and trustworthiness, lasting for an undefined period. The ultimate objective is to ensure that both parties have benefited from this relationship.

Mentors may undertake various roles such as "sponsor, coach, protector, challenge-giver and exposure-provider. It may also be psychosocial in nature, with the mentor

taking the role of friend, social supporter, parent, role model, counsellor and acceptance-giver" (Singh *et al.*, 2002:1). Mentoring relates to an interaction of skills and knowledge that redefines achievements and goals (Kobeleva & Strongman, 2010). Chandler, Kram and Yip (2011) suggest that mentorship can be understood from an ecological system paradigm that provides insight into how individuals and environmental systems are reciprocal and mutually functioning. Through an ecological system perspective, the thinking should shift away from only understanding mentorship as a relationship that focuses only on interaction between individual differences and dyadic exchanges in a societal context. Mentorship should also include societal influences as well as developmental networks. Mentorship provides much relief to the mentee in terms of psychological support and the acquisition of knowledge (job-related and other knowledge). Mentees receive emotional support and protection from political harm in organisations and can acquire more developmental skills. Mentors on the other hand can benefit from a mental and emotional perspective as they share their acquired knowledge with less experienced individuals. Witnessing the mentees' growth can led to greater levels of satisfaction as well as career enhancement (Liu *et al.*, 2020).

Mentoring provides a means for continuous development in learning and applying training to further develop skills (Moleko, 2012).

2.5.3. Training

Yamnill and McLean (2001) communicate that training leads to competitive success and that training needs to relate to performance. Performance is a key factor in human resource development (HRD). As such, these authors argue that improved performance is dependent on training and development.

Abushamsieh (2014) claims that a strength, weakness, opportunity and threat (SWOT) analysis is decisive in providing directives for an organisation, as well as for individuals within the organisation. Salas and Cannon-Bowers (2001) report that it is imperative to undertake a training needs analysis in developing training. The training needs analysis addresses where the training will occur, what training needs to be offered,

and who requires training. A training needs analysis will highlight the connection between age and motivation to learn. Consideration must be given when discussing training with older workers as they are less motivated to learn. Training involves a set of activities that are laid down to manage individuals in an organisational context. From a human resource perspective, it involves four stages, namely needs assessment, training development, training delivery, and training evaluation (Ferreira, 2016).

The literature provides clear evidence that training cannot be executed without understanding the needs of the individuals.

Based on research conducted in five sub-Saharan African countries, Adams, De Silva and Razmara (2013) found that training and education is pivotal in both the formal and informal sectors and that increased education leads to better skills and higher remuneration. Training in entrepreneurial skills in the informal sector would help in the sustainability of employment in that sector (Smith & Perks, 2006).

2.5.4. Training and development in the informal sector

"The World Employment Report (WER) says the number of unemployed and under-employed workers around the world has never been higher, and will grow by millions more before the end of the year as a result of the financial crisis in Asia and other parts of the world. Worker training provides an effective means to resolve this problem among unemployed women, youths, workers trapped in the informal sector and other vulnerable groups."

World Employment Report 1998 – 1999, ILO

The development of the necessary skills and knowledge can serve as a vehicle to improve productivity, enrich working conditions and ensure better work in the informal sector. This development can be accomplished through working smart and not focusing on work intensiveness. Productivity can be increased through the use of technology, thus helping to reduce monotonous work and alleviate health risks through safety awareness. Newly acquired skills and knowledge can enhance work opportunities that would be socially and economically rewarding (Liimatainen, 2002). Informal sector training can only be effective and fully structured if public authorities

acknowledge the major contribution that micro to small businesses make to the economy in terms of job creation and wealth (Walther & Filipiak, 2007).

In India, the informal sector dominates the economy, and therefore skills development is of particular importance. Street vendors do not acquire training formally but are provided with the relevant training on the job, irrespective if it is a family business or informal employment (Pilz, Uma & Venkatram, 2015). Walther (2011) claims that research has proven that a significant proportion of individuals working in the informal sector acquire training by the informal sector itself. He states that based on research conducted in Morocco's informal sector, 80.4% do not have any form of skills except on-the-job training. Similarly, data collected in Ethiopia, where the informal sector comprises 90% of the entire labour market activities and jobs, 67.86% of workers acquired their skills through self-training. A variety of training approaches are applicable when it comes to improving micro entrepreneurial skills, including – but not limited to – learning through observation or participation, as well as educational programmes. However, training approaches cannot be fully utilised by all micro businesses. Some individuals lack education while others lack skills (Smith & Perks, 2006).

Research has shown that informal stakeholders working in the informal sector are eager to improve their skill sets. Among those informal stakeholders, some with a low level of formal education seek to have literacy training that would enable them to read, which would be beneficial to them as they would be able to read the technical instructions on how to operate and repair machines (Walther, 2011). Informal workers often do not favour formal education as it is not flexible enough. Trainers should therefore focus on other types of training such as literacy programmes (Sparks & Barnett, 2010). Walther and Filipiak (2007) report that a number of national and international technical and financial partners employed in the informal sector in the countries that they studied agreed that training should not be an end in and of itself but rather should engage individuals to find appropriate jobs or activities.

Walther and Filipiak (2007) indicate that training should not be the means to an end and additionally should include support such as mentoring, post-training assistance, etc. to guide individuals for the start-up phases of an activity.

Hattingh, Coetzee and Schreuder (2005) elaborate that under special circumstances, mentoring can meet certain requirements better than training. A strong advantage of mentorship is that it allows an individual to learn and develop capabilities at his/her own pace.

2.5.5. Informal and formal mentoring

Mentorship produces success amongst entrepreneurs as they develop a relationship by engaging together in tasks. This engagement increases their knowledge, improves communication and creates boundaries for a mentorship relationship (Smith & Perks, 2006).

To ponder the definition constructed: Mentorship is a relationship that could be casual or professional where an individual who has attained certain skills sets and knowledge (known as the mentor) disseminates that knowledge and skills set to someone who is willing to learn and develop accordingly (known as the mentee) Maclean, Wilson and Chinien (2009) provide some direction to guide mentors based on a research study they conducted. They state that mentors should (a) provide practical guidance and support; (b) monitor progress and activities undertaken by trainees; (c) provide advice; and (d) meet with stakeholders and provide feedback.

Formal mentorship differs from informal mentorship. Formal mentoring is a planned process that is usually facilitated by an organisation whereas informal mentoring is unplanned and a decision undertaken by both the mentor and mentee. Informal mentoring is informal, permitting more flexibility and enhancing relationship building (Liu *et al.*, 2020). The authors further state that based on theory, mentors' desired outcomes are motivated by benefits and costs relating to informal mentoring as well as behavioural influences, which relates to the time and effort the parties are willing to invest in a mentoring relationship.

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2.5.6. Training and mentoring waste pickers

The South African Cities Network (SACN, 2016) reports that waste pickers require training to initiate them into the waste management plans and that waste managers also require training in understanding the roles of waste pickers. Outcomes from a needs analysis revealed that waste pickers require skills training that includes training in entrepreneurial skills development and audit skills training (Baker, Memela & Rampete, 2016).

Cowing (2013) identifies that training in health and safety is needed when working at waste-handling sites. Dlamini (2017) suggests that municipalities should include training for waste pickers in recycling and waste management as part of their strategies. Sembiring and Nitivattananon (2010) explain that past policies have shown that authorities previously tried to change the occupation type of waste pickers but failed in an attempt to improve their livelihood. What they should have done was listen to the needs of the waste pickers in order to integrate the informal sector and improve human capital, which encompasses individual skills, training and/or education (Sembiring & Nitivattananon, 2010). The Acahualinca development project in Managua, Nicaragua, provided job training that was appreciated by waste pickers, including literacy education, social development training and training in technical careers (Hartmann, 2018). De Silva (2015) explains that government and sponsors can contribute through training development. Skills development training in the formal sector differs from such training in the informal sector as multi-type training is required in the informal sector, but the upgrading of skills can be constrained due to a lack of financial support. Essop and Yu (2006) emphasise that skills development is important in the enhancement of small, medium and micro sized enterprises (SMMEs), while Marello (2013) further accentuates that training of waste pickers will improve their abilities and add value when they are organised into small and medium enterprises. The author does caution that the training process can be slow as low-level workers lack business and management skills and would require support in terms of funding.

The effectiveness of informal sector training can only be apparent if government authorities realise the importance of this sector in terms of job creation and poverty reduction. Skills development and training in terms of mentorship have been adopted internationally and supported by informal sector workers. Peer-to-peer training through shared knowledge enables better start-up enterprises when informal workers are also stakeholders in skills development training (Walther & Filipiak, 2007). Waste pickers are people who make a living from selling recyclable items to buy-back centres. They operate in the informal sector, so they don't have any organisational benefits (Amin, 1982). To understand how waste pickers are striving to become sustainable, the Sustainable Livelihood Framework (SLF) is used in this research study.

2.6. Conclusion

The purpose of this chapter was to create a quintessential understanding of waste pickers and the sector in which they operate. The literature provided some insight into the role of waste pickers within the waste recycling process and the challenges they encounter daily as representatives of the informal sector. The chapter discussed solid waste management systems and the significant role the informal sector plays within the waste division.

At the beginning of this chapter, the literature described waste pickers and the activity of waste picking. The literature concurs that waste pickers are perceived as bottom of the pyramid and therefore many consider them to be menaces of societies. This perception could be due to the ignorance of the layman in his/her obliviousness to concede the value these individuals contribute to the recycling of valorised waste. Ralfe (2007) avers that waste pickers are constantly targeted by homeowners and stigmatised by the public. Waste picking entails individuals sorting through garbage bins and trash left outside businesses and collecting items from landfills that are perceived to be valuable. The literature attempts to provide some demographic features of a waste picker. It should be noted that no "true" demographic profile can be constructed of waste pickers globally, due to some being nomadic and some remaining hidden in fear of harassment. A study conducted by Dias and Samson (2016) found that harassment was one of the most prevalent negative sentiments

expressed by waste pickers. The demographic profiling of waste pickers remains diverse and therefore some type of intervention is required (Mvuyane, 2018). The activities of waste pickers were explored and the literature examined their contributions and the challenges they face. In terms of their contribution to waste management, sufficient publications denote valid evidence that waste pickers are active in the collection of waste where municipalities neglect this service. Schenck *et al.* (2016) affirm that waste pickers' integration into the formal waste management system would provide stakeholders with relevant information on the mechanisms of the informal economy. There is a great deal of literature that clarifies the challenges waste pickers encounter daily. One of the noteworthy challenges faced by waste pickers is that they are victimised or exploited and merely wish to be acknowledged for their contributions. They do not want to be victims of a capitalist structure, nor do they want donations, but welcome the prospect of business opportunities that would enable them to compete in the formal waste sector (Shogole, 2019). Many opportunities can be offered to waste pickers, such as the formation of co-operatives. However, the literature provides ambiguous accounts of the success of co-operatives. Medina (2005) found that the most vigorous co-operative body in the world for waste pickers is found in Colombia. Waste-pickers who are members of co-operatives are able to sell their goods at a higher price than waste pickers who are not members of co-operatives. Godfrey *et al.* (2017) accentuate that in South Africa, few co-operatives have successfully operated for long periods of time and that most of them fail within the first few months. One of the key objectives of this research is to establish what waste pickers want and how best they could be integrated (through co-operatives) into a formal business. Many proposed integrated methods have been documented in this review, but few have provided insight into what waste pickers want and how they want to be included in the formal waste sector.

The mid-section of the literature review elucidates solid waste management systems through an array of definitions from various prominent organisations. Generally, waste is generated, collected and disposed of, with waste pickers actively partaking in the recycling of goods by selling it to middle agents (Godfrey *et al.*, 2017). It is alarming to concede how much waste ends up at landfills despite the shortage of available space

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at landfills. The literature accentuated the importance of waste pickers in preventing waste – albeit it a small percentage – from being discarded at landfills. Ninety percent of waste in South Africa is disposed of at landfills (DEA, 2012). Waste pickers are formally unemployed and consequently find themselves operating in the informal sector. The literature scrutinised various definitions of the informal sector. Key characteristics of the informal sector is that it is free from government taxation and intricate government regulations (Fourie, 2018). Those operating in this sector do not enjoy the fringe benefits offered by formal organisations, but many prefer the independence of working when they deem necessary. The chapter explored the linkage between formal waste management systems and the waste pickers' activities in recycling and investigated some mechanism of coalescence. The literature reconnoitred training and development programmes for the informal sector in terms of how best to train waste pickers. Mentorship plays a pivotal role in the development of waste pickers, and mentoring is used as a source to assist in improving the current conditions and circumstances of waste pickers. It is argued that waste pickers are individuals who in their own space and time will accept some form of development as long as they are informed and aware of its benefits.

The next chapter reconnoitres the environment of the waste pickers, their livelihood assets and structures. The Sustainable Livelihood Framework (SLF) as an insertion into the conceptual model is aimed at understanding the needs of the waste pickers. A component of the SLF is the livelihood assets comprising social, physical, natural and human capital. The capabilities approach will be used as an epistemological lens to dissect the livelihood assets within the conceptual framework. Participatory research will be discussed from a theoretical perspective as participatory action research was the applied research method for this study. The chapter will investigate how developmental mentorship could be the vehicle to drive the survivalist entrepreneurs (waste pickers), with their involvement, to be more sustainable. The research applies a bottom-up approach, that is, investigating the needs and requirements of waste pickers from their perspective, hence constructing a conceptual framework that could be applicable in assisting in the integration of waste pickers into the formal economy.

Chapter 3: Conceptual Framework of the Study

3.1. Introduction

A conceptual framework contributes to the foundation of the research and provides an entry point to interpret the research findings (Rocco & Plakhotnik, 2009). The conceptual framework represents the researcher's epistemological lens of the phenomenon being researched (Adom & Hussein, 2018) as the researcher will apply the Sustainable Livelihood Framework (SLF) in conjunction with the capabilities approach (CA) as a part of the conceptual framework to understand and improve the lives of the waste pickers (Varpio *et al.*, 2020).

A conceptual framework provides a construct of the role that each concept plays in the research. The framework helps the researcher to explain or justify how and why the study was undertaken and not only serves as a scaffold and structure for the research, but also helps to interpret the findings (Casanave & Li, 2015). Adom and Hussein (2018) state that the conceptual framework can consist of existing frameworks provided that the frameworks are adjusted to the research study and research questions. The aim of the conceptual framework is to categorise and explain the concepts applicable to the research by mapping the relationship between them. This is accomplished by incorporating the relevant theories into the conceptual framework.

3.1.1. Building the conceptual framework

The researcher employs the Sustainable Livelihood Framework (SLF) to conceptualise the lives of the waste pickers and the challenges and opportunities that impact their lives. Sustainable livelihoods thinking has contributed richly in understandings how individuals, households, and social groups from diverse contexts exercise agency and apply their livelihood assets to produce outcomes necessary for sustenance and wellbeing (Manlosa *et al.*, 2019).

Subsequently, the researcher incorporates entrepreneurship in the conceptual framework as it is not prevalent in the SLF. Generally, waste pickers are self-employed

and seek an income as a means of survival. Emphasis is placed on subsistence entrepreneurs as this type of entrepreneurship is most applicable to waste pickers.

The application of the capability approach is discussed and a correlation between the livelihood assets of waste pickers and the capability approach is illustrated. Livelihood assets constitute a component of the SLF and provide a physiological and psychological overview of waste pickers. Normative exercises based in the theoretical assumption of the capability approach exemplify the SLF as a strong framework to apply to waste pickers.

Although the importance of mentorship was briefly outlined in the previous chapter, more information based on the inter-relationship between the mentor and waste pickers will be explored. The chapter provides a brief discourse on mentorship as a development tool in aiding waste pickers to become more sustainable. Identifying the capabilities and functioning of waste pickers requires mentoring to be executed patiently due to the vulnerable nature of waste pickers.

Waste pickers are perceived as entrepreneurs, and business incubators are able to assist them in boosting their growth prospects (Ikebuaku & Dinbabo, 2018). Business incubators focus on a form of training and mentorship and therefore it is imperative to discuss the linkage to the social development and economic prosperity of waste pickers.

Lastly, the researcher illustrates the convergence of SLF, entrepreneurship, the capability approach, mentorship and business incubators as the final conceptual framework. Through the amalgamation of these theories, the conceptual framework will address the research aims and objectives while guiding the analysis of the data.

3.2. What is Sustainability?

Sustainability has been used in many disciplines such as environmental, economic and social disciplines. Countless authors have debated on the establishment of a lucid definition of sustainability (Eizaguirre, Garcia-Feijoo & Laka, 2019; Nilashi *et al.*, 2019;

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Moore *et al.*, 2017) which differentiate between various perspectives, depending on the field of study. Pojasek (2012) alludes that many individuals are confused to the concept of sustainability as it can be viewed from various viewpoints.

Sustainability, as explained by the World Commission on Environment and Development (1987), means that humanity is capable of creating development that is sustainable and which will safeguard present needs without compromising future generations in being able to meet their own needs. This implies that humanity must exercise restraint when extracting environmental resources. Sverdrup and Svensson (2002) accentuate that the Brundtland Report on sustainability (World Commission on Environment and Development, 1987) initiated many institutions to introduce policies and practices aimed at providing society with ecological, economic and cultural sustainability.

From a natural science outlook, Jerneck *et al.* (2011) state that sustainability science serves as a connectivity in the amalgamation of natural and social sciences to curtail challenges. These challenges include water shortage, deforestation, biodiversity loss and ill-health globally. The authors argue that sustainability challenges cannot be overcome exclusively from a natural science or engineering perspective, but need to consider other ontologies and epistemologies. Bell and Morse (2005) provide a more profound perspective of sustainability. To accentuate their viewpoint on the importance of sustainability, they quote the translated verse from the Koran, Chapter Al Imran (Verses 189 to 192):

189. And to God belongs the dominion of the heavens and the earth, and God has power over all things.

190. Verily! In the creation of the heavens and the earth, and in the alternation of night and day, there are indeed signs for men of understanding.

191. Those who remember God, standing, sitting, and lying down on their sides, and think deeply about the creation of the heavens and the earth.

Based on these verses, Bell and Morse (2005) emphasise that human beings are addressed at a higher level to ensure that they are worthy of caring for the earth

through the implementation of proper sustainability. The concept of sustainability originates from ecological science, as it was formulated to provide some guidelines as to how we need to sustain the earth over a long period of time. From an organisation's perspective, Pojasek (2012) delineates sustainability as the capability of organisations to serve as guardians of the environment and to implement social wellbeing and economic prosperity over long periods while being accountable to its stakeholders. Based on this definition, organisations should practise socially co-operative responsibilities as part of sustainability development. Socially co-operative responsibility denotes an organisation's responsibility towards society and the environment (Touboul, 2013). Although there are a plethora of definitions on sustainability and inconsistencies (Moore *et al.*, 2017), many scholars argue that there is a difference between sustainability and sustainable development, but there are other scholars who state that these two concepts are similar. The researcher subscribes to the notion as expressed by Holden, Linnerud and Banister (2014) that sustainability and sustainable development have similar characteristics and therefore express similar implications. These terms will be used interchangeably within this report. As mentioned previously, sustainability is concerned with the wellbeing of the environment, economics and society (Balaceanu & Apostol, 2014; Moore *et al.,* 2017; Nzeadibe & Mbah, 2015; Sverdrup & Svensson, 2002). Cavagnaro and Curiel (2012) claim that the main objective of sustainable development is to universally maintain a better quality of life for both present and future generations, by protecting the environment and pursuing equitable social progress as well as responsible economic growth.

In 1992, the United Nations established Agenda 21, which proclaims that, "*Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more*

prosperous future. No nation can achieve this on its own; but together we can - in a global partnership for sustainable development." (UN, 1992:3).

Any sustainable development programme can distract the path of capitalism (Connelly, 2002) and as capitalism is the dominant economic system globally, it is likely to continue causing climate change, inequality, war and instability (Streeck, 2016). Capitalistic accumulation continuously comprises production and consumption. Functioning accumulation constantly requires a relationship between norms of production and consumption, as in the case of standardised and durable mass-produced goods (Brand & Wissen, 2021). These authors further pronounce that the correlation between production and consumption is the result of social struggles and power relationships between governmental and social institutionalisation. Consequently, the production and consumption phenomenon as incited by capitalism is the root cause of global calamity. Exuberant increases in world trade, along with the development of China, have benefited developed countries. As these developed countries and the elite continue to flourish, developing countries and the majority of their citizens struggle with basic health conditions, welfare and education, creating inequalities between rich and poor countries (Redclift & Springett, 2015).

Modern capitalism has enhanced the predominance of waste in the production/consumption cycle. Increased consumption can occur through three factors (Marques, 2018): 1) Product obsolete is when the lifespan of the product is purposely shortened to encourage consumers to purchase a new item. 2) Subjective obsolescence refers to creating a new demand for a particular product (the annual launch of new electronic products creates a feeling amongst consumers that an upgrade is needed to keep abreast with new technology. 3) Emergence of consumer credit has accelerated consumption despite an increase in bad debt (many consumers are living in debt, but this has not discouraged individuals from consuming on credit. Calhoun (2016) posits that capitalism has the ability to generate wealth but equally can produce the opposite of wealth; not necessarily poverty but "ilth" as referred to by John Ruskin. "Ilth" is the accumulation of waste, pollution of air and water and climate change, to mention a few.

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These factors have spurred consumption, resulting in unwanted items being discarded. Humans manufactured more than eight billion metric tons of plastic between 1950 and 2015. It is believed that currently 30% of this quantity is in societal materials stock while 60% of all plastic is accumulated as waste either in landfills or in the natural environment. Several million metric tons of plastic have entered the ocean, causing much destruction to ocean marine life (Gall *et al.*, 2020). Under the aegis of the United Nations, the 2030 Agenda for Sustainable Development was initiated, which outlines 17 sustainable development goals (SDG) and 169 targets to improve sustainability in economic, social and environment landscapes. These include protecting the planet from degradation, which includes sustainable consumption and production, managing natural resources sustainably, and taking drastic action on climate change with the aim of supporting the needs of the present and future generations (UN, 2018). Despite these initiatives, waste continues to increase in parallel to increasing population numbers and urbanisation. In many cities in India, half of the waste is collected, while only 10% of it is treated safely. Large quantities of waste are incinerated, causing harmful and toxic fumes to be released into the environment, particularly from plastic waste. Additionally, landfills and dumpsites are filling up rapidly, resulting in severe air, water and land pollution which expels high levels of methane (Oates *et al.*, 2018). According to the Institute of Applied Science, recycling could contribute positively to the economic, social and environmental landscape. In Brazil, recycling and recycling activities could contribute billions of dollars to the municipal solid waste management system (Ramos *et al.*, 2013). With the implementation of effective waste management systems, promoting recycling activities would be globally beneficial to sustainable livelihoods. Recycling efforts by waste pickers are not always acknowledged, despite their valuable contribution to improving the environment and the economy (Schenck *et al.*, 2018). The World Bank estimates that in developing countries, between 15 and 20 million people (1% of the urban population) participate in waste-picking activities, which contribute to the reduction of greenhouse gas emissions, the spread of diseases and natural disasters (Oates *et al.*, 2018).

Waste pickers form an integral part of a capitalist system from a structuralist perspective through their supply of recyclable materials and the demand from formal enterprises (Navarrete-Hernandez & Navarrete-Hernandez, 2018). Dias and Samson (2016) state that waste pickers are exploited and intimidated by the middleman, suffer deplorable working and living conditions, receive minimal or no support from local authorities, and have low social status. Although favourable policies have been implemented to support waste pickers in many countries, large structural differences continue to prevail, such as availability of infrastructure, space and leadership skills and the ability to secure large private and government contracts. These disparities affect the waste pickers' ability to improve their income and productivity and to implement some of the sustainable development goals (SDGs) as advocated by the United Nations (Gutberlet, 2021). The majority of individuals are exposed to inequality, but the worst form of inequality is the inequality of opportunity, which is the cause of inequality of outcomes, resulting in economic inefficiency and reduced development affecting large numbers of individuals who are unable to reach their full potential (Doyle & Stiglitz, 2014). The SDGs not only address environmental concerns but strongly propose methods that can help eradicate inequality and poverty. Embedded in sustainability are promoting gender equality, empowering females, eradicating extreme poverty and hunger, achieving at least a primary education, and addressing the special needs of least developed countries (Doyle & Stiglitz, 2014).

During the apartheid era in South Africa, the affluent were mostly whites as they were allowed to excel under the white supremacy ideology. Due to the effects of apartheid, in 2013 close to 90% of black South Africans were living in poverty (Spaull, 2013). A report by the World Bank (2018) states that South Africa's slow economic growth and high level of inequality is the result of expropriation, corruption and crime which suppress investments needed to stimulate job creation and reduce inequality. Half of South Africa lives in poverty and there is very little to suggest that the poorest will see a reverse in their misfortunes in future years. Most of the poor people in South Africa are females. Despite the post-apartheid government's efforts to fight poverty and inequality through the implementation of the Reconstruction and Development Plan (RDP), the Growth, Employment and Redistribution (GEAR) programme and the

National Development Plan (NDP) in 2011, poverty and inequality continue to increase. Inequality in now higher than it was just post-apartheid (Francis & Webster, 2019). The majority of the waste pickers are people who are living in poverty (Dias & Samson, 2016) and therefore the researcher uses the SLF as a framework to help understand the social, environmental and economic landscape of waste pickers. The SLF is designed to identify poverty and how best to develop individuals and communities (Ludi & Slater, 2008; Morse & McNamara, 2013).

Morse and McNamara (2013) state that in order to curtail poverty, there is a need to understand poverty and this in itself can be daunting. It is therefore imperative to provide some understanding of poverty and the factors that generate poverty before embarking on the SLF.

3.3. Poverty and Inequality

Poverty and inequality are two serious problems that the United Nations has committed to address (UN, 2018). In many cases, poverty and inequality are clustered together as the two are treated as transposable (Stats SA, 2019). However, the researcher has decided to discuss each separately, starting with poverty and thereafter inequality. In both discussions, poverty and inequality will be linked to the waste pickers by demonstrating how these problems impact on their livelihoods.

3.3.1. Poverty

Waste pickers operate in the informal sector under precarious conditions. These individuals mostly reside in informal settlements close to landfills or dumpsites and are regarded as the poorest in communities (Oates *et al.*, 2018). Waste picking emerged based on a lack of economic growth and is perceived as a marginal survival activity in the absence of formal employment in most cities in the Global South (Navarrete-Hernandez & Navarrete-Hernandez, 2018).

In the 1960s poverty was determined by the income level which focused on the Gross National Income (GNI). In the 1970s, poverty was not only based on the income level, but included how individuals keep up with the standard of living set by society. Notably

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Sen (1981) elucidates that poverty is not only about being deprived of food but that it is caused by inequality. Labourers with their measly wages cannot sustain themselves with the increase in food prices. The 1980s generated a broader concept of poverty, including the terminology of livelihood as identified by the Brundtland Report on Sustainability and the Environment (World Commission on Environment and Development, 1987). In the 1990s, the concept of wellbeing was included in the poverty definition held by the United Nations Development Programme (UNDP) in 1990, which was inspired by Sen (Maxwell, 1999). This definition factors in non-monetary values focusing on Robert Chamberlain's research on powerlessness and isolation. This signified the importance of shocks within the environment as well as social relations, more specifically, social capital (Maxwell, 1999). Poverty can be determined by witnessing whether an individual (Ruch, 2014):

1. Has access to some form of income
2. Has employment
3. Possesses valuable assets
4. Is part of decision-making processes
5. Has the ability to provide for basic needs

From a development aspect, poverty can be delineated as a deprivation of economic, social, political, pellucidity and security freedom (Reeves, Parsell & Lui, 2019). According to Sen (1999) these freedoms are what restrict individuals from participating in social activities. The freedoms and development as highlighted by Sen became what is known as the capability approach (Reeves *et al.*, 2019).

Karl Marx stated that poverty is a result of individuals being exploited for their labour by the affluent. However, this does not factor in changes in technology and the increase in liberal reforms (Morse & McNamara, 2013). From a perspective of substantiated freedom, i.e. individuals are free to enjoy the life they perceive as valuable, poverty must be comprehended not only as a lowness in income but also the deprivation of capabilities, which is a normative identification of poverty (Alkire, 2015).

The level of poverty in Africa increased exponentially by nearly two-thirds between 1979 and 1985. By the start of 2000, it was estimated that 400 million individuals were living in poverty as compared to 250 million in 1985 (UNDP, 1990). In China, poverty has been reduced considerable but could have declined even more if the disparity of income were addressed. Amongst African countries it appears that generally, growth is a deterrent to poverty reduction. Botswana has experienced a significant increase in income but the country has not succeeded in transforming growth into a considerable reduction in poverty (Kwasi, 2010).

In South Africa, the fight to reduce poverty and inequality through the National Development Plan continues. The development of the poverty line allows the National Commission to identify the various poverty lines of individuals. The aim is to pursue the goal that by 2030 no individual will live beyond the food poverty line. Ruch (2014) provides a clear illustration of the poverty lines (Figure 10).

Figure 10: Poverty lines 2014
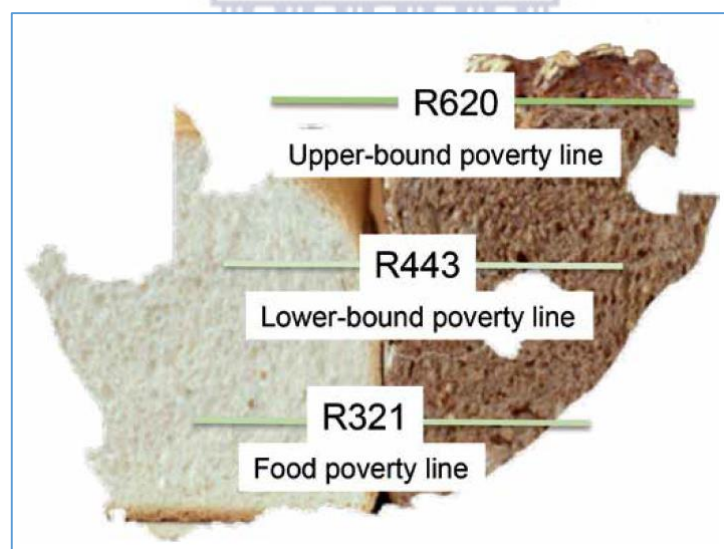
Source: Ruch (2014)

The national poverty lines are constructed based on the linking of welfare to consumption. The poverty lines are based on the cost-of-basic-needs approach. The lines are derived based on food and non-food components of household consumption expenditure. Based on the figure above (Stats SA, 2020a):

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- The food poverty line refers to the minimum amount an individual requires for daily energy intake. This is also referred to as the "extreme" poverty line.
- The lower-bound poverty line includes the food poverty line as well as an additional average amount for non-food essentials where total expenditure equals the food poverty line.
- The upper-bound poverty line includes both the average amount of the food poverty line and the lower-bound poverty average amount.

Following on Figure 10, Table 12 illustrates that poor individuals spend most of their income on bread and cereals (34.7%) compared to non-poor individuals (22.1%).

Table 12: Comparison of consumption between poor and non-poor individuals

What the poor eat		
Item	Poor	Non-Poor
Average annual food expenditure	R8 485	R14 020
Percentage spent on:		
Bread and cereals	34,7%	22,1%
Meat and fish	22,4%	28,9%
Milk, cheese and eggs	7,4%	10,3%
Fruits and vegetables	12,3%	12,3%
Non-alcoholic beverages	4,9%	8,1%
Oils and fats	4,9%	3,8%

Source: Ruch (2014)

Table 13: National poverty lines for 2019

Poverty Line	2019 Line Values(Rs)
Food poverty line (FPL)	561
Lower-bound poverty line (LBPL)	810
Upper-bound poverty line (UBPL)	1 227

Source: (Stats SA, 2020a)

A comparison on Figure 10 and Table 13 shows that the amount required for individuals increased between 2014 and 2019. FPL increased by 57.2%, LBPL by 54,9% and UBPL by 50.5%. This indicates that the cost of living increased by more than 50% between 2014 and 2019.

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The current economic system of South Africa is encapsulated by slow economic growth due to the current government's inability to attract investment. The government is also responsible for corruption, an increase in crime and expropriation, as well as inequality. The World Bank (2018) explicitly states that South Africa has one of the highest inequality rates in the world. Wage inequality has become more prevalent since 1995 and is now strongly resolute by job status, skilled compared to unskilled and employed versus unemployed. One percent of top earners in South Africa earn close to 20% of the country's income, while 10% earns more than 65% of the country's income. This implies that 90% of South African registered earners receive only 35% of the total income (Webster, 2019). Apart from the income inequality, South Africa's current unemployment rate is at 30.1% (Stats SA, 2020b) resulting in many individuals seeking income from informal sectors.

Wellbeing within a society is determined by the utilisation of income and not necessarily the level of income. An individual who is capable of caring for him/herself and is in a good state of health contributes generally to the wellbeing of the country (Naidoo, 2007). As reported by the UNDP (1990), "income is the means, not an end". Income may be used to pay for essential goods, such as medication. Wellbeing cannot be measured by the performance of the markets or by the Gross Domestic Product (GDP), but other indexes do need to be considered (Gaye, 2011). Economic growth plays a significant role in human development, but that growth needs to be precisely managed in order to harness the wellbeing of individuals (UNDP, 1990). The report accentuates that human development is a system of enhancing individuals' options. The focus should promote individuals to live long and healthy lives, to procure knowledge and have access to needed resources that will enhance their standard of living. To capitalise on opportunities, these essential options should be accessible. Gaye (2011) confirms that the GDP as a measurement instrument for a country's economic development has been debated for decades. The Human Development Index (HDI) considers other factors such as opportunities and freedoms that are accessible to individuals that will help improve their wellbeing, including access to

health and educational institutions, and as such the HDI serves to measure both social and economic development.

"*The HDI was premised on the fundamental tenets of human development, the idea that wellbeing is multidimensional and encompasses multiple aspects of human life, including how people interact with each other and with our physical environment. The HDI as such incorporates information on the level of income per person of a country, as well as indicators measuring achievements in health and education.*" (UNDP, 2016)

The neoliberal is of the opinion that income inequality has diminished in the past two decades and that the number of those living in extreme poverty has also decreased (Wade, 2004). McKay (2002) postulates that although inequality differs from poverty, the two concepts are related. Inequality focuses on differences in living standards whereas poverty centres around those whose standard of living has dropped beyond the poverty line. Sen (1981) further argues that poverty and inequality are not unrelated, but to analyse inequality as an element of poverty or vice versa would not justify each concept. This is further supported by Stewart (2013) who states that if inequality increases then poverty will increase. The elasticity of poverty is affected by growth. If economic growth is slow, this will result in a decrease in poverty if accompanied by large improvements in income distribution. Waste pickers are individuals who live in poverty, and including the informal sector in the circular economy will improve environmental, social and economic sustainability (Ferronato & Torretta, 2019).

3.3.2. Inequality

The growth of urbanisation in Global South is causing an increase in urban poverty and inequality, resulting in more individuals engaging in informal activities (Schenck *et al.,* 2019). Two important challenges that need to be addressed are income inequality and seeking some advancement to a circular economy of waste recycling. In this regard, one of the United Nations Sustainable Development Goals (SDGs) is to improve and sustain income growth among the bottom 40% of the population. Another

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SDG is to significantly reduce waste generation by implementing the 3Rs (reduce, reuse and recycle) (Valenzuela-Levi, 2020).

A report compiled by the Development Strategy and Policy Analysis Unit (Afonso, LaFleur and Alarcón, 2015) posits that inequality is when individuals are not treated equally, particularly in status, rights and opportunities. Inequality is closely related to theories of social justice. The report further states that many authors distinguish inequality as inequality in income or monetary inequality, or inequality associated with living conditions. Others distinguish inequality from a legalist perspective, associating it with inequality of rights – more specifically, when individuals are not treated equally before the law or when political power differs from individual to individual. Income inequality has increased in most developed and some middle-income countries since 1990. The average income of individuals living in North America is 16 times higher than those living in sub-Saharan Africa. The bottom 40% of individuals, based on income, earn less than 25% of the income in all 92 countries from which data was extracted (UNDESA, 2020). Many neo-liberal reforms in India have been socially dissentious, prompting land eviction, loss of subsistence and a decline in agricultural income in rural areas, leading to intensified poverty and inequality. The process of urbanisation produces various forms of political, economic and social inequality (Michael, 2019). Dabla-Norris *et al.* (2015) report that based on their research, they suggest the following to help combat inequality:

- Improved technology leads to a demand for high levels of skills, which results in an increase in inequality. One way to mitigate inequality is to offer high-level skills to individuals.
- Policies that concentrate on the poor will help alleviate inequality. Providing easier access to education and healthcare as well as social policies will help the poor to improve their income.
- Inequality cannot be harnessed by a "one size fits all" strategy. In the Global North, policies should focus on improving premium skills whereas in the Global South policies should centre around improving living conditions and standards of living.

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South Africa has always been ranked as one of the most unequal countries in the world, stemming from colonialism and apartheid. Inequality in South Africa is one of the most prominent features of its society (Stats SA, 2019). Despite South Africans experiencing democracy in 1994, individuals perceive democracy as poverty, unemployment and exclusion. Today, individuals continuously face the challenges of unequal access to opportunities and political power left by the legacy of apartheid, and inequality continues to increase (Govender, 2016). South Africa's Gini co-efficient is extremely high (62.0), as illustrated in Figure 11, which places South Africa among the top five most unequal countries in the world (Stats SA, 2019).

Figure 11: Gini coefficient of income inequality

Source: Organisation for Economic Co-operation and Development (OECD) (2021)

South Africa is typically characterised by a small economy, as well as high levels of poverty, unemployment and income inequality, which has spurred on an increase in informal activities (Mdleleni *et al.*, 2021). Most waste pickers globally encounter a multitude of challenges in their efforts to secure a livelihood. These challenges include issues of race, religion, nationality and caste. Gender inequality has resulted in female waste pickers being exposed to greater health risks (DEFF/DSI, 2020). Inequality, discrimination and poverty are entangled in unsustainability, but institutional reforms that promote new regulations and policies for sustainability could pave a new path to promoting sustainability and development (Scoones, 2016).

The researcher chose to use the Sustainable Livelihood Framework (SLF) as part of the conceptual framework, as it is an analytical framework that will help to understand various elements that can affect decisions based on subsistence and also determine

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how these elements synergistically interact (UNDP, 2015). The SLF is also referred to as the sustainable livelihood approach, but this research uses the term Sustainable Livelihood Framework (SLF). The SLF was constructed from what Morse and McNamara (2013) refer to as an "intentional" approach to development. International development is whereby government and non-governmental organisations seek means through projects to help alleviate those in poverty. Livelihoods combine resources which include assets, capabilities and activities that are essential in supporting living activities. Capabilities can be identified and developed in the application of the SLF (Zhao *et al.*, 2019). The livelihood frameworks consist of skills, assets and certain approaches used by individuals to survive. Through the SLF, these individuals will be able to confront and overcome vulnerability shocks as well as improve their current skills and assets without abusing the natural environment (UNDP, 2015). Morse and McNamara (2013) posit that the SLF serves as a diagnostic instrument that aids in analysing current situations and developing some form of intervention through policy reconstruction, or which serves as a basis for in-depth interviews. The SLF is usually applied in poor countries to address their current livelihoods and what intervention would be appropriate to enhance their development. This approach strengthens the need to adopt developmental mentorship to help waste pickers identify their capabilities, develop new skills and improve their assets in pursuit of an improved livelihood. The SLF provides a framework to engage and understand how waste pickers as individuals and as a group respond to the shocks or policy changes by applying their capital assets in achieving a desired outcome that is beneficial to their livelihoods. Manlosa *et al.* (2019) assert that the thinking around the SLF has contributed to the manner in which individuals, households and social groups within different circumstances engage agency and apply their human capital to devise outcomes relevant to their wellbeing and sustenance. Thus, the SLF provides investigation into the social, economic, political and knowledge base of those living in poverty.

3.4. Sustainable Livelihood Framework

Adato and Meinzen-Dick (2003) postulate that livelihood from a policymaker's perspective provides a structure that focuses on poverty and processes that

accentuate poverty. From the perspective of consultants, livelihood constitutes the construction of developmental programmes aimed at those who are participants in the programmes. From a social perspective, livelihood provides a holistic analogy of development. Generally, the SLF provides a linkage of specific work and capacities. The SLF examines the capabilities of individuals, what they seek and how they perceive their needs. As such, the framework can be used for research and intervention.

In 1998 the Institute of Development Studies (IDS) designed a framework to understand the livelihoods of the poor (Solesbury, 2003), which was later further developed by the Sustainable Rural Livelihood Advisory Committee based on previous literature from the IDS (DFID, 1999). The SLF is not sacrosanct but amenable to any analytical critique that could pursue a more theoretical and empirical framework to analyse and evaluate development policies (Joseph & Mensah, 2011). Delineating sustainable livelihood in a specific context can lead to various debates. Sustainable livelihood encompasses a variety of criteria and normative concepts that need to be understood by stakeholders prior to any intervention process (Chambers & Conway, 1991). The SLF renders some understanding of the livelihoods of the poor, propounding a connection between individuals and the enabling environment that influences the outcomes of livelihood strategies. The SLF offers a framework to individuals by identifying their skills, social networks, availability to physical and financial resources, and how relevant institutions can be influenced (Serrat, 2014). The SLF serves as a diagnostic instrument that aids in analysing current situations and developing some form of intervention through policy reconstruction, or which serves as a basis for in-depth interviews.

The table below shows how key organisations have applied the livelihood framework as an analytical tool (Hussein, 2002).

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Table 14: Core aspects of the livelihood approach used by development organisations

Agency	Asset categories	Sectors in which it is applied	Core ideas and principles	Levels
DFID	Human, social, natural, physical and financial (consideration of political as a further asset).	Rural (Livelihoods + NR), urban, conflict and situations of chronic instability, transport and infrastructure, enterprise, literacy and livelihoods, health and HIV/AIDS.	Six Guiding Principles: People-centered, Responsive and Participatory, Multi-level, Partnership that promote SL in the context of poverty elimination. Various types of Sustainability, Dynamic. Additional principles being considered Holistic and Strength-based as well as integration of Rights Based Approaches and gender issues.	Policy level, project programming framework, external partnerships with NGOs, governments and multi-laterals.
CARE	Social, physical, human, political, financial and natural	Rural, urban, conflict and situations of chronic political instability, disaster.	Four principles of HLS: people, holistic, disasters and development, micro and macro. Integration of RBA to livelihood programming.	Household level, urban management, country–specific.
UNDP	Human, social, natural, physical and economic (sometimes adds political).	Uses at the field and country level (with the exception of the PEI). Applications in rural and urban environments, agriculture and NR, environment and local planning.	People-centered, participatory approaches, holistic vision of development agenda. Established SL unit in its Social Development and included in initiatives concerning income-generation, NRM, people's Poverty Elimination Division – but disbanded in 2001.	Country level, field level, local institutions and organizations.

Source: (Hussein, 2002: 52)

The SLF is usually applied in poor countries to address their current livelihoods through some form of intervention that would be appropriate to enhance their development (Morse & McNamara, 2013). Serrat (2014) states that the SLF can assist in the development of activities and assess the contribution of activities on sustaining livelihoods. It should be noted that the SLF is not a panacea and as such other developmental projects should not be relinquished. The SLF highlights factors that influence individuals' livelihoods. The framework can be applied to the planning of newly developed programmes, as well as the assessment of the contribution of current activities or programmes (DFID, 1999). The report further emphasises that the SLF is

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focused on people and does not function in a linear manner. The core purpose is to provide stakeholders with an array of perspectives that will render some insight into the multitude of factors that affect livelihoods. The SLF is designed to assist those in poverty through individuals identifying poverty indicators. Effective development to improve individuals' livelihoods can be achieved by analysing the causes of poverty, which could provide a basis for examining opportunities for developmental activities. Most importantly, it places people at the centre of analysing and setting objectives (Ashley & Carney, 1999).

Figure 12: DFID core sustainable livelihood principles

Poverty-focused development activity should be:
- **People-centred**: sustainable poverty elimination will be achieved only if external support focuses on what matters to people, understands the differences between groups of people and works with them in a way that is congruent with their current livelihood strategies, social environment and ability to adapt.
- **Responsive and participatory**: poor people themselves must be key actors in identifying and addressing livelihood priorities. Outsiders need processes that enable them to listen and respond to the poor.
- **Multi-level**: poverty elimination is an enormous challenge that will only be overcome by working at multiple levels, ensuring that micro-level activity informs the development of policy and an effective enabling environment, and that macro-level structures and processes support people to build upon their own strengths.
- **Conducted in partnership**: with both the public and the private sector.
- **Sustainable**: there are four key dimensions to sustainability – economic, institutional, social and environmental sustainability. All are important – a balance must be found between them.
- **Dynamic**: external support must recognise the dynamic nature of livelihood strategies, respond flexibly to changes in people's situation, and develop longer-term commitments.

SL approaches must be underpinned by a **commitment to poverty eradication**. Although they can, in theory, be applied to work with any stakeholder group, an implicit principle for DFID is that activities should be designed to maximise livelihood benefits for the poor.

Source: Ashley and Carney (1999)

The SLF is particularly structured to identify a coherent entry point for the support of livelihoods. Sheheli (2012) further accentuates that the SLF is people-centric and is therefore designed to build on the individual's assets to improve their current livelihoods. The SLF is comprised of four key elements. Based on the figure below, the first component is referred to as the vulnerability context. This component encompasses the environment in which the individuals or community reside or work. The next component is livelihood assets, which is comprised of different assets

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possessed by the individual that aid him/her in achieving some sustainability. The third component relates to structures, policies and processes that need to be adhered to by individuals and communities. Livelihood strategies encourages choice, diversity and opportunities available to individuals and communities. The last component is the livelihood outcomes based on what opportunities and choices the individual or community applied to help reduce their precariousness and improve their sustainability (DFID, 1999).

The core basis of the SLF is to determine the asset limitations of the poor, what risks they encounter and what structures and policies enable or inhibit them from developing a pathway that would assist them in improving their livelihoods (Levine, 2014).

Figure 13: Sustainable Livelihood Framework
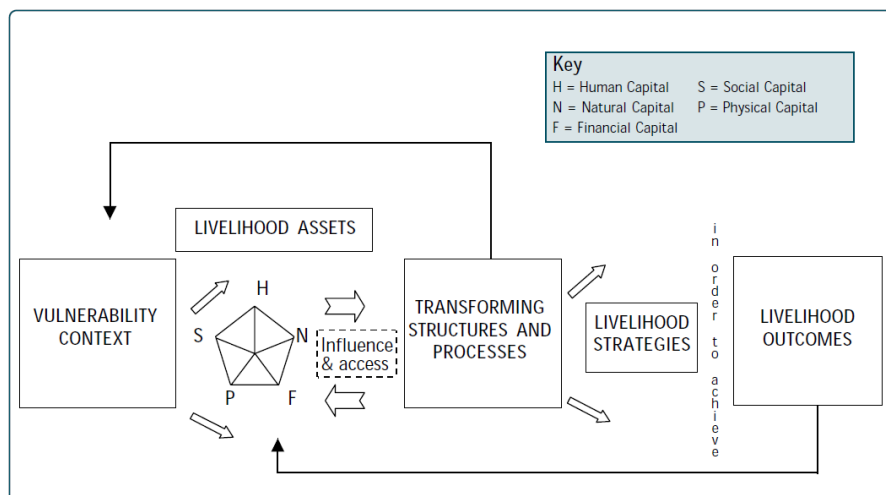
Source: DFID (1999)

The arrows in the diagram provide direction and the inter-relationships that exist from the variable. Although many academics have critiqued the SLF, it remains adaptable and capable as a tool to evaluate the poor (Levine, 2014). Each of the variables as illustrated in the diagram will be discussed to demonstrate their applicability to waste pickers.

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3.4.1. Vulnerability context

The lexicon of vulnerability has evolved over recent years, providing powerful insights into the magnitude of disaster on individuals, communities, cities and countries. Nowadays, vulnerability is delineated and applied in numerous disciplines as each is furnished with its own ontologies, methods and definitions (Hufschmidt, 2011).

Vulnerability is assimilated to development and can be associated with uncertainties, defencelessness and exposure to risk (Chambers, 1989). The concept of vulnerability is embedded in the study of natural hazards. Vulnerability is defined as the features of an individual or community in terms of their capacity to prognosticate, manage, defend and recuperate from the effects of a natural hazard. It involves a combination of factors that determine the level of impact on a person's livelihood through a strange or recognisable act in nature or in society (Janssen *et al.*, 2006).

Vulnerable groups can be affiliated to pregnant or lactating women, as well as children and disadvantaged communities (Chambers, 1989). Between 1970 and 1990 many articles explored the reactions of humans to the effects of disaster. Vulnerability to natural disasters affects nature, society, environment, and financial and community conditions. Natural disasters affect the livelihoods of individuals, especially in developing countries where resources are limited (Sarker *et al.*, 2019). Frameworks were developed to help understand the vulnerability to disaster and how to curtail it. One of these frameworks was the Capacity and Vulnerabilities Analysis (CVA) that was developed by Anderson and Woodrow in 1989 (Twigg & Greig, 2001). The authors further state that the CVA is a practical application that can be utilised as a diagnostic tool in identifying the vulnerability of individuals in their environment. This is achieved by analysing individual vulnerability on three interrelated variables. The first is the physical/material, followed by the social/organisational and lastly motivational/attitudinal. The table below provides an overview of the CVA framework.

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Table 15: CVA matrix

	Vulnerability	Capacities
Physical/Material What productive resources, skills and hazards exist?		
Social/organisational What are the relations and organisation among people?		
Motivational/attitudinal How does the community view its ability to create change?		

Source: Twigg and Greig (2001)

Roy (2013) accentuates that the purpose of the CVA matrix is to mitigate and rehabilitate responses that not only provide information on the physical and material needs of individuals, but also address the social and attitudinal outcomes. Vulnerability can be described as exposure to eventualities and stress, which is difficult for individuals to overcome (Chambers, 1989). The vulnerability context describes the environment and challenges faced by households or individuals in striving to maintain some form of sustainability (Sheheli, 2012). Chambers (1989) asserts that there are two sides to vulnerability: The first relates to the externalities comprising risk, shocks and stress to which individuals are exposed. The second relates to the internal aspect of the individual; their defencelessness when it comes to coping with damages caused by the external environment. These damages can incur losses that could impede the individual's physical wellbeing, resulting in impoverished income that affects his/her social standing and subsequently leads to humiliation and psychological harm. The vulnerability context stresses the external environment in which individuals interact. Individuals' assets and livelihoods are affected by forces related to the external environment. These include shocks, trends and seasonality (DFID, 1999). Adato and Meinzen-Dick (2003) provide a brief overview of the vulnerability context as follows:

- Trends refer to changes in population, as well as economic indicators relating to prices and governance, and changes in resources and technology.

- Shocks refer to variations in individuals and animal health, natural disasters, unexpected changes in the economy and arising conflict.

- Seasonality affects prices, production (agriculture), availability of resources, health and employment opportunities.

Chambers (1989) states that ill health as a vulnerability attribute affects the breadwinner's income. As the individual's treatment is delayed, the person becomes sicker and poorer as he/she is unable to work. The tenacity displayed by these individuals is remarkable as they sacrifice to maintain their livelihood. It might be perceived that all vulnerabilities have a negative impact on individuals' livelihoods. This is not always the case, as changes in economic indicators can have a positive effect. Similarly, new technology might be advantageous to those in poverty (DFID, 1999). Although vulnerability is out of the control of individuals, Adato and Meinzen-Dick (2003) assert that it depends on the subjective perception of individuals. The individual assesses the vulnerability and can decide if he/she will alter his/her interest in adapting to the new conditions.

The vulnerability context of the waste pickers is where they live and the environment in which they earn their livelihoods – landfills or waste picking from garbage bins (DFID, 1999). In this environment, waste pickers have very little control as the landfills have policies that restrict the time for waste pickers to be at the sites to collect recyclable items to sell. Furthermore, waste pickers are exposed to numerous health issues and the threat of being victimised by gangsters who often steal the collected items, especially from female waste pickers (Schenck *et al*., 2018). Wet and cold conditions can also impact negatively on waste pickers' ability to sustain themselves (Scoones, 1998).

Waste pickers are vulnerable, especially to the harsh environment in which they work. Schenck *et al.* (2018) report that waste pickers are exposed to being cut by glass and pricked by needles, and they do not wear protective gloves. They drink polluted water and eat rotten food, which impacts on their health and results in them not being able to generate an income. Part of the focus of this research is to develop a training intervention that will make waste pickers more environmentally health and safety conscious.

Working towards finding a mutual understanding to vulnerability from a theoretical perspective is a daunting task. More challenging would be to operationalise

vulnerability as there is no standard to measure vulnerability (Hufschmidt, 2011). The next section discusses livelihood assets, which entail the assets and capabilities of individuals.

3.4.2. Livelihood assets

In addressing the effort to improve the livelihoods of individuals, it is important to note the activities in which individuals engage in order to earn an income, as well as what prompted them to engage in such activities (Levine, 2014).

Adato and Meinzen-Dick (2003) state that livelihood assets incorporate the following assets or capital:

- Natural capital includes access to land, water, forests, marine life, protection from erosion and biodiversity.
- Human capital comprises the level of education, skills and knowledge acquired, health conditions and labour power (the ability to work).
- Financial capital involves the ability to save, liquid assets and creditworthiness.
- Social capital encompasses variations of networks that can help increase trust, ability to work as teams, mutual relationships, ability to access opportunities, capability to develop safety nets, and affiliation to organisations.
- Physical capital entails the availability to transportation, type of shelter, and access to roads, sanitation, technology and communication.

Livelihood assets not only supply an overview of the assets that individuals have acquired but also examine how individuals access these assets and how they productively utilise them (Krantz, 2001).

The livelihood asset determines the assets and capacities a person possesses to be sustainable. The research will examine waste pickers' human, physical, social and financial assets or capital and provide some form of intervention to improve this capital.

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Natural Capital

Natural capital relates to the availability of natural resources that will assist waste pickers to sustain their livelihoods. As mentioned previously, access to land, water, air quality helps waste pickers to collect recyclable items more diligently (Adato & Meinzen-Dick (2003; DFID, 1999).

Within the vulnerable context are natural resources that, through disasters, affect the livelihoods of the poor through the impact of individuals' natural capital (Twigg & Greig, 2001). In India, protecting the environment from waste dumped at one location has organised waste pickers to collect waste on a neighbourhood level (Scoones, 2016). In terms of natural capital, this attribute focuses on how individuals perceive the importance of the land and the structures attached to it that would help them to alleviate their poverty conditions (DFID, 1999). Natural capital (homes) can be destroyed by natural disasters (floods). This would impact on the livelihoods of the community and cause them to sink deeper into poverty as their natural capital decreases (Twigg & Greig, 2001). It is arguably important that individuals maintain their natural assets (Scoones, 2016) and that individuals learn how to help sustain natural resources for future generations Twigg and Greig (2001). Natural capital, like all other capital within the livelihood asset framework, is interrelated. Adato and Meinzen-Dick (2003) explain that the strength of social networks can be utilised to increase the natural capital of individuals.

As waste increases and landfills reach their maximum capacity, environmental sustainability is aimed at maintaining items that serve as value to the physical environment (Sutton, 2004). Waste pickers should be educated on the importance of their environment and the risks that they encounter (Lotz-Sisitka *et al.,* 2005).

Human Capital

One of the components of human capital is good health, which is also vital to human development. Good health adds to the quality of an everyday life (Sheheli, 2012). Many regard poor health or a lack of education as a deterrent to achieving a livelihood outcome (DFID, 1999; Joseph & Mensah, 2011).

A study conducted by Adato and Meinzen-Dick (2003) details the importance of strong health amongst Bangladeshis. Those with diseases serve as a dividing line between the poor and those who are extremely poor. Accumulation of human capital is dependent on the individual's willingness to seek medical attention or attend training sessions (DFID, 1999). Human capital encompasses the skills and knowledge that waste pickers have in order to maintain their livelihoods, which includes their physical health and wellbeing. (Krantz, 2001). Levine (2014) emphasises that human capital encompasses an array of individuals' abilities, including their eagerness to experiment, how they confront risk and how they react to social norms. The more developed these skills are, the better waste pickers will be able to sustain their livelihoods. Adato and Meinzen-Dick (2003) cite Long (2001) who critiques human capital as part of a context, as knowledge acquired is voluntary and does not always require some form of structure. However, DFID (1999), Krantz (2001) and Levine (2014) iterate that human capital entails more than knowledge and skills acquisition, but includes the health and working ability of individuals. The salary or income earned is dependent on the skills and abilities of the individual (human capital) and this would provide an indication of their professional connections (social capital) (Morse & McNamara, 2013). This depicts a relationship between human capital and social capital.

Personal empowerment through the enhancement of human capital can be achieved through the formation of social groups and connections with people that will help with financial education (Krantz, 2001). This will allow individuals to save, resulting in an increase in natural, social and financial capital. It is therefore imperative that waste pickers are trained in business and technical skills (hard skills) as well confidence building and networking (soft skills) in order to be more effective (Brixiová & Kangoye, 2018).

Financial Capital

Without finance, no business can operate or sustain itself. Money is therefore an essential component in income-generating activities. Amongst the poor, a measly

income is a restrictive attribute when it comes to accumulating assets or saving money (Sheheli, 2012).

Financial assets include cash, access to credit and debt, savings accumulated and similar economic assets (Joseph & Mensah, 2011), as well as pensions (Serrat, 2014), which are important in the pursuit of a livelihood strategy (Krantz, 2001). There are two key sources of financial income, namely available stocks and regular inflow of money. Available stocks can be in the form of savings as there are no liabilities attached, as well as liquid assets such as jewellery or livestock. Regular income of money can be from government grants such as pension or child support (DFID, 1999). This provides a means to budget expenses. Finance is acquired by the selling of items and the amount is determined by the market conditions (Morse & McNamara, 2013) or the demand for the item. In terms of solid waste management, livelihood assets may include income derived from the collection of recyclable items and fees obtained for garbage collected, constituting part of financial income (Nzeadibe & Mbah, 2015). Financial capital in essence outlines the fluidity in terms of cash and creditworthiness acquired by waste pickers. To improve their financial capital, a financial literacy training programme aimed at empowering waste pickers to better manage their cash must be implemented. Lack of financial literacy affects individuals when it comes to making sound financial decisions, leading to an inability to save and poor credit decisions (Lusardi, 2008).

Social Capital

As previously mentioned, social capital includes affiliation to social networks (Bhandari & Yasunobu, 2009; Joseph & Mensah, 2011) and relationships built on trust (DFID, 1999, Bhandari & Yasunobu, 2009). It also includes shared values, beliefs, norms andreciprocity of institutional connections that facilitate mutual benefits (Bhandari & Yasunobu, 2009). Social capital, particularly trust, is the basis for strengthening personal relationships that can produce positive economic and social outcomes (Musson & Rousselier, 2020).

Social capital has become one of the basic variables to explain social inequalities, degree of delinquency, underdevelopment of countries and communities, and quality of life. Policymakers apply social capital to derive social policies whereas economists use it for as an inferential tool for economic development (Gudmundsson & Mikiewicz, 2012). Economic development is largely attributed to social structures. Development not only increases the per-capita income, but it also assists in improving the quality of life embedded in social and cultural systems (Bhandari & Yasunobu, 2009). DFID (1999) explains that improving economic efficiencies and social capital can aid in increasing individuals' income. Micro finance programmes increase social empowerment through the creation of greater independence; they also lead to an increase in financial power and an overall improvement in quality of life (Sheheli, 2012). Restricting access to public assets through control of private enterprises will restrict the accumulation of income, resulting in social inequalities (Scoones, 2016). The author accentuates that the neo-liberals favour capitalists' ideologies over others through the incorporation of four systems, namely privatisation, manipulation and management of crisis, financial management, and state redistribution. In most communities, some individuals are financially better off than others, and the poor are compelled to live in poorer communities, thus creating social classes and social inequalities (Krantz, 2001). Social networks are established on hierarchical levels that restrict mobility and prevent individuals from escaping poverty (DFID, 1999). Waste pickers strive to attain some social acceptance for their contribution to recycling.

Previous literature highlights that waste pickers will assist one another in generating an income. Social capital includes family members who work together to improve their livelihoods, but in doing so they expose their young children to environmental risks (Schenck *et al.*, 2018).

Physical Capital

Physical capital can be explained as the basic infrastructure needed to produce goods that would support livelihoods (Twigg & Greig, 2001). Examples of physical capital include technology and tools in the form of equipment for production, pesticides, seeds and fertiliser. Another example provided is infrastructure, which is comprised of access

to transport, roads, vehicles, shelter and buildings, sanitation, communication and energy (Serrat, 2014).

There are two types of physical capital, namely man-made (buildings and machinery) and non-man-made (soil, water, crops, etc.) (Morse & McNamara, 2013). Although physical capital such as a truck can be owned by the individual, he/she will need to use the roads provided by government, thus making the individual reliant on public services (Joseph & Mensah, 2011). Roads that are well maintained will lead to easier movement between rural and urban areas. It is imperative that the demand for physical assets (public infrastructure) is driven by individuals in order for it to be sustainable (DFID, 1999). Physical capital differs from human capital in that physical capital refers to objects and human capital refers to an individual's property (Bhandari & Yasunobu, 2009). Human capital in terms of skills and knowledge, conjugated with physical capabilities, will germinate an assortment of livelihood strategies (Krantz, 2001). Physical capital assessments should be participatory in nature, as individuals might require one service more than others. When scrutinising the infrastructure needed, individuals should ask themselves if the needed infrastructure will provide long-term sustainability. The infrastructure that is required should also be assessed in terms of what service value it will offer. A school, for example, will not be advantageous if there is a shortage of qualified teachers and if the school is remotely located as such that students find it difficult to access (UNDP, 2015).

Physical capital, as previously emphasised, refers to the landfills and waste collected by waste pickers to sustain their livelihoods. Schenck *et al.* (2018) report that some landfills in South Africa lack proper sanitation, shelter and water supply for waste pickers. Training is required in how to access and utilise the required physical assets.

Concluding remarks on livelihoods assets
The livelihood assets allow individuals to utilise the relevant assets to improve their livelihoods. No single asset will enable an individual to yield the desired outcomes (DFID, 1999).

Figure 14: Pentagon of the livelihood assets
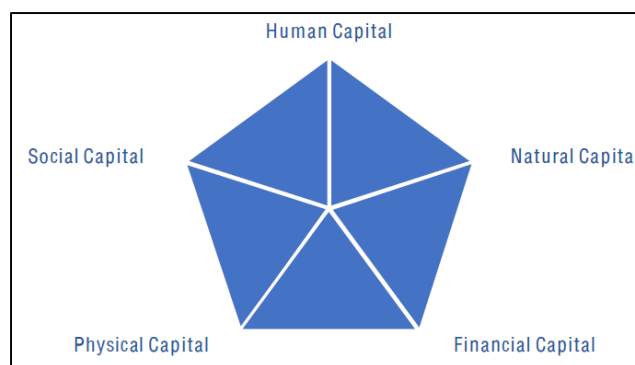
Source: UNDP (2015)

All assets (capital) are interrelated. The increase in income strengthens financial capital, which is dependent on social capital. The strengthening of financial capital provides individuals with the ability to improve their natural assets (home), giving them less exposure to harsh conditions and leading to improved health conditions (human capital) (DFID, 1999). To further emphasise the relationship between these capitals, De Haan and Zoomers (2016) state that a rural worker who does not own land to cultivate will strive to acquire land by making use of his/her social network (social capital). The worker's labour (human capital) is utilised to nurture the land through the use of equipment (physical capital). These examples infer that the livelihood assets interact without the consideration of time or space. Individuals or households may utilise some assets by sacrificing others. Financial capital is used to purchase natural or physical capital and similarly, natural and physical capital can be sold (Morse & McNamara, 2013). It is therefore imperative to view these assets as dynamic and not static.

Lastly, Joseph and Mensah (2011) allude that the use of capability as iterated by Sen, is conveyed as the ability by individuals to access and exploit their livelihood assets to achieve the desired outcomes. Once individuals have identified their ability to undertake certain functions, they will be able to derive meaningful livelihood strategies (Chambers & Conway, 1991). This research applies the capability approach in order to identify individuals' capabilities and assets and determine a course of action to best exploit these assets. The next section of the SLF that will be discussed relates to transforming structures and processes.

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3.4.3. Transforming structures and processes

This segment of the SLF consists of structures (government and privately owned) such as institutions and organisations. Included in this segment are policies, legislation and processes that guide individuals in accessing their assets and decisions for livelihood strategies (DFID, 1999; Sheheli, 2012; Twigg & Greig, 2001). Structures and processes assist the transformation of assets into choices and choices into outcomes (Ashley & Carney, 1999).

The activities and assets developed by individuals are based on their preferences and what they deem as priorities, which is largely dependent on externalities such as structures and policies (Turton, 2000). "Structures, organisations, customs, laws are all words used to define 'institutions'; these are the mechanisms by which processes function" (Lowe & Schilderman, 2001). Livelihood approaches have much to offer to organisations and governments in implementing improved policies and programmes. Attention to institutional context in terms of political, economic and social relations will underline the strategy applicable to livelihood strategies. These are based on the availability of resources to individuals (Conway *et al.*, 2002). Turton (2000) explains that in Cambodia the influence of external structures and policies is less effective than in other parts of the world. There is a lack of central government engagement with rural residents resulting in an absence of centrally formulated policies and with ineffective development. In South Africa and Zimbabwe, the Sustainable Livelihood Approach (SLA) was implemented to guide research on institutions and policies. Practitioners were able to distinguish methods whereby policy changes could be applied at grass roots level, while in some cases strategies were implemented at policy level. Those involved at policy level were able to communicate the need for change in policy and institutional structures. This was considered at both micro and macro levels (Ashley & Carney, 1999). Vulnerability shocks may cause some assets to become vulnerable, and it is important that policymakers subscribe policies that could help lessen the negative impact of these shocks by offering some form of recompense. It is not solely government's responsibility to assist those in vulnerable positions, as private agencies can also help support livelihoods (Morse and McNamara, 2013).

Policymakers must be less focused on sectoral concerns and more focused on individual needs, which could be implemented by creating dialogue with the poor on policy changes (Ashley & Carney, 1999). The SLA can play a role by providing an in-depth understanding on a local level of how policy changes can improve livelihoods, and can further contribute by furnishing relevant information on power imbalances that institutions and policies can address (Hussein, 2002). Therefore, policy changes at various levels need to be mindful of the variation in the composition of income sources (Turton, 2000). The rights of those in poverty are rarely considered by government institutions, as opposed to the rights of the more affluent who control institutions and processes with little consideration for the poor (Lowe & Schilderman, 2001). Structures are crucial to development since without structures, processes are unlikely to function. Legislative bodies are required for the existence of legislation. Legislation will be futile without courts to enforce it (DFID, 1999). The report further accentuates that livelihood assets are largely dependent on structures and processes. The value of shelter is dependent on the organisation that provides basic services such as water, sanitation, etc., and how policies control access to these services. Notably, the location of any shelter is influenced by cultural differences (DFID, 1999). Structures, in theory, serve as a means to inform individuals of government policies and the implementation of people's rights (Lowe & Schilderman, 2001).

The livelihood framework underlines how the exclusion of certain laws or policies determine the individual's livelihood. Policies, legislation and institutions provide direction for the operation of structures in terms of service delivery, trade and the engagement in the lives of individuals. Structures can serve as enablers or inhibiters through the availability of resources to all individuals (Mazibuko, 2013).

3.4.4. Livelihood strategies and outcomes

The concept of livelihood strategies has become fundamentally notable, and the ability to operationalise this concept has become especially significant when considering the outcome, which is to have improved livelihoods (Brown *et al.*, 2006). The overarching benefits of using livelihood strategies is dependent on the vulnerability context, livelihood assets and the structures and processes of the SLF (DFID, 1999). The SLF

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seeks to understand the individual's choices that influence their livelihood strategies and how to mitigate negative reinforcements that would assist in positive outcomes (Twigg & Greig, 2001). It is therefore an important component in assisting in the alleviation of poverty (Paudel *et al.*, 2017).

A livelihood strategy, as defined by Walker, Mitchell and Wismer (2012:298) is "an organized set of lifestyle choices, goals and values, and activities influenced by biophysical, political/legal, economic, social, cultural and psychological components and designed to secure an optimum quality of life for individuals and their families or social groups". A livelihood strategy provides a paradigm to comprehend and analyse social systems at community level. The ability to administer the concept of livelihood strategies can be pivotal when striving to ameliorate livelihoods. Certain strategies may suggest that households or individuals could yield higher returns on their assets, including labour (Brown *et al.*, 2006). A report by Globalisation and Livelihood Options of People Living in Poverty (GLOPP, 2008) states that livelihood strategies are directly dependent upon the assets of individuals, policies, processes and institutions and that these strategies differ among individuals and households. Livelihood strategies might differ from household to household, and these strategies could be beneficial to one household and impact negatively on another. Brown *et al.* (2006) express that distinct methods of livelihood strategies can be identified. The most common is the analysis of income per household and what activities constitute various incomes. Sustainable livelihoods focus more on asset allocation across diverse activities and not solely on income outcomes. A remunerative livelihood strategy is being self-employed. The utilisation of physical and financial capital is key in adopting a self-employed strategy (Sun *et al.*, 2019).

Livelihood strategies are pivotal in improving the livelihoods of the poor as well as the structure of the community (Alinovi *et al.*, 2010). Livelihood strategies are centred around a range of combined activities that convert livelihood assets into livelihood outcomes (Sun *et al.*, 2019).

Figure 15: Application of the Sustainable Livelihood Framework
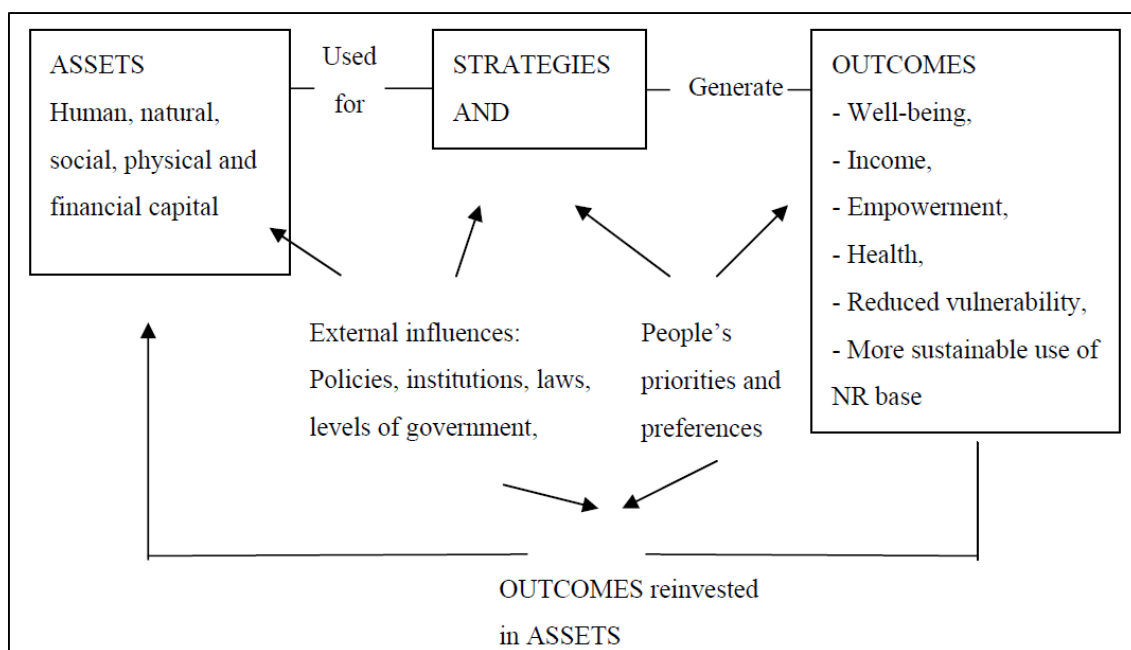
Source: Soini (2005)

Reflecting on Figure 15, if livelihood assets are improved and used strategically, it is likely to generate livelihood outcomes (Soini, 2005).

This could entail an improvement in income, eudemonia, reduced vulnerability and better sustainability in general (Alinovi *et al.*, 2010; GLOPP, 2008; Hussein, 2002). Livelihood outcomes can be influenced by different livelihood strategies- for example if the breadwinner is compelled to take care of the sick in the household, this action could affect the livelihood outcomes (Waddington, 2003). Outcomes can only be achieved if the individuals have set themselves outcomes, and this research will develop livelihood outcomes based on the capabilities of individuals.

Through the use of participatory research, the researcher applied the SLF in conjunction with the capability approach to help determine the livelihood assets of waste pickers. Once the livelihood assets of the sampled waste pickers have been determined, livelihood strategies are undertaken based on empirical information that facilitates in determining which strategies the individuals will adopt.

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http://etd.uwc.ac.za/

It is argued that waste pickers can be perceived as subsistence- or need-driven entrepreneurs as they have created an income from collecting valuable items that they sell to either a middleman or directly to the buy-back centres. From the legalist perspective, waste pickers are recognised as micro entrepreneurs connected in two methods to the formal industry. Firstly, industrialised waste-picking activities supply the local industry with inexpensive substituted raw materials, thus reducing production costs and increasing profits and competitiveness. Secondly, the demand for substitute materials determines the price paid to waste pickers (Navarrete-Hernandez & Navarrete-Hernandez, 2018). In Brazil and other parts of the world, including South Africa, waste pickers have been incorporated into the formal economy through the formulation of co-operatives. Godfrey *et al.* (2016) argue that government and business should support the integration of the informal sector, particularly waste pickers, into the formal economy through the establishment of co-operatives and SMMEs. Support should be offered through mentorship and incubators for the sustainability of these newly developed co-operatives. Navarrete-Hernandez and Navarrete-Hernandez (2018) mention that there could be a positive correlation between government support and performance indicators of waste pickers' co-operatives. In other words, an increase in support intervention from government could lead to an increase in sustainable performance of co-operatives. As waste pickers are acknowledged as entrepreneurs, the conceptual framework will include subsistence entrepreneurs. Thus the next section will provide a brief insight into entrepreneurs and the various typologies thereof. Later in the chapter, the discussion will focus on mentorship and business incubators based on Godfrey *et al.* (2016) as an integral part of the conceptual framework.

3.5. Entrepreneurship

Entrepreneurship is and will always be an advantage to many economic policies as it encourages economic growth (Carree & Thurik, 2005) and is offered as a panacea to unemployment. Many governments and stakeholders have invested in entrepreneurial education and development to boost entrepreneurial activities to help against the struggle of unemployment (Ikebuaku & Dinbabo, 2018). Developing technical skills provides access to technologies, and offering co-operative enterprise model support

would help enhance waste pickers' entrepreneurial capabilities when it comes to being integrated from the informal to the formal economy (Buch *et al.*, 2021). The Institute of Waste Management of Southern Africa (IWMSA, 2016) reports that waste pickers are entrepreneurs by heart and would be reluctant to work in the formal sector where they would be required to ascribe to certain policies and processes.

There is an abundance of literature on entrepreneurship providing different definitions. Van Stel *et al.* (2015) delineate entrepreneurs as individuals who are older than 15 years, who work in their own business, are responsible for the operation of their business, or who are currently in the process of establishing a business. Another definition of entrepreneurship is that of Balasundaram, Absar and Akhter (2010:7) who cite Hagen (1962) as follows: "creating opportunities for investment and production, establishing an organisation capable of introducing new production processes, accumulation of capital, collection of raw materials, innovation of new production techniques and new products, searching for new sources of raw materials and above all the selection of an efficient manager to run the day affairs of the organisation". In addition, entrepreneurship has a strong influence on economic development (Carree & Thurik, 2005). Stam and Van Stel (2009) emphasise that one of the challenges of economic development is to improve the standard of living of all individuals, as well as economic growth. These definitions accentuate the objectives of the waste pickers in relation to this study. The researcher defines entrepreneurs as individuals who embark on achieving sustainability through the pursuit of the opportunity that they identified. Waste pickers pursue the creation of an organisation through the collection of recyclable waste by seeking new techniques to increase their production with the key purpose to enhance their livelihood capitals, which would lead to an improved sustainable livelihood. Waste pickers, as previously documented, are survivalists seeking ways to alleviate their poverty. The typologies of entrepreneurs are vast, ranging from opportunity entrepreneurs to necessity entrepreneurs. Necessity entrepreneurs are those who are likely to function within the informal sector as a means to combat poverty (Basardien *et al.*, 2014). There are differences between opportunity entrepreneurs and necessity entrepreneurs. The former seized a business opportunity with the outcome being profit driven. The latter, on the other hand, became

self-employed due to a lack of employment or any other means of earning an income (Van Stel *et al.,* 2015). Research on entrepreneurship provides a visible distinction between transformational entrepreneurs and subsistence entrepreneurs. Transformational entrepreneurs are regarded as the real contributors to economic growth as they create employment. Subsistence entrepreneurs provide the individual with a subsistence (Seroka, 2018) and are more reliant on families to help with any shocks that would hinder their income. They are more inclined to start businesses that require low-level skills associated with easy entry into the market (Uparna, 2015). Waste pickers are individuals who seek an opportunity despite the hardships (environmental, social, political) to collect and sell valuable items. Sarasvathy's (2008) well-known effectuation theory of entrepreneurship is increasingly applied as a conceptual base for research amongst entrepreneurs. The effectuation theory proposes that from the outset of the entrepreneurial process, individuals grasp a reasonably clear and coherent insight of who they are, and on the basis of this they act (Sarasvathy, 2001). Effectuation theory further suggests that the identity of individuals may alter during the entrepreneurial process as they engage with new contacts through the expansion of their social circles, gain access to new opportunities, and have access to new resources (Nielsen & Lassen, 2012). Mamphitha (2012) identifies waste pickers as subsistence entrepreneurs, and the effectuation theory will provide the conceptual foundation to understand these subsistence entrepreneurs.

3.5.1. Effectuation entrepreneurship

Effectuation is constructed on the premise that opportunities are not discovered but can emerge through the creation of the entrepreneurial individual or group (Read, Song & Smit, 2009).

Effectuation is inverted with causation. Causation is a process that postulates a particular effect as given and focuses on various available means to achieve the desired effect. Contrarily, the effectuation process takes the available means (who the decision-maker is, what he/she knows and whom he/she knows) as given and focuses on a number of effects that could result in the creation of the desired means. This

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proves that effectuation is essentially dependent on stakeholders rather than being goal or resource dependent (Sarasvathy, 2001; Sarasvathy, 2008). Waste pickers are dependent on the stakeholders within the recycling chain as some stakeholders, such as municipalities, can affect the availability of resources to waste pickers. The research participants perceive themselves as entrepreneurs and in order to remain as waste entrepreneurs, they need to engage with other stakeholders and review the effects that are presented to remain as entrepreneurs. The table below provides an overview of the distinction between causation and effectuation.

Table 16: Differentiation between causation and effectuation

Categories of differentiation	Causation processes	Effectuation processes
Givens	Effect is given	Only some means or tools are given
Decision-making selection criteria	Help choose between means to achieve the given effect	Help choose between possible effects that can be created with given means
	Selection criteria based on expected return	Selection criteria based on affordable loss or acceptable risk
	Effect dependent: Choice of means is driven by characteristics of the effect the decision-maker wants to create and his or her knowledge of possible means	Actor dependent: Given specific means, choice of effect is driven by characteristics of the actor and his or her ability to discover and use contingencies
Competencies employed	Excellent at exploiting knowledge	Excellent at exploiting contingencies
Context of relevance	More ubiquitous in nature	More ubiquitous in human action
	More useful in static, linear, and independent environments	Explicit assumption of dynamic, nonlinear, and ecological environments
Nature of unknowns	Focus on the predictable aspects of an uncertain future	Focus on the controllable aspects of an unpredictable future
Underlying logic	To the extent we can predict future, we can control it	To the extent we can control future, we do not need to predict it
Outcomes	Market share in existent markets through competitive strategies	New markets created through alliances and other cooperative strategies

Source: Sarasvathy (2001)

The table above illustrates that the effectuation process is more actor dependent as in the case of the sampled waste pickers. In terms of outcomes, the effectuation process focuses on creating new marketing opportunities through the development of alliances and strategies. If waste pickers create an alliance with schools and businesses to collect their recyclable items, this will be a new opportunity for them. An example of

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effectuation is when a person decides to cook dinner for him/herself; the individual will look in the cupboards to see what ingredients are available and decide from those means what to cook for dinner (Sarasvathy, 2001).

Although the effectuation approach is mostly utilised by experienced entrepreneurs (Lennips, 2016) it does not restrict less experienced or novice entrepreneurs from using this approach. The effectuation theory approach is actor dependent and therefore proposes that entrepreneurs start with individual-related means, with identity being one (Nielsen & Lassen, 2012). There are three typologies of means that the entrepreneur can identify. The first is to know oneself, followed by what knowledge they possess and lastly, whom they know (Sarasvathy, 2001).

The researcher added subsistence entrepreneurs to the conceptual framework, as waste pickers are individuals who seek to accumulate an income with the purpose of sustaining themselves, thus they are subsistence entrepreneurs. Due to their survivalist nature, they are generally not able to employ other individuals.

3.5.2. Subsistence entrepreneurship

Subsistence entrepreneurs are individuals who are poor with limited resources who struggle to derive income from their business. Despite them being instrumental in the alleviation of poverty and one of the key players in recycling in South Africa, they are exposed to social vulnerabilities as a result of their place of operation and their living conditions (Ratten *et al.*, 2019). Nonetheless, subsistence entrepreneurs comprise the majority of entrepreneurs in developing countries such as China and India (Schoar, 2010).

Globally there are millions of subsistence entrepreneurs who seek survival through the engagement of micro enterprises. They are caught in a web of necessity, survival and maintenance livelihoods (Sridharan, Maltz & Gupta, 2014). Subsistence entrepreneurs are perceived as individuals who operate in the informal sector and are considered to be at the bottom of the pyramid in terms of their income. They face a double jeopardy scenario as they are restricted by limited resources and are enfeebled by

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environmental shocks as well as structural policies, making their entrepreneurial efforts highly challenging (Echambadi, Venugopal & Sridharan, 2014). Due to the low barriers of entry into the subsistence markets, competition is high, leading to few growth opportunities. Growth can occur when these individuals acquire skills that will result in them obtaining a stronger competitive advantage over rivals (Uparna, 2015). Human capital is pivotal in the development process as this leads to improved innovativeness and performance. The acquisition of human capital such as skills, capabilities and good health, to mention a few, is instrumental in enhancing subsistence entrepreneurs (Jardon, 2016).

Most subsistence entrepreneurs operate small businesses that do not develop into medium-sized businesses (Schoar, 2010). They usually operate in local economies and never in international markets, and their focus is on sustaining their low standard of living rather than concentrating on economic growth (Toledo-López *et al.*, 2012). Subsistence entrepreneurs create economic value through financial gain and also contribute to social and environmental value within their communities. These social values aid in the construction of intermediate levels of social exchange systems, which lead to the development and maintenance of the informal economy (Echambadi *et al.*, 2014). Subsistence entrepreneurs live in compact networked social communities and meet regularly to discuss their employed tasks, but this does not contribute to increased business skills but merely aids in support and protection for each household (Uparna, 2015). Subsistence entrepreneurs have formed close relationships with their customers and have developed bonded relationships and commitments, creating a close social network. Social capital provides a fundamental insight in understanding those living in poverty and those who are likely active as subsistence entrepreneurs operating in subsistence markets (Echambadi *et al.*, 2014). Subsistence markets are delineated as markets that are positioned in the backdrop of emerging markets, and those with low income are likely key stakeholders of this market. Subsistence markets comprise 60% of the national Gross Domestic Product (GDP) in developing economies and as little as 10% in developing markets (Venugopal & Viswanathan, 2015). In Mexico, micro and small businesses contribute to 95% of the GDP (Toledo-

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López *et al.*, 2012). The figure below, based on research conducted by Echambadi *et al.* (2014), illustrates the importance of social exchange.

Figure 16: Importance of social networking in subsistence entrepreneurship

P1: Subsistence entrepreneurship arises out of uncertainties in basic life circumstances.
P2: Learning about being subsistence entrepreneurs versus consumers is mutually reinforcing.
P3: Subsistence entrepreneurs choose pathways for survival rather than new opportunities.
P4: Structural, cognitive, and relational social capital are each positively associated with building and sustaining subsistence enterprises.
P5: Structural social capital is positively related to
   a)   embarking on subsistence entrepreneurship
   b)   sustaining subsistence entrepreneurship
P6: Cognitive social capital is positively related to
   a)   envisioning successful enterprises
   b)   understanding and satisfying subsistence consumer needs.
P7: Relational social capital is positively related to
   a)   sustaining subsistence entrepreneurship
   b)   succeeding in subsistence entrepreneurship
P8: External entities that partner with subsistence entrepreneurs are more likely to succeed in subsistence marketplaces than those that do not.

Source: Echambadi *et al.* (2014)

Sridharan *et al.* (2014) found that through the identification of particular environmental triggers, subsistence entrepreneurs can develop into transformational entrepreneurs. Additionally, Sridharan *et al.* (2014) state that individuals' exposure to entrepreneurial skills and business models has allowed them to evolve from subsistence entrepreneurs to transformational entrepreneurs.

The majority of policymakers and international organisations ardently advocate that most development programmes are aimed at converting subsistence entrepreneurs into transformational entrepreneurs. Researchers believe this to be the initial stage of transformation (Schoar, 2010), but this is likely not true. Schoar (2010) further argues that "this line of argument is misguided, since it is not supported by the recent literature that aims to characterize the different types of entrepreneurs in emerging markets and how they respond to growth opportunities". Lerner and Schoar (2010) emphasise that

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subsistence entrepreneurs are more inclined to transition to seeking employment and very seldom would transformational entrepreneurs switch to being subsistence entrepreneurs. On the other hand, Gamberoni, Heath and Nix (2012) indicate that policy change plays a vital role in assisting in the development of subsistence entrepreneurs to transformational entrepreneurs. The example they provide to support their stance is that if policy favours growth, then deciding which subsistence entrepreneurs to target to convert transformational entrepreneurs without causing too much of a negative impact on the transformational entrepreneurs could be an effective policy. Subsistence entrepreneurs are those individuals (waste pickers) who are most active in developing economies (South Africa) (Ratten *et al.*, 2019) and who are striving to generate an income to survive (Sridharan *et al.*, 2014). Waste pickers are a close-knit community and share "trade secrets" to help one another. Through the exchange of knowledge, they develop strong social networks.

From the literature it is clear that waste pickers need assistance in developing themselves to become more sustainable (Schenck *et al.*, 2019). Sen's capability approach is a framework that helps in any developmental endeavours by focusing on the capabilities of individuals (Ikebuaku & Dinbabo, 2018) such as the entrepreneurial development of waste pickers. The capability approach takes an in-depth approach in addressing social injustice and individual capabilities and freedoms. "Sen identifies five instrumental freedoms that are valuable not only as ends in themselves, but also as the primary means of development: political freedoms, economic facilities, social opportunities, transparency guarantees, and protective security" (Hu, 2014:1). Additionally, the capability approach provides an assessment of deprivation, particularly in the Global South, and has been linked to sustainable development. An individual's freedom is affected by his/her wellbeing, which has a direct link to environmental sustainability through the preservation of the environment for future generations (Ballet, Kof & Pelenc, 2013). The capability approach can be applied to evaluate social interaction and wellbeing such as poverty and inequality (Hu, 2014). The capability approach was chosen as it enhances the SLF through empowering waste pickers to make effective choices that can be translated into desired actions and outcomes (Kleine, 2008). The next section focuses on the capability approach as

a component of the conceptual framework in understanding the precariousness of waste pickers.

3.6. Capability Approach

Most waste pickers in South Africa live in poverty. The capability approach (CA) delineates poverty as a deprivation of capabilities (Alkire, 2007) and, as the literature illustrates, waste pickers are individuals who live in poverty. The approach argues that an individual's substantive freedom (to live a life with value) should be the key aim of development, and economic measures should be a means to this end. This approach provides a dissimilarity between the means and the ends of wellbeing and development (Kleine, 2008). The approach is perceived as a pliable multipurpose framework as opposed to an exact theory of wellbeing (Robeyns, 2016). Although the term "capability" will be discussed, Nussbaum (2011) prefers the term "capabilities approach" as she announces that people's quality of life should be perceived in the plural form and not be analysed in a single metric. This thesis extols no distinct preference but applies the term "capability" when discussing the capability approach.

The capability approach (CA) serves as a normative framework that seeks to assess the quality of life by evaluating individual freedoms. It does not attempt to provide a theoretical discourse in delineating poverty, inequality or wellbeing but rather provides a normative approach to explain these conceptions (Robeyns, 2016). Thus, the fundamental purpose of the CA is to appraise the improvement of human development (Ribeiro, 2017). Human development can be defined as a process of extending/expanding an individual's choices. These choices or options can impact negatively, as in the case of an HIV-positive individual, or can be mundane, such as many ways to make a biscuit (Gasper, 2002), or have a positive impact (the choice to be able to buy food). The CA seeks to address the question, "what is each individual able to do and achieve?" Put simply, the CA takes each individual as an end to a means, and does not merely evaluate their wellbeing but rather examines the opportunities available to each individual (Nussbaum, 2011). It is for this reason that the researcher decided to use the capability approach as a normative framework for this qualitative research on waste pickers. Waste pickers are vulnerable and

dependent on municipalities as well as home owners to allow them access to recyclable items. The CA does not provide a universal set of templates that can be applicable to all evaluative exercises, nor will it provide a distinctive methodology to identify particular spheres of poverty for any group of individuals (Tiwari & Ibrahim, 2014). The CA seeks to reveal an in-depth understanding of inequality, quality of life, and poverty with the aim to evaluate ways to reduce or attempt to eliminate poverty completely (Heckman & Corbin, 2016).

Vast numbers of humans live in conditions of poverty, and the need to address poverty can be analysed by taking into consideration four criteria (Lienert & Burger, 2015). Firstly, livelihoods depend on the availability of natural resources, which are being abused globally. Secondly, this leads to a shortage of natural resources, adversely affecting livelihoods. Thirdly, conflicts arise as resources are used to sustain livelihoods, which leads to deficiencies in resources, and therefore resources need to be utilised in a sustainable manner. Lastly, the terms "poor" and "poverty" are perceived as a capability depreciation and not solely connoted to income poverty (Alkire, 2007), despite income measurement in most cases being used as an indicator of poverty (Lienert & Burger, 2015). Nussbaum espouses 10 fundamental sets of capabilities: (1) Life; (2) Bodily health; (3) Bodily integrity; (4) Senses, imagination and thought; (5) Emotion; (6) Practical reason; (7) Affiliation; (8) Other species; (9) Play and lastly (10) Control over one's environment (Robeyns, 2016). Many acclaimed authors have argued against this list, asking how bodily health and control over one's environment can be compatible with the bodily health of freedom to live in a society that is infested with drug addicts and a society that advocates radicalism (Heckman & Corbin, 2016). Nussbaum, however, supports these capabilities as the moral entitlement of every human being and argues that each capability is essential for humans to live a life of worthy dignity (Robeyns, 2016). The capability approach (CA) provides a purport that offers both justice and poverty reduction that advocates that individuals should have the freedom to access positive resources and be able to make choices that they deem necessary (Alkire, 2005). Bagolin and Comim (2000) identify five categories whereby the capability approach (CA) can be applied:

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1. It provides a philosophical concept of human development which leads to key changes in economic development.
2. It identifies and provides solutions to gender bias.
3. It aids in recognition and offers clarification on hunger and famine issues.
4. It helps current research on conceptualising poverty measurement.
5. It opens discussions of inequality.

Some of the above categories provide a reason as to why the CA was selected as a means to understand the poverty circumstances of the waste pickers, as well as how to help develop them. Each of the five categories mentioned by Bagolin and Comim (2000) is infused in the SLF. Human development, seeking a solution to gender bias, addressing hunger issues, identifying poverty and addressing inequality are all elements that are encompassed in the SLF. Alkire (2007) emphasises that according to Sen, capabilities should be constructed in light of the research study and the sampled participants. Comim (2001) indicates that the CA is a framework that evaluates and assesses standards of living, social engagement, justice, poverty, wellbeing, and quality of life. The CA should not be used as an essential theory framework for these issues, but rather as an exercise that provides insight into what capabilities individuals have or what they can do.

Robeyns (2016) elucidates that the CA is a conceptual framework that offers a variety of normative exercises, including: 1) the appraisal of individuals' health, happiness and comfort; 2) the evaluation and assessment of social interaction; and 3) the designing of policies and proposing of social change in society. Reflecting on the sustainable livelihood framework, these three normative exercises can help link the capability approach to the SLF. Appraising waste pickers' health and evaluating and accessing their social interaction can enable the livelihood assets of the SLF. Policy design and social change relate to the transforming structures and policies of the SLF. By linking the sustainable livelihood framework to the three normative exercises within the capability approach, the hope is to provide valuable insight into the capabilities and functioning of the waste pickers. Robeyns (2016) identifies three normative programmes as part of the capability approach. It should be noted that these three

exercises can be observed and evaluated concurrently. The first criterion to investigate would be the appraisal of the waste pickers' health, comfort and happiness, and thereafter the evaluation and assessment of the waste pickers' current social interaction. The capability approach is more than an evaluative tool to understand individuals' wellbeing; it also investigates empowerment and policy development (Robeyns, 2016). The last criteria would be to investigate the current design of policies and to propose necessary social changes that would improve the current society in which waste pickers are engaged.

3.6.1. Linking the Sustainable Livelihood Framework and the Capability Approach

As stated in the Brundtland report (World Commission on Environment and Development, 1987), sustainability must fulfil the needs of those living in the present without compromising future generations in satisfying their needs. Sen fully advocates this notion but further emphasises that it is upon the individual to select what is of value to him/her and to have the freedom of choice in pursuing wellbeing opportunities. Therefore, the concept of sustainability is deeply embedded in the CA (Grasso & Di Giulio, 2003).

The capability approach in terms of wellbeing and development scrutinises policies and evaluates the impact on individuals' capabilities. It questions the state of individuals in terms of their health and seeks to evaluate the relevant availability resources. These resources include, amongst others, access to health institutions and clean water, and protection from infectious diseases that would be applicable to an individual's capability (Robeyns, 2003). Schenck *et al.* (2018) posit that waste pickers who work on landfills prefer to sort through waste without wearing gloves, which exposes them to various health risks as they are easily exposed to used syringes, broken glass and sharp-edged tins. This implies that they are willing to risk their health to earn an income without considering the precarious situation in which they place themselves. Pandey (2004) reports that waste pickers are prone to skin rashes and other serious allergies due to the environmental landscape in which they scavenge for recyclable items. This relates to the vulnerability context within the Sustainable

Livelihood Framework. The SLF is normatively based on notions of capability, sustainability and equity. The framework focuses on the present and future capabilities as well as policy considerations for future generations, including households, their exposure to shocks and reactions to policies, and how they deal with these issues based on their assets (Lienert & Burger, 2015). As the Capability Approach and the Sustainable Livelihood Framework are both evaluative frameworks, Lienert and Burger (2015) provide a table that describes the differences between the two.

Figure 17: Differences between the Capability Approach and the Sustainable Livelihood Framework

	Standard Capability Approach (CA)	Extended Capabilities Framework	Sustainable Livelihood Approach (SLA)
Strengths			
	Strong normative background	Acknowledges other factors as decisive means for attaining normative ends	Instrumental importance: capital assets as decisive means for well-being
	Consideration of intergenerational justice	Incorporates the influence of societal structures on individual's well-being	Takes feedback loops into account
	Universally applicable metric of quality of life		Has proved its applicability
	Characterizes people as active agents		
Weaknesses			
	Weak consideration of social and collective dimensions	Only broadly defines inputs for the creation of capabilities	Ambiguous understanding of capabilities as means and ends
	Weak consideration of environmental aspects	Leaves the meaning of conversion factors relatively open	Weak normative understanding
	Single directed	Environmental aspects are only considered as conversion factors	Narrow understanding of "sustainable"
	Empirical applicability	No feedback loops considered	Weak consideration of power, politics, and governance
		Gives no concrete directions for an empirical application	

Source: Lienert and Burger (2015)

By incorporating the Capability Approach and the Sustainable Livelihood Framework, the researcher hopes to uncover the needs and capabilities that will empower waste pickers to develop their human abilities. Tiwari and Ibrahim (2014) postulate that human development is not only about generating more income but encompass access to equal opportunities that could allow individuals to actively participate in the

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processes that offer these opportunities. When waste pickers are part of the implementation of policies, this will help them in making informed decisions with regard to environmental shocks and trends and may contribute to policy changes, ultimately improving their development. Heckman and Corbin (2016) explicate that human capital, as well as cognitive and non-cognitive skills, are pivotal in understanding an individual's wellbeing and are the ingredients of capabilities. The figure below illustrates the relationship between skills (livelihood assets – human capital) and the Capability Approach.

Figure 18: Skills embedded in the Capability Approach
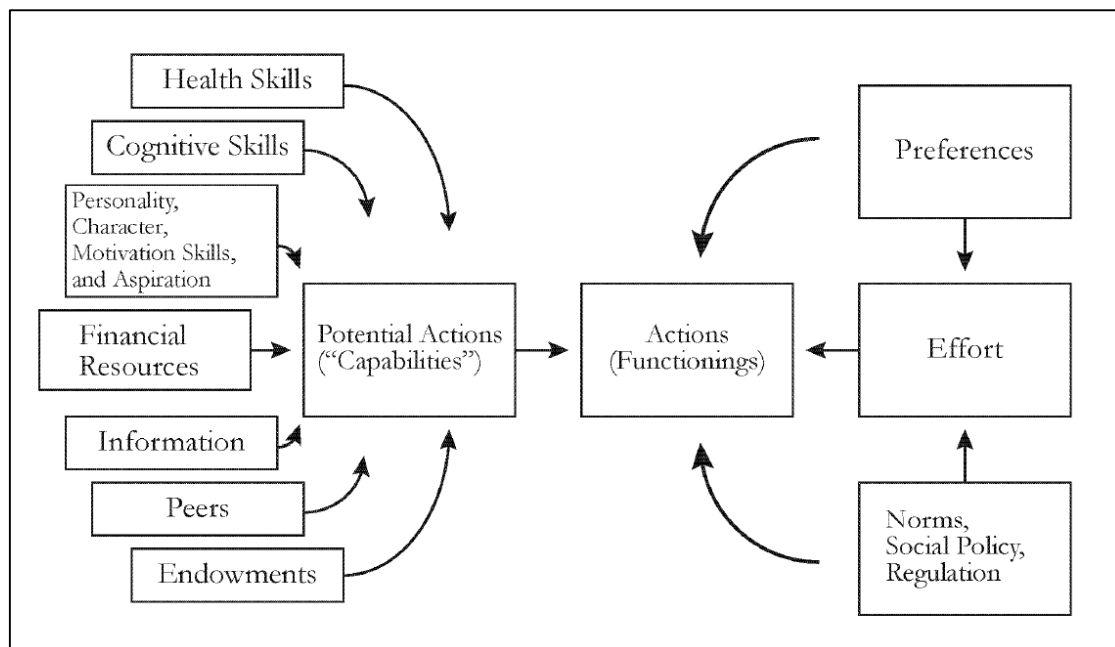
Source: Heckman and Corbin (2016)

Functioning (actions) refers to various stages within the development of human beings and the actions they undertake. To elaborate, the development of human beings refers to their condition, such as hungry, happy, warm or cold, etc., whereas functioning refers to the ability to undertake an action. Actions include caring for an infant, the ability to travel, understanding how to manage finances, etc. (Robeyns, 2016). Capabilities and functioning are the cornerstones of wellbeing. Wellbeing comprises a set of functioning that governs an individual's capability (Vaughan, 2011).

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http://etd.uwc.ac.za/

The inclusion of the Capability Approach into the conceptual framework will help understand the current capabilities and functions of waste pickers, as well as highlight which capabilities and functions that the researcher, as a developmental mentor, can use to help improve their current wellbeing. In the previous chapter mentorship was discussed as a developmental tool in facilitating waste pickers to identify their needs and assets and how best to exploit these. Mentorship helps to identify the needs of waste pickers based on their assumptions. The CA identifies the capabilities and functioning of waste pickers, while applying the livelihood strategy, a component of the SLF, will enhance their wellbeing (Schenck *et al.*, 2018). The capability approach has the causal power to provide wellbeing. To accomplish a specific level of wellbeing, it is necessary to be able to perform certain crucial functions such as having mobility, having shelter and being in good health (Ballet *et al.*, 2013) and therefore mentoring is vital in developing skills (DiGirolamo *et al.*, 2012). This study is a participatory research study but does not only assess the waste pickers in identifying their problems, but also attempts to use intervention to enhance their capabilities and assets through developmental mentorship. Katoppo and Sudradjat (2015) emphasise that participatory action research occurs by a certain phenomenon within a specific social context, such as social injustice and inequalities, that is undertaken by action towards ameliorating current conditions. Participatory action research (PAR) is for members of the community, whether they are interventionists and/or participants, to forego their philosophies and embrace problems in the context of their lived experience in an attempt to transform. It is not preconceived concepts that lead to this transformation but rather education that stimulates an action, research, and reflection cycle (Glassman & Erdem, 2014). Thus, developmental mentorship is embedded in PAR, which supports the notion of including developmental mentorship as part of the conceptual framework.

3.7. Developmental Mentorship

The developmental focus makes a valuable contribution to the mentoring process. The role of the mentor may be undertaken as an advisor, supervisor or even confidant, which would infer a substantial amount of time and financial expense (Brown, Daly & Leong, 2009). Mentorship serves as a vehicle to help identify the capabilities of the

waste pickers and skills that they are likely to pursue. To help waste pickers in their initial phase of transforming into entrepreneurs, a mentorship programme is crucial to help them apply basic business skills (Viljoen, 2014).

Knowledge sharing is reliant on one individual, who has more knowledge of a particular subject, to disseminate with another, who has less knowledge of the particular subject. The dissemination and the process of receiving and implementing new knowledge constitutes part of a mentoring process (Curtis & Taylor, 2018), thus creating a dyadic relationship. St-Jean and Tremblay (2020) explicate that mentorship for novice entrepreneurs is a vehicle that will drive them to self-efficacy, which will improve the sense of achievability and entrepreneurial progress. Waste pickers are perceived as novice entrepreneurs that require guidance through constant communication and vicarious experience. This will boost their confidence to operate their start-up businesses effectively. Holland (2009) declares that there are two types of mentoring. The first is the functionalist model, which presents a formal distance between the mentor and the mentee. The focus is on achieving learning outcomes and is not specifically directed to the mentee as an individual. The second type is the relational model that focuses on the mentee as an equal who is offered specific support needs. Trust and respect are important in this relationship. Fullick-Jagiela, Verbos and Wiese (2015) assert that relational mentoring is a key contributing factor to psychological empowerment. They state that relational mentoring is a co-dependent and reproductive developmental relationship that enhances mutual growth, development and learning. Relationships with mentors can build strong social capital relevant to navigating to other important sources.

Mentoring problems are likely to occur through the protégé developing distrust and other deceptive issues. Other problems that serve as a catalyst to a negative mentor relationship is unwillingness to learn, personality and cultural clashes, as well as poor experiences when it comes to the mentor's advice (Ragins & Kram, 2007). The literature proposes that individual differences escalate the negative mentor relationship. These include social and cultural differences (Banerjee-Batist, Reigo &

Rocco, 2019). It is therefore relevant to understand the level of severity to the relationship problem. This is illustrated in the figure below (Ragins & Kram, 2007).

Figure 19: Mentor relationship continuum
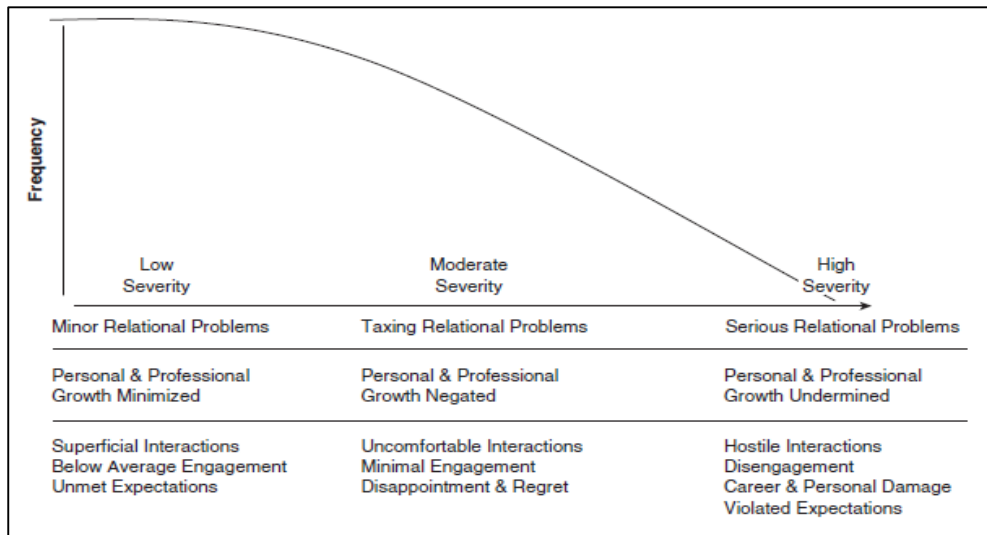
Source: Ragins and Kram (2007)

Understanding how mentoring works by scrutinising challenges can benefit the dyadic relationship in the knowledge sharing process (Curtis & Taylor, 2018). Knowledge sharing is linked to training and training is linked to mentoring. (Brown *et al.*, 2009) explain that mentoring programmes can include the training of research students at various developmental levels. Research proposes that individuals are inclined to seek help when they are less threatened psychologically, in other words when their ego or self-esteem is not undermined (Higgins & Kram, 2009). The literature suggests that culture, gender and race variances can influence the dyad relationship between the mentor and protégé (Banerjee-Batist *et al.*, 2019).

Ragins and Kram (2007) state that mentorship comprises three stages, namely the initiation stage, the cultivation stage and the dissolution/redefinition stage. The initiation stage or the engagement phase is when individuals agree to a mentorship process (Memon *et al.*, 2015; Ragins & Kram, 2007). However, this thesis argues that before mentorship can be executed, the potential protégés need to establish a trust relationship with the mentor. The duration of the trust building process is dependent on how well the individual can develop a working relationship. In the case of the waste

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pickers, the relationship was assisted through constant visitations and observations, as well as by engaging with individuals on a personal level. Therefore, a pre-initiation stage to the three suggested stages is proposed. This pre-initiation stage creates a path to mentoring, namely the acquaintance stage.

In the engagement stage, which is the second stage, a stronger relationship is developed and each party's role becomes more defined (Memon *et al.*, 2015) as the trust relationship becomes stronger. The dissolution stage should provide the mentees with a sense of satisfaction as the relationship can be dissolved, but it is at the discretion of both the mentor and the mentee if they want to continue their relationship (Ragins & Kram, 2007). Memon *et al.* (2015) separate the dissolution/redefinition stage as illustrated in the table below.

Table 17: Stages of mentoring

Initiation	Cultivation	Separation	Redefinition
Engagement phase Establishing identity of dyad as entity Forging attachment to one another	Active phase Confirmation of role Mutuality of self-disclosure Clear relational boundaries Information sharing	Ending phase Physical and emotional separation Obtaining closure	Friendship phase Supportive colleagues Possible friendship

Source: Memon *et al. (*2015)

Although Memon *et al. (*2015) state that trust between the mentor and the protégée is forged later in the initiation stage, the researcher argues that due to the importance of trust, it should precede the initiation stage of the mentoring process. Based on the above table, it is proposed that the stage before the initiation stage – the acquaintance stage – is crucial, as it is in this stage that a trust relationship is established. Holland (2009) posits that trust plays a valuable role in the development of the mentee and this in turn allows the mentee to become trusting of the mentor. Lack of trust will result in a lack of commitment, which could have an adverse impact on the mentoring programme. Whether the mentoring is offered formally or informally, trust is crucial in both cases, as it provides a path to communication engagement (Hollywood *et al.*,

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2016). Banerjee-Batist *et al.* (2019) report that individuals who have experienced distrust in the past will find it difficult to initiate a mentoring relationship, thus trust is indicative of successful mentoring. Based on the literature, a five-tier approach is proposed, as illustrated in the table below, whereby the first tier is to establish trust among those who will be mentored.

Table 18: Five tiers of mentoring

Tier of mentorship	Activities involved in each stage
1. Acquaintance	Meet potential mentees Establish platonic relationship Develop some trust through relationship building
2. Introductory	Introduce role as a mentor Provide subtle mentorship with the approval of the mentees Create a mentor and mentee relationship. Trust building continues
3. Interactive	Each person's roles are clearly defined Boundaries are formed and ethical considerations need to be practised Information is shared and personal relationships are established Mentor disseminates knowledge based on interaction with mentees
4. Maturity	Relationship development reaches its peak Knowledge dissemination and knowledge acquisition are circulated between the mentor and mentees Mentees need to become less dependent on the mentor
5. Rekindling	The relationship between the mentor and mentee dissolves gradually Each party is receptive to advice from the other Parties support each other with endeavours Friendship bond strengthens

Source: Researcher

Each tier has its own unique characteristics, and therefore no timeline can be established for each phase. Trust is the dominant variable for each phase. Once trust is comprised, it would be difficult to re-establish a mentor role among the mentees. Trust in mentorship provides a perspective that the mentor will commit to offering helpful support to the mentees. Previous research has shown that trust in mentors is an effective tool in mentorship (Qian, Lin & Hays, 2014). Mentors must openly communicate certain events of their lives with mentees to elicit and accelerate their

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trust relationship. Eller, Lev and Feurer (2014) point out that key components of effective mentor relationships are trust and mutual respect. They state that based on their research, mentees feel that trust and respect are needed to build good relations. The newly constructed five tiers of mentorship development apply to this research study.

Asserting the importance of developmental mentorship as a component of the conceptual framework will assist with the implementation of the Capability Approach as it will germinate the capabilities and functioning skills of the participants. Developmental mentorship in conjunction with PAR will be able to address the three normative exercises as proposed by Robeyns (2016): 1) Assess and improve the waste pickers' wellbeing; 2) Assess and evaluate their social network; and 3) Assist waste pickers to communicate with the municipality to redesign policies to improve their livelihoods. Furthermore, mentorship serves as a tool in business incubators (Preethika *et al.*, 2020) and therefore business incubators form part of the conceptual framework. Mentorship and incubation will help waste pickers to develop skills and nudge waste picker co-operatives to become sustainable. These developmental tools will help waste pickers enhance their capabilities through new knowledge and skills development (CSIR, 2015). Petrucci (2019) postulates that numerous academics classify business support in various elements of counselling, mentoring and coaching and that these form part of business incubation in the knowledge creation and learning process. Business incubators are also linked to the capability approach as individuals' capabilities are enhanced through continuous entrepreneurial training (Salem, 2014). The last part of this chapter focuses on business incubators as a vehicle to train waste pickers to help them on their entrepreneurial journey.

3.8. Business Incubators

The Council for Scientific and Industrial Research (CSIR) states that continuous business development through mentorship and incubation is needed to help waste pickers who are co-operative members to improve their skills in order to have a better understanding of running a business (CSIR, 2015). Incubators are usually associated with premature infants or those infants who require nurturing in order to survive.

Similarly, business incubators assist new start-up organisations to develop and grow during this vulnerable stage. Business incubators were introduced in the 1960s but only started to gain momentum in the 1990s as a form of support to start-up businesses (Lesáková, 2012). Dahleez (2009) asserts that business incubators render relevant services and a conducive environment that support entrepreneurial development (ideas, knowledge and skills).

3.8.1. Defining business incubators

The basis of business incubation is designed to provide support to young and struggling organisations during challenging times. Governments and private sectors that offer these support structures are referred to as business incubators. The companies that seek assistance from business incubators to develop or grow their organisations are known as business incubatees (Lose *et al.*, 2016). Business incubators differ from other training programmes that are targeted to enhance business support. They specifically provide entrepreneurs with financial support, training and technology, and help young and up-and-coming entrepreneurs to benefit from their knowledge and an array of available resources (Salem, 2014).

According to the National Business Incubation Association (NBIA), "Business incubators are facilities that provide shared resources for young businesses, such as office space, consultants, and personnel. They may also provide access to financing and technical support." (NBIA, 2020). The South Africa Business Incubator Establishment Handbook: A Guide to Establishing Business Incubators in South Africa delineates business incubators as "physical and/or virtual facilities that support the development of early stage SMEs through a combination of business development services, funding and access to the physical space necessary to conduct business" (DTI, 2014:12). Another definition of business incubators as organisations is that they create favourable conditions for start-up enterprises by creating a shared service with the purpose of reducing costs (Ogurtsov *et al.*, 2016). Business incubators are comprised of programmes that will assist in the acceleration of new ventures through offering an array of business support resources and services (Lesáková, 2012). These services provide a protected environment for new businesses until such time that they

are able to sustain themselves (NBIA, 2020). Bruneel *et al.* (2012) denote that business incubators rejuvenate economic development and that they support newly developed enterprises with the hope that they will be able to become self-sustainable organisations. This support encapsulates numerous activities such as office space, business support, access to networks and shared resources. Business incubators evolve through three critical stages, namely start-up, business development and maturity (Tengeh & Choto, 2015). The first phase (start-up) of the incubation process is where the entrepreneurs will test their product and find solutions for their prototype. This phase will affirm that the enterprise is ready in terms of the viability of the teams to pursue this venture. In the second phase (business development) the entrepreneurs should acquire knowledge on business development and construct a business plan (Grancea, 2016). In the maturity stage, the enterprise will become more developed and will excel in performance (Tengeh & Choto, 2015).

Business incubators, with the support of mentors and business agents, aid in practical and exploitative learning, which in turn are the precursors of knowledge accumulation (Patton, 2014). Business incubators further contribute to the development of social capital through enabling shared resources that could eliminate availability and affordability obstacles (Totterman & Sten, 2005). Social capital is a component of the SLF together with financial and human capital, and which through developmental mentorship will help improve the waste pickers' social relations with other agents. As stated earlier, this capital will be exploited through developmental mentorship in order to identify and improve the capabilities and functioning of the waste pickers.

3.8.2. Contributing factors of business incubators

Many new organisations are confronted with harsh environmental shocks and trends and many do not make it pass the first stage of their business development. Business incubators offers the support required to circumvent some of the obstacles faced by newly developed organisations (Bøllingtoft, 2012; Mbewana, 2005). Incubation programmes can facilitate the co-operatives of waste pickers to become sustainable,

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but the pursuit of improved sustainability should be driven by the waste pickers (CSIR, 2015).

Business incubators have evolved from the 1950s when they were first introduced in the United States due to poor economic performance. Today, incubators offer additional services that incorporate social networking and improved social capital, which is vital to the growth and development of novice companies (Smith & Zhang, 2012). Offering network support has been proven to lead to improved performance (Harper-Anderson & Lewis, 2018). Pettersen *et al.* (2016) assert that business incubators should establish networks with external organisations and individuals to help generate new ideas, test products, identify new market opportunities, and obtain financial support and legitimacy.

Harper-Anderson and Lewis (2018) suggest that incubator practitioners can apply best practice programmes to enhance internal performance:

1) **Services and Quality**

Services can be offered in a tangible and intangible manner. Tangible services include business plan development, legal advice, access to finance, marketing, network opportunities and shared office space. Intangible services refer to financial and other related skills training.

2) **Operations and Management Practices**

The commitment from the incubator practitioners must be solid to yield positive outcomes. Management practices are important to the success of the incubator coupled with the relevant networking resources.

3) **Resources**

Human capital and financial capital are crucial resources, including management practices, for incubation success.

4) **Facility Characteristics**

Geographic location helps to improve entrepreneurial innovation. Urbanised spaces see accelerated entrepreneurial activities.

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Business incubators are vital to economic development as they furnish resources that are relevant to start-up businesses and also contribute to the creation of employment. Many developing countries have adopted the concept of business incubators (Salem, 2014). Ogurtsov *et al.* (2016) relate that in Russia there are 70 business incubators that offer support to an average of 15 to 20 entrepreneurs whose average workforce is about seven to 12 individuals. The number of business incubators is not sufficient considering that globally there are 5000 business incubators. Their research further reveals that the majority of these incubators provide office space and conference rooms. Scaramuzzi (2002) asserts that in the United States of America, business incubators have reached the maturity stage and are responsible for the success of more than 19 000 business, fostering the employment of more than 245 000 jobs. Seventy-five percent of these business incubators are not profit driven and have grown considerably over the years. In 2002, it was estimated that 1000 business incubators operate in Europe, with about 300 in Germany.

The table below provides an indication of the incubation programmes used in Europe by the various sectors.

Table 19: Main industry sectors supported by incubation programmes in Europe

Industry sectors/Business activities	%
Biotechnology, pharmaceutical sector	14,2
Hi-tech sector	18,6
IT sector	18,2
Combination of more activities	9,5
Business and financial services	0,6
Retail, marketing and distribution	0,4
Services/Professional	8,8
Knowledge-oriented services	11,5
Creative industries	6,1
Research and development	12,2

Source: Lesáková (2012)

In China, business incubators were first introduced in 1987 by the Ministry of Science and Technology and by 1999 the number had increased to 110, ranking China third in the world in terms of business incubators (Mbewana, 2005). In Saudi Arabia business incubators provide empowerment to minority groups through policies that promote young female entrepreneurs and offer leadership training to young Saudi girls. Additionally, through reform policies initiated by business incubators, the Saudi government aspires to create new businesses, train entrepreneurs, provide financial support, and expand current enterprises (Salem, 2014).

In South Africa business incubators are in the growing stage and are mostly funded by government on a national and provincial level. There is, however, a growing number of privately funded incubators. Government-funded incubators are operated by the Small Enterprise Development Agency (SEDA) and by 2010 it had 29 incubators operating in various sectors within South Africa (Kavhumbura, 2014). The main aim of the creation of SEDA was to turn 80% of business failures in the initial stages to 80% of business success within the first three years. To achieve the success of the small enterprises, the focus was on the following (Khuzwayo, 2015):

1. To improve the competitiveness, performance and productivity of small enterprises
2. To enhance growth and profitability
3. To provide management support and increase accessibility
4. To facilitate the acquisition of development and transfer of technology, specifically for those operating in the informal economy and secondary sector

Ogurtsov *et al.* (2016) conclude that the objective of business incubators is to engage with the population to create small businesses as a means to curtail unemployment and create growth opportunities through engagement with other organisations in other sectors.

3.8.3. Challenges experienced by business incubators

Although incubators charge for the facilities and services provided, many are funded by government and therefore can offer a subsidised price which is lower than the

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market price (Lesáková, 2012). However, business incubators are fraught with challenges.

3.8.3.1. Technological changes

A huge challenge that business incubators face is to match the technology required by start-up enterprises in the ever-changing technological environment (Clausen & Korneliussen, 2012). Incubators at times lack the ability to provide the relevant technological support to further develop start-up businesses (Lose & Tengeh, 2015).

3.8.3.2. Lack of funding

At stated previously, business incubators are in most cases funded by government, but there are those privately funded incubators that do require additional funding to assist businesses. To assist start-up businesses in South Africa, an amount of at least R500 000 is required by the incubator (Tengeh & Choto, 2015).

3.8.3.3. Lack of skills

Lalkaka (2002) asserts that management control of incubators lacks entrepreneurial experience resulting in failure to provide start-ups with the relevant support. He further emphasises that incubators lack innovation and creativity in developing countries. The need to continuously update competences is a challenge especially in an ever-changing environment (Grancea, 2016).

3.8.3.4. Geographic location

Subsistence entrepreneurs are not easily accessible and business incubators are not of the means to assist them if they are located in remote or rural areas. Although business incubators should be ideally located where technology and service infrastructures are easily accessible, geographic areas do pose a challenge (Tengeh & Choto, 2015).

Based on the literature relating to business incubators, it is imperative to include business incubators as part of the conceptual framework. However, bearing in mind the challenges presented, specifically the geographic location, and considering the

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impact of COVID-19 in terms of social distancing and screening before entering any premises, it is proposed that the business incubator must be able to provide training at the location where the waste pickers are working. Lose (2020) asserts that business operations have been disrupted by the advent of COVID-19 and the Fourth Industrial Revolution (4IR), and that for business incubators to remain sustainable, they need to adopt a more technological approach. This would include digitalisation, online platforms and artificial intelligence. However, if one considers the current skills and assets of the waste pickers, it would be best to provide the training on-site.

The final component of the conceptual framework is to include a mobile business incubator as a training vehicle for waste pickers. The mobile business incubator will alleviate the problem of waste pickers forgoing their daily activities to attend training workshops.

3.9. Putting it all together

This chapter introduces sustainability and briefly discusses poverty in addition to the income inequality landscape within South Africa. This helps to set the foundation for the construction of the conceptual framework and also provides an understanding and an interpretative view of the social constructs based on the qualitative findings (Jabareen, 2009). The paradigmatic significance of a conceptual model is to outline the methodological underpinning of the research study. This can be accomplished by highlighting the importance of the research through the contribution of new knowledge to the existing body of knowledge (Varpio *et al.*, 2020).

Reflecting on the primary research question, the conceptual model serves as a roadmap to guide the research in seeking knowledge that will hopefully address the research question, as well as function as a guide to analyse the data collected.

The Primary Research Question:

What informal training and mentoring programme can be developed through participatory research that will enhance the capabilities of waste pickers to improve their sustainability and entrepreneurial development?

As discussed throughout this chapter, the conceptual model embodies five key theoretical perspectives that serve corroboratively to guide the research. An overview of how these five theories are numbered is given in the conceptual model diagram below, namely 1) developmental mentorship; 2) waste pickers as subsistence entrepreneurs; 3) capabilities approach; 4) the Sustainable Livelihood Framework; and 5) business incubators, as depicted in a synergetic method. When it comes to waste pickers as subsistence entrepreneurs, the Capability Approach is entrenched in the Sustainable Livelihood Framework, which is depicted by the circle in the conceptual model. Developmental mentorship helps in understanding, accessing, evaluating and facilitating waste pickers to improve their capabilities, functions and freedoms based on the components of the Sustainable Livelihood Framework. Each of the theories is applied synergistically in hopes of helping the waste pickers to improve on issues of social injustice, wellbeing, and economic and political challenges.

Figure 20: Conceptual model for the development of waste pickers
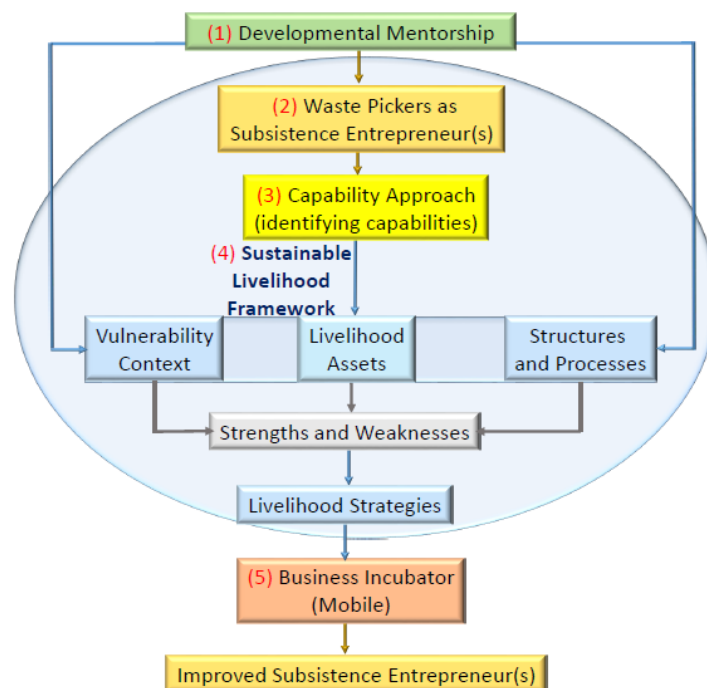
Source: Researcher

Developmental mentorship, the first theoretical perspective of the conceptual model, and its application will provide much-needed information on waste pickers and how best to help them overcome difficulties and hurdles on the path to improving their

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current wellbeing. The transition from being an illegal occupant at a landfill to an individual who regards his/her legal stance in the recycling cycle as pertinent can be achieved through developmental mentorship. Trust is a key component in innovation, as well as knowledge dissemination and acquisition, and stabilises relationships while fostering order in the economy (James, 2006) and community. Employing the five tiers of mentorship, namely (1) acquaintance; (2) introductory; (3) interactive; (4) maturity; and (5) rekindling, will accentuate the skills and capabilities that these waste pickers need to develop. Thus, developmental mentorship will facilitate in this process and, through the implementation of the Capability Approach, will help to identify neglected capabilities that could be converted into additional human assets.

The second component of the conceptual framework is the concept of subsistence entrepreneurs, as the sampled waste pickers perceive themselves to be recycling entrepreneurs. These entrepreneurs usually run small businesses (Schoar, 2010) and are regarded as the bottom of the pyramid. They persistently strive to sustain their low standard of living and operate in the micro economy (Toledo-López *et al.,* 2012). The key objective is to provide a roadmap that will assist waste pickers to attain an improved status as subsistence entrepreneurs.

The Capability Approach is the third component of the conceptual framework and identifies the waste pickers as individuals. It scrutinises their health, financial acumen and other factors that accentuate their capability (Robeyns, 2003). One of the predominant attributes of the SLF is livelihood assets. The livelihood assets are utilised to identify the capabilities and functioning of the waste pickers in terms of their assets.

Figure 21: Pentagon of the livelihood assets

Source: UNDP (2015)

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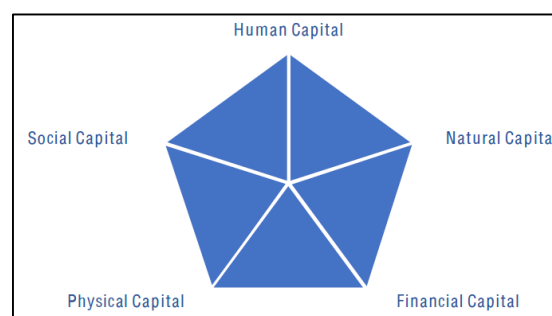
These assets help to identify the waste pickers' possessions and analyse their surroundings in terms of basic needs. It additionally serves as a guide to determine specified areas that require facilitation to improve their current situation. Mentorship is the applied technique to create a relationship with the researcher and the waste pickers, as well as assist in the application of the Capability Approach. This is determined by applying the three normative exercises as elucidated by Robeyns (2016).

The fourth component of the conceptual framework is the Sustainable Livelihood Framework (SLF). The core purpose of the establishment of the SLF is to identify various levels of poverty and how to assist in the reduction of poverty (Morse & McNamara, 2013). As stated, the SLF comprises five attributes and each of these attributes are applied to the current conditions of waste pickers.

Figure 22: Sustainable Livelihood Framework
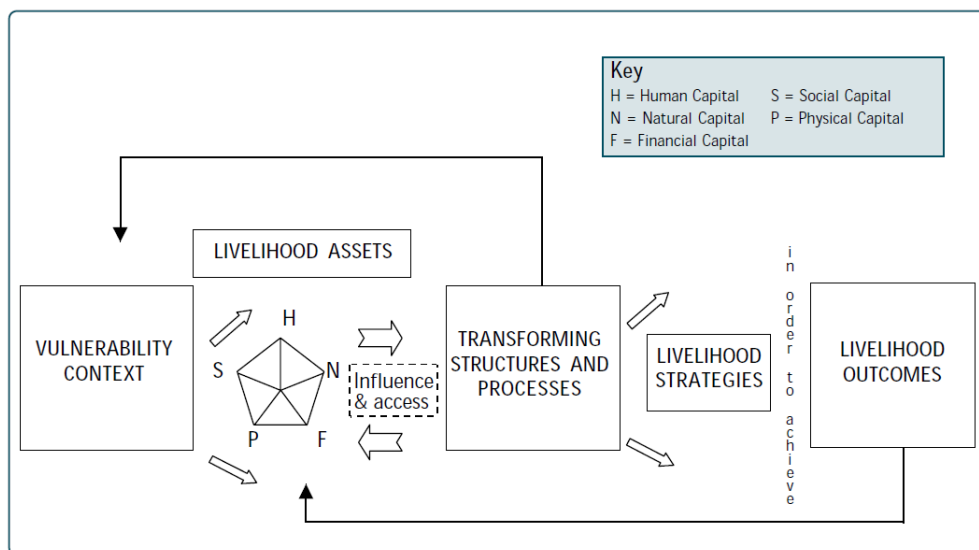
Source: DFID (1999)

The SLF framework serves as a key indicator in identifying the conditions, capabilities and structures that would enable waste pickers to improve their livelihood outcomes. Waste pickers are individuals who are constantly confronted with various obstacles whilst earning some income. Most of them are not formally employed and operate

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perilously in the informal economy. Some describe themselves as entrepreneurs, as they believe that their activity contributes to the recycling sector. Together with the corroboration of the capabilities approach, developmental mentorship and the SLF, the research is able to identify the strengths and weaknesses of the waste pickers. Once these components have been identified, only then can strategies, including training programmes, be developed to assist waste pickers to improve their skills and capabilities.

Executing the optimal livelihood strategies based on information gathered through the Capability Approach, mentorship, the environment, policies and procedures and the livelihood assets of the waste pickers could be administered through business incubators. Novel entrepreneurs best excel through the assistance of business incubators. The last section of the chapter explored the final component of the conceptual framework, namely business incubators. Business incubators enhance both economic development and economic growth as they seek mechanisms to enhance newly created ventures (Salem, 2014).

The researcher incorporated business incubators into his framework because he sees it as the vehicle to provide training to waste pickers based on the requirements identified by them. The researcher further suggests that training be jointly designed and developed by the waste pickers and stakeholders.

Participatory Action Research (PAR) is the qualitative research method that serves as a backdrop but also a vehicle through which the conceptual framework can be actualised.

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Figure 20: Conceptual model for the development of waste pickers
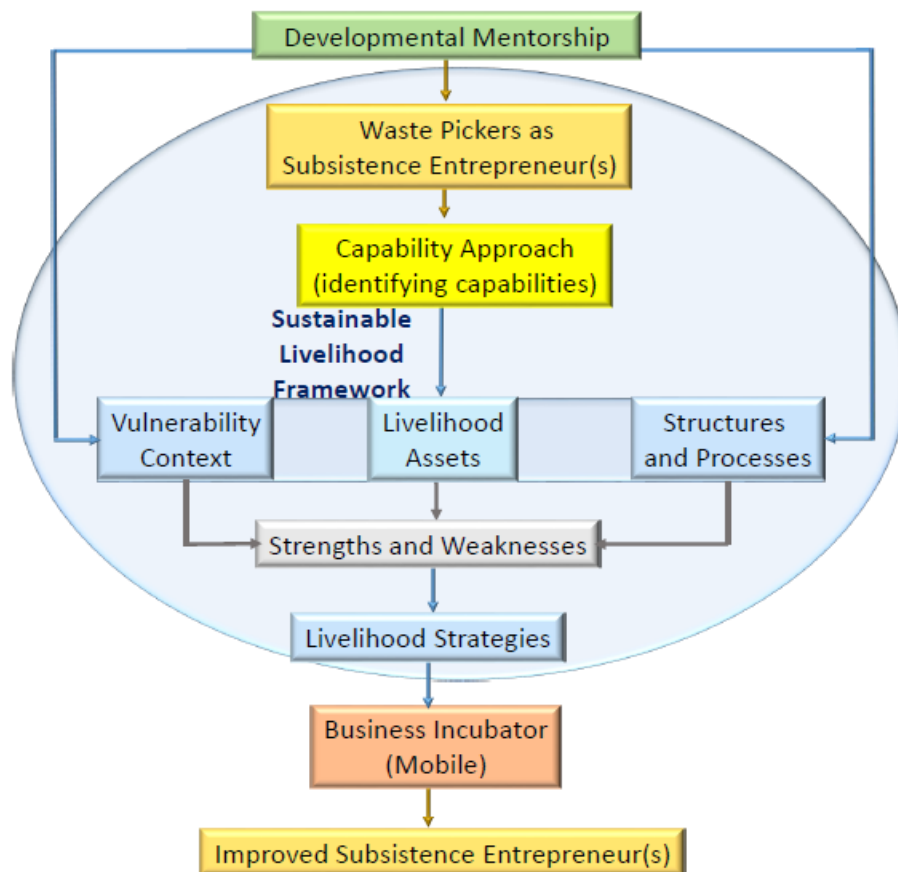
Source: Researcher

Each of the components is dependent on how PAR is executed throughout the research. A detailed explanation of PAR has been reserved for the next chapter. The next chapter explores the transformative paradigm as a philosophical framework that concentrates on power differences and building trust relationships, and focuses on culturally diverse communities that are exposed to social injustice (Mertens, 2012). Additionally, the chapter will explore the theoretical assumption of PAR as a qualitative research methodology.

Chapter 4: Research Design and Methodology

Waste pickers are individuals who seek a livelihood in perilous circumstances by sorting through waste at landfills and in rubbish bins. They are exposed to many forms or discrimination and social injustice. To evaluate and understand the social justice, cultural intricacies and power issues, the transformative paradigm is applied. Mertens (2012) postulates that the transformative paradigm examines the assumptions that address power differences and trust-building relationships and primarily focus on ethics in terms of cultural diversity. Participatory action research (PAR) is applied as a qualitative research approach to illustrate the methodological implications of the transformative paradigm.

4.1. Introduction

This chapter discusses the ontological, epistemological, axiological and methodological assumptions of the transformative paradigm in relation to the precarious lives of the waste pickers. PAR as a research approach was undertaken with waste pickers in the form of in-depth personal interviews, observations and focus groups, as these constitute the basis of qualitative research (Creswell & Creswell, 2018). The research among the waste pickers started in 2018 and continued until 2021. Data collection was disrupted between March 2020 and June 2020 due to the COVID-19 pandemic, resulting in the entire country going into a complete lockdown. Currently, the research is ongoing, with this thesis presenting the most recent data collection.

Kumar (2011) discusses two types of research – pure research and applied research. Briefly, pure research involves a more quantitative approach, which entails the development of a sample technique applicable to a specific situation. It provides a basis to measure individuals' emotions and attitudes, thus contributing to the existing body of knowledge within research methods. Applied research is predominantly applicable to the social sciences and thus relates to research techniques, methods and procedures within the research methodology framework. Applicable to applied research is transformative research, which is pertinent to social science studies as it contends with inequality and incorporates qualitative methods for data collection

(Matjila & Van der Merwe, 2021). Transformative research was applied, which integrated qualitative methods as the information collected relates to several characteristics of a situation, issue and phenomenon. These applied to this study as the researcher sought to understand the current phenomenon, situation and issues experienced by the waste pickers. In addition, the objective of the research is to facilitate change or affect policy decisions to improve the waste pickers' livelihoods. Qualitative research is centred on descriptive data that does not involve statistical analysis but seeks a thorough description of the findings to ascertain individuals' perceptions of their realities. Therefore, no large sample size is required but the questions are more open-ended to facilitate a more in-depth response (Mackey & Gass, 2005). Qualitative research as a methodological assumption is important in transformative research and evaluation through the creation of a dialogue with participants as a starting point (Mertens, 2012). Based on this premise, the researcher selected a transformative research approach that integrates a qualitative approach, as it results in a paradigm shift from where the researcher is not only part of the research process but seeks to improve social justice and reduce inequality.

The **first part** of this chapter investigates the theoretical assumption of the transformative paradigm, assigning importance to the waste pickers as a marginalised group exposed to social inequalities and social injustice (Romm, 2015). This part underlines the ontological, epistemological and methodological perspectives that differentiate from the post-positivist and interpretive/constructivist world views. The **second part** of this chapter examines the theoretical aspects pertaining to the ontological and epistemological perspectives of PAR and links these to the transformative paradigm. This part briefly discusses interpretivism and social constructionism, as well as positivism/post-positivism. **Part three** of the chapter outlines the rationale behind choosing PAR for this research study and the reasons for undertaking personal observation, personal interviews and group discussions as part of the research design. These methods were instrumental in establishing a trust relationship with the waste pickers, which facilitated in understanding their social realities. PAR helped the researcher to reflect after each data collection session, and these reflective thoughts were documented to aid in the data analysis process. The

interaction with waste pickers revealed a paradigm shift and unveiled many nuances of the living conditions of precarious individuals, which were previously unknown. On the other hand, the researcher's presence led to the exchange of many pleasantries with the waste pickers, which later developed into trust and recognition of the researcher as their mentor. Trust forms part of a strong component in the transformative paradigm, as trust enables valid data (Mertens, 2007). Through constant interaction with the waste pickers as a trusted mentor, a dyad and reciprocal relationship emerged. The final part (**part four**) of the chapter reveals the ethical considerations that permitted the researcher to conduct this research without any discrimination or misconduct. It provided a basis of trust between the waste pickers and the researcher, which is showcased in the next chapter (discussion of results).

4.2. Sampling Technique

There are various non-probability sampling techniques such as convenience, quota, judgemental (also called purposive sampling), and snowball sampling (Blumberg, Cooper & Schindler, 2011). The researcher employed purposive sampling to conduct face-to-to-face interviews. Purposive sampling is a recommended sampling technique in qualitative research (Creswell & Creswell, 2018). Purposive sampling is appropriate when the research is exploratory in nature, and this research seeks to explore and understand waste pickers in their natural working environment (Sekaran & Bougie, 2016). In non-probability sampling, it is not the aim that the sample be representative of the population, thus the use of a small sample size. There are many limitations when applying a non-probability sampling technique, e.g. it is not representative of the entire population and therefore the results cannot be applied generally (Etikan, Musa & Alkassim, 2016) but since this is an participatory action research study I am interested in the mechanisms of transformation within the target group. However, non-probability sampling offers potentially useful information about the population (Sekaran & Bougie, 2016) as in the situation of the waste pickers.

The next section discusses the transformative paradigm that was adopted for this research. A transformative paradigm underlines the application of qualitative and mixed methods to highlight the ecological complexity of a particular circumstance and

to access the voices of those who have historically been ostracised (Jackson *et al.*, 2018), as in the case of the research sample – the waste pickers.

4.3. The Transformative Paradigm

The transformative paradigm focuses on social justice problems and investigates social harassment, conflict and power constructs at whatever levels these take place (Kivunja & Kuyini, 2017). It is a feasible and convincing framework for research that integrates social justice and advocacy of marginalised communities. It permits the researcher to investigate the balance of power relationships, and how to action social inequity and injustice. In other words, the transformative framework serves as an evaluative tool to research in general (Jackson *et al.*, 2018). "This paradigm assumes a transactional epistemology, (in which the researcher interacts with the participants), an ontology of historical realism, especially as it relates to oppression; a methodology that is dialogic, and an axiology that respects cultural norms" (Kivunja & Kuyini, 2017:10). Transformative researchers are of the opinion that the interpretivist perspective does not satisfactorily address issues relating to marginalised communities and social justice. Transformative researchers suggest that transformative research should impact the lives of the participants, institutions and the researcher (Mackenzie & Knipe, 2006).

Transformative Ontological Perspective

The ontological perspective of the transformative paradigm concurs that reality is constructed socially, but cognitively some individuals possess more power than others and certain individuals with different characteristics might be excluded from decisions resulting in social injustice. As such, multiple realities may emerge due to the different levels of power related to the characteristics of the participants (Mertens, 2007). In terms of the research, each waste picker constructs realities based on his/her understanding, power relations and cultural diversity that the researcher needs to understand through dialogue (Garneau & Pepin, 2015) brought upon by a qualitative approach. Mertens (2012) thus posits that it is the researcher's responsibility to probe the emergence of those realities based on issues of power that could be affiliated to economics, politics, disabilities, gender relations, religion, sexual orientation and other

factors associated with differential accessibility to power. Conclusively, the transformative paradigm from an ontological assumption is that social realities are constructed on the basis of power and privilege (Sweetman, Badiee & Creswell, 2010). Our world is multifaceted, with an array of views about what is real, originating from diverse societal and cultural situations (Cram & Mertens, 2016).

Transformative Epistemological Perspective

Epistemology in research delineates how we learn to know something – the reality or truth, as well as what we consider as knowledge within this world. It concentrates on the nature of human knowledge and understanding as to how the researcher can attain it and apply it to the research (Kivunja & Kuyini, 2017).

The epistemological perspective in transformative research is to understand the realities through a collaborative relation between the researcher and the participant (Mertens, 2007). This entails understanding the different power relations by examining the historical and social context by building trust relationships among all parties involved (Mertens, 2012). Developmental mentorship as a component of the conceptual framework is overarched by trust as the first step in the mentoring process. This enabled the researcher to understand and acquire the relevant knowledge needed to engage with waste pickers based on their realities.

Transformative Axiological Perspective

Axiology is a branch of philosophy that considers the nature of principles and value judgements, specifically the process of social enquiry (Saunders, Lewis & Thornhill, 2009). It is based on the notion about the nature of ethics and identifying what is of value to individuals (Biddle & Schafft, 2015; Mertens, Holmes & Harris, 2013). It entails how the values of the researcher are demonstrated throughout the research process if the researcher wants to ensure credible data. Researchers should therefore depict an axiological trait by being able to articulate their morals as a foundation for making decisions about the research they undertake and the processes that follow (Saunders *et al.*, 2009). The axiological assumption posits that it is important to respect cultural background and standards when conducting research to improve social justice.

Researchers must be aware of the pervasiveness of discrimination and harassment and must also understand the dynamics of the communities in order to challenge the status quo to produce social change (Mertens, 2012). This research intends to understand the oppressive nature experienced by waste pickers, and through engagement with them, to seek ways to facilitate some process that could generate positive social change.

Transformative Methodological Perspective

Methodology in research can be understood by the methods undertaken to conduct research and the theories underpinning the specific approach to research. It is linked to a particular paradigm or theoretical or conceptual framework (Mackenzie & Knipe, 2006). The transformative methodology is grounded on the assumption that the researcher has the choice of choosing a quantitative, qualitative or mixed methods approach. Irrespective of the choice, a collaborative link should be established between the researcher and the participants in understanding the problem. Methods should align to facilitate cultural complexities, while power relations should be addressed and issues of oppression and unfair treatment should be acknowledged (Mertens, 2007).

Table 20: Different research traditions and methods applicable to the different research paradigms

Positivist/ Postpositivist	Interpretivist/ Constructivist	Transformative	Pragmatic
	Naturalistic	Critical theory	Consequences of actions
Experimental	Phenomenological	Neo-marxist	Problem-centred
Quasi-experimental	Hermeneutic	Feminist	Pluralistic
Correlational	Interpretivist	Critical Race Theory	Real-world practice oriented
Reductionism	Ethnographic	Freirean	Mixed models
Theory verification	Multiple participant meanings	Participatory	
Causal comparative	Social and historical construction	Emancipatory	
Determination	Theory generation	Advocacy	
Normative	Symbolic interaction	Grand Narrative Empowerment issue oriented Change-oriented Interventionist Queer theory Race specific Political	

Source: Mackenzie & Knipe (2006)

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The methodological assumption based on the transformative paradigm, as indicated in the table above, corresponds with approaches such as participatory research (Mertens *et al.*, 2013). The transformative paradigm was applied to participatory action research as a method to explore the inequities and social injustices of the waste pickers as a marginalised community. Participatory Action Research (PAR) is one option of qualitative research that incorporates methods and techniques of observation, documentation, and analysing and construing patterns, characteristics, attributes and connotations of human phenomena (MacDonald, 2012). Participatory researchers can appear either in a practical or transformative manner and should be commensurate with the standards of the transformative paradigm. They should be sensitive in their interaction with people in a respectable manner (Mertens, 2007). Apart from the transformative paradigm, other paradigms such as interpretivism, post-positivism and positivism provide much understanding in research. An overview of these paradigms is discussed below.

4.3.1. Interpretivism

Social context has formed a basis for a philosophical belief system that is contextualised in social sciences based on individuals' subjective experiences and understanding, which is valued by researchers. Interpretivism or constructivist views are overarching categories embedded in a range of perspectives including phenomenology and ethnomethodology (Leavy, 2017).

In this perspective, social interaction serves as the basis for acquiring new knowledge as the researcher applies his/her skills as a social being in understanding how other individuals understand their world (O'Donoghue, 2007). Interpretivists seek meaning in an individual's actions and behaviour with other individuals in society. They not only study causal relationships but delve into what transpired and pursue the reasons for a particular action (Chowdhury, 2014). Interpretivism researchers understand the world as experienced by individuals by interpreting the understanding of these individuals. They search for methods that will provide an in-depth understanding of the relationships individuals have as a social group and how they react in their

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environment (Thanh, Thi & Thanh, 2015). The interpretivist lens provides a better focus in understanding the capabilities, social interaction and coping strategies in how waste pickers will deal with environmental shocks and stresses.

Interpretivism consider each individual's perception, behaviour and emotions. It is this theoretical approach that differs from positivism (Packard, 2017).

4.3.2. Positivism and post-positivism

Positivists seek an outside approach to culture and behaviour, as well as a more scientific approach (Cassell, Cunliffe & Grandy, 2018). They claim that "science involves confirmation and falsification, and that these methods and procedures are to be carried out objectively" (Johnson & Onwuegbuzie, 1973).

Positivism asserts that direct observation leads to a subjective view which cannot be reliable. It relies on statistical data through computer-aided software rather than insightful analysis carried out by the researcher (Malina, Nørreklit & Selto, 2011). Kumar (2011) clearly states that positivism can be included in both qualitative and quantitative research. However, he provides a clear distinction between qualitative data and qualitative research. The former is confined to measuring variables, whereas the latter is related to methodology. This is further emphasised by Leavy (2017) who argues that positivism or post-positivism can be applied in both quantitative and qualitative research, because a good researcher will be objective and practise neutrality. For example, a doctor will treat each patient with the similar care irrespective of race, culture, and/or gender. Post-positivists believe that a cause determines the outcome or effects. To state this more clearly, post-positivists' studies identify and access the sources that influence the outcomes, usually determined through experimentation (Creswell & Creswell, 2018). Positivists view the world as a single reality that needs to be scientifically measured and where variables are controlled and manipulated to provide a causal relationship (Baum, MacDougall & Smith, 2006).

One of the objectives of this research study is to develop a training programme that will address the needs of waste pickers through mentorship. In order to deliver on this objective, an interpretivist's view is recommended based on the literature explored. Positivism encompasses a statistical approach based on a scientific method and a rationalistic philosophy (Mackenzie & Knipe, 2006) to research, whereas this study aims to encapsulate a more in-depth approach to the lives of the waste pickers. To ensure that the waste pickers' needs are addressed, Participatory Action Research (PAR) was chosen as the research approach.

4.3.3. PAR as an epistemology

Ontologically, PAR posits that individuals are active human beings capable of spontaneous reaction and self-change. Epistemologically, individuals are capable of acting on diverse forms of knowledge (Kindon, Pain & Kesby, 2007).

PAR serves as an important concept in the conceptual framework for understanding the world of waste pickers (participants in this study), thus qualitative research is the most viable option. PAR from a transformative paradigm can range from a simplistic outreach and consultation collaborative to an iterative process of interaction with community groups who share in the research process, which can be time consuming. (Jackson *et al.*, 2018). This research study was conducted over a period of three years, which enabled a trust-building relationship and an iterative process to take place. The research study employed the capability approach to determine what skills can be nurtured through developmental mentorship that would enable waste pickers to become more entrepreneurial and help alleviate any discrimination. The fundamental objective of PAR is to accomplish action through research and to conduct research to achieve a desired action. Traditional research plays a more outside approach in understanding the social world of participants (Allen, 2016). This research aims to help empower waste pickers, which is achievable through intervention with the waste pickers as they actively participated in providing their thoughts, feelings and perspectives on their lives as waste pickers. The diagram below provides a pictorial depiction of PAR and the relevance to this research study. In the diagram, the action provides evidence for an alternative outcome, whereas research allows the researcher

to document the findings in a report format. Waste pickers' participation in the research will enable them to empower themselves by partaking in decisions that will address their needs, which will help to address issues of social injustice.

Figure 23:Multiple facets of PAR
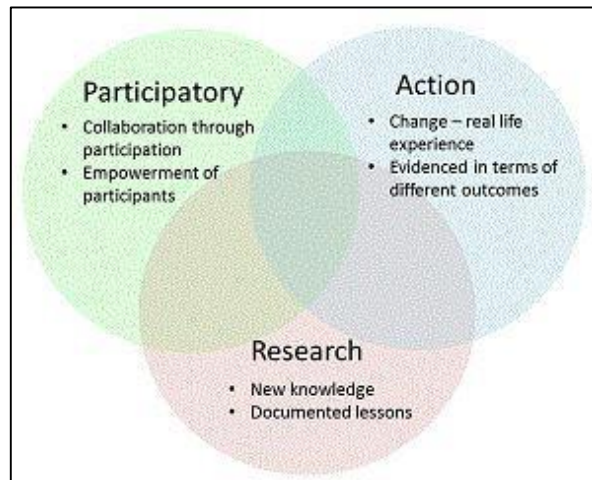
Source: Chevalier and Buckles (2013)

PAR is one of the few research approaches that embraces the principle of participants' participation and serious reflection with the aim to empower communities seeking a more desired lifestyle (Baldwin, 2012). In the preceding chapters, much was documented of the challenges faced by waste pickers. PAR attempts to redistribute power through the involvement of participants and engagement with stakeholders. Through an iterative process, participants will seek to collaborate in recognising social problems, identifying solutions and devising strategies to overcome these challenges (Tetui *et al.*, 2017). Reason and Bradley (2008), as cited by (Baldwin, 2012), claim that PAR consists of three stages. The first stage is the action process whereby new knowledge is attained through action and reflection. The second stage enables the participants to interactively participate in the research process by addressing social injustices. The last stage provides an epistemological shift from positivist thinking. Participatory action researchers seek to understand and change the world together with participants (Baum *et al.*, 2006) as in the case of the waste pickers. PAR therefore enabled the researcher to be part of the social realities of the waste pickers. This entailed conducting research **with** waste pickers and not **on** waste pickers.

Constructing a world as seen by waste pickers enabled the research to provide a more detailed description on how to address the research problem as stated in the introductory chapter. Baldwin (2012) emphasises that the perspective of PAR researchers is that knowledge is socially created and that as individuals interact with one another, they create their own realities from their own perspectives of the world. PAR accentuates that a socially constructed reality exists that allows for multiple interpretations of the phenomenon by both the participants and researcher. This perspective allows knowledge to generate through various forms from different theoretical perspectives, i.e. the actuality of a plurality of knowledge through various institutions and locations (Kindon *et al.*, 2007). PAR is perceived as an iterative process consisting of various stages, namely plan, act, observe, and reflect. Action research applies the concept of learning through experience. It acknowledges that people are reflexive through learning from their interactions with others and their experiences with other individuals that germinate social learning (Allen, 2016).

The next section of the chapter distinguishes the role of the researcher as a participatory action researcher, before discussing how PAR is embedded in the research design. The research design or strategy of inquiry is appropriate to discuss once the research topic has been derived and the research questions constructed (Abutabenjeh & Jaradat, 2018).

4.4. Research Design for Participatory Action Research

There is a plethora of literature on research design. A research design is a framework for the collection of data (Bryman & Bell, 2011), while Saunders, Lewis and Thornhill (2007) mention that it provides a general plan for answering the research question. PAR methodology is considered a subset of action research, which involves the collection and analysis of data to generate actions and apply change. PAR is considered to be a qualitative research method as it integrates techniques of observation and the interpretation of human phenomena (MacDonald, 2012).

PAR emerged in the 1970s to oppose positivist research. In the 1990s, PAR was generally used as a research methodology as it challenged the subjectivity of

participants and empowered those in precarious positions (Zhu, 2019). This research aims at empowering waste pickers to help them become more sustainable. Baldwin (2012) infers that PAR is undertaken **with** the participants and not **about** them, creating active participation with participants in order to solve the research problem. PAR helps in changing a situation and providing a shift in power relations (Hall *et al.*, 2017). Similar to action research, PAR does not follow a linear approach but is conducted in a spiral of circles, as illustrated in the figure below (Pardede, 2018).

Figure 24: Circular stages of action research
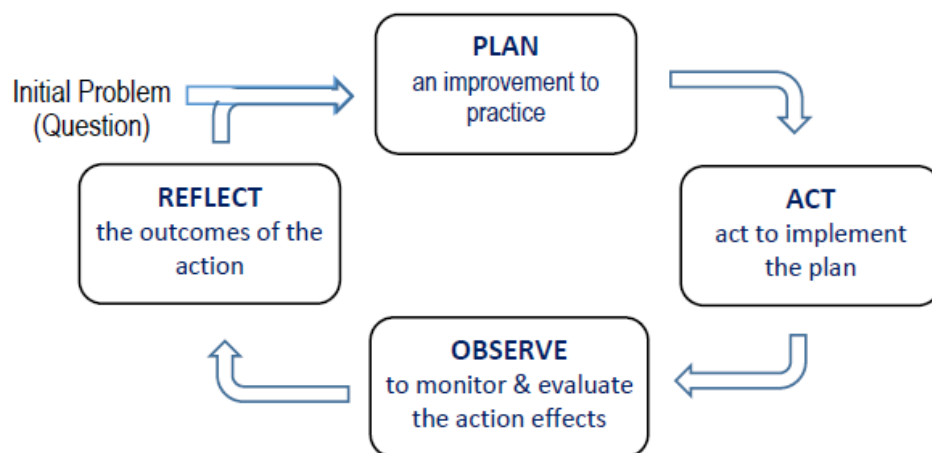
Source: Pardede (2018)

Gittins (2019) elucidates that PAR is a democratic and participative manner of acquiring new knowledge as it converges action and reflection, praxis and conceptualisation in the pursuit of determining workable solutions that are of immediate concern. The primary objective of this study is to enhance the livelihoods and entrepreneurial capabilities of waste pickers through developmental mentoring that could assist in establishing an informal training programme. As mentioned in the introductory chapter, this study focuses on the needs of the waste pickers as identified by them. To achieve this, data was collected in a participatory manner with the waste pickers to learn how they best accumulate and disseminate knowledge.

As part of the research design, PAR is incorporated in the conceptual framework of this study. The circular process of PAR, based on the process of action research as

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accentuated by Pardede (2018), is embedded in each component of the conceptual framework. The general circular flow is illustrated in the diagram below.

Figure 25: Circular process of PAR
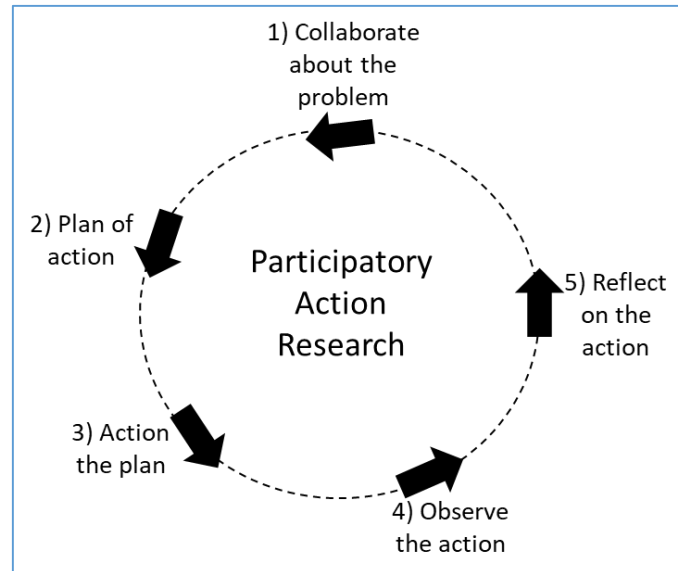
Source: Researcher

Overarching each of the actions of the circular process of PAR is developmental mentorship. Mentorship provides guidance to the waste pickers and assists them in making informed decisions with the purpose of improving their current conditions.

4.4.1. Collaborate about the problem

The approach of PAR is to empower and guide vulnerable individuals to have better control of their lives (Baum *et al.*; Zhu, 2019) and the environment in which they are active participants. In order to empower the waste pickers, the researcher listened to their problems and then worked together with the waste pickers to find some solution to their problems. These problems will be discussed in the succeeding chapters. It is important to ensure that the power relation between the researcher and the participants is well poised as it can be a concern if the power relation is favourable to one side (Zhu, 2019). The PAR researcher has to guard against enforcing his/her decisions and must rather focus on the decisions of the participants. Chevalier and Buckles (2013) postulate that PAR practitioners must ensure that the correct questions are presented and that the applied methods provide a justifiable solution to the

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phenomenon. The researcher therefore employed the capability approach to this research study to identify what abilities must be enhanced in order to achieve successful results as well as to address the research questions. PAR identifies that individuals acquire knowledge through the active conversion of their existing knowledge as they learn from the experiences of others and the environment in which they participate (Allen, 2016). When waste pickers identified problems relating to the environment and acknowledged their inabilities, the participants not only became part of the research process – they became co-researchers.

4.4.2. Plan of action

Once a particular problem or a set of problems has been identified, it is recommended that the researcher and the participants collaborate on how to generate a well-thought-out plan. This would require all participants to brainstorm and provide a plan of action (Kemmis, McTaggart & Nixon, 2014). The PAR researcher plays the role of a mentor to facilitate the planning process. Commitment by all participants can be arduous (Baldwin, 2012) as all participants might not commit to the planning process. The final plan should be consulted with all relevant stakeholders and, if required, a timeline should be set to implement the plan. The core purpose of this stage is to provide a roadmap that will successfully tackle the problem.

4.4.3. Action the plan

This is dependent on the problem that needs to be addressed. The key purpose of this stage is to ensure that the original problem is eliminated according to the plan of action (Pardede, 2018). Not much can be communicated about this stage, other than to ensure that the plan is executed as planned and documented (Kemmis *et al.*, 2014). In terms of this research, mentoring helped the waste pickers to remain focused in executing the plan. All actions do not always go according to plan, so it is expected that minor deviations could occur, which is why PAR is not a linear approach but a circular process. From the existing problems new problems could emerge, and this would require reflection and replanning. New insights could arise from the actions, which must be documented. This is brought about through constant reflection.

4.4.4. Observe the action

Observing the action and whatever changes occur should be documented in order to help the researcher develop new insights. Observing the plan and reflecting on it are the principle components of PAR (Pardede, 2018). The researcher will address the participants involved in the action and those not actively participating in order to determine their thoughts on the executed action and what they observed (Islam, Siddique, Karim, Acharjya, 2016).

4.4.5. Reflect on the action

The reflective stage is important to the researcher, as it allows the researcher to reflect on how each step unravelled and to reflect on what could have been done differently. Pain and Whitman (2011) state that the reflection process should evaluate the action undertaken as well as the reflection process. When the participants reflect on the process it allows them to challenge their personal and professional development and also to dispense valuable cognitive feedback (Baldwin, 2012). In this process, the researcher should reflect on whether the executed plan has provided the required outcomes and if the stakeholders participated harmoniously. Where all parties provide reflective insights, there could be different interpretations (Baum *et al.*, 2006) which could provide new perceptivity to the current research study. Reflection can be explained as the ability to think, ponder and meditate. Understanding the process from a philosophical viewpoint provides insight into how knowledge is acquired through experience (Wain, 2017).

The reflective process draws on the reflective cycle as constructed by Gibbs (2013). The cycle encourages learners to systematically contemplate each stage of an activity or experience undertaken. The diagram below illustrates the various stages of the reflective cycle (Wain, 2017).

Figure 26: Gibbs' reflective cycle

Source: Wain (2017)

There are six different stages in Gibbs' reflective cycle:

● Description: recounts the event as accurately and impartially as possible based on the powers of observation

● Feelings: identifies the emotions and thoughts spurred on by the experience of the event

● Evaluation: evaluates optimistic and pessimistic attributes of the experience

● Analysis: offers personal interactions against published literature and research

● Conclusion: encapsulates responses to the event or action and ponders what was learnt, as well as what reactions or responses would be best in future

● Action plan: contemplates specific actions to undertake based on the knowledge and experience. This could include incorporating some type of beneficial training

In perceiving the reflective process holistically, the researcher's thoughts on the research process are provided in the analysis chapter. Additionally, the reflective

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voices of the participants will form part of the analytical chapter, but thematic analysis will be implemented to draw out these reflective voices.

The next section scrutinises the sample technique and thereafter embarks on the data collection methods. The succeeding section discusses the data analysis, which sets the foundation for the analysis chapter. The chapter concludes by examining the ethical considerations implemented when conducting PAR with the precarious group of waste pickers. To provide a deeper understanding of the sample technique, a brief discourse on the population is provided.

4.5. Duality Role of the Researcher in PAR

Participatory research is established on the premise of reducing the chasm between the researcher and the participants. It aims to improve community participation and involvement, which could heighten the importance of the research findings to the needs of the community. A qualitative approach helps with participants' involvement, participation and collaboration in the research process (Kumar, 2011), and through the transformative paradigm, would enable the researcher to evaluate the research (Jackson *et al.*, 2018).

PAR researchers must be cognisant of the duality role confronted – truthfulness and responsibility, as well as contentment at being part of the world that is being researched (Chevalier & Buckles, 2013). It is imperative for PAR researchers to implement a participatory role that requires them to be reflexive and lucid about the perspective where knowledge is disseminated. This requires researchers to enhance the inquiry process – implementing the ethos of PAR (Kindon *et al.*, 2007), and addressing issues of complexity by ensuring that the questions addressed and the methods implemented are able to provide a roadmap to the issues under investigation (Chevalier & Buckles, 2013).

4.5.1. My role as a PAR researcher

I was introduced by Professor Schenck to officials of the Drakenstein municipality and, after explaining the purpose of my research, I was granted permission to engage with

the waste pickers only if the waste pickers agreed. After receiving ethical clearance, I was ready to engage with the waste pickers, or at least so I thought. Arriving at the Wellington area where the waste pickers were legally collecting waste, I was nervous and simultaneously excited. My anxiety was spurred on by not knowing what to expect. My excitement was triggered by the fact that I was in the field and ready to interact with the waste pickers. The municipal manager introduced me to the supervisor, who was very friendly and talkative. Reflecting on my first encounter with the Wellington and Paarl supervisors, it was I who was taking a participant role, as they were explaining their roles and those of the waste pickers. The Wellington supervisor spoke in Afrikaans and although my first language of choice is English, I thought it would be best to converse in Afrikaans. After all, it was I who was entering their social world. Both supervisors permitted me to observe the waste pickers and to converse with them.

As a participatory researcher, it was very daunting at first as I had to walk on heaps of rubbish to see what the waste pickers were doing. This provided me with insight into how they separated the recyclable items and at the same time protected themselves from being injured. There is a constant learning process that takes place as knowledge is shared by both the researcher and the participant(s) while investigating a particular phenomenon, as in the case of me and the waste pickers. Toledo and Giatti (2014) postulate that a co-learning relationship is developed between the participants and the researcher as new knowledge is uncovered during the research process, resulting in new learning for everyone. The waste pickers were very forthcoming in sharing their knowledge of the different types of plastic and would encourage me to help sort through items in the shade as they were consciously aware of the fact that I was struggling in the hot sun. My participation in their sorting process created a pleasant atmosphere between us.

The researcher must be motivated to encourage participants to partake wholeheartedly in the research. Some waste pickers informed me that other researchers in the past would come and speak to them, so they were willing to speak to me. Participant interaction is imperative as they are required to generate new ideas

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and suggestions that would help alleviate their current perilous situation. Kindon *et al.* (2007) state that a PAR researcher should possess the following characteristics:

- Hybrid of scholar/activist where neither is privileged
- Interdisciplinary
- Maverick/heretic
- Patient
- Optimistic, believing in the possibility of change
- Sociable and collaborative
- Practical and concerned with achieving real outcomes with real people
- Able to be flexible and accommodate chaos, uncertainty and messiness; able to tolerate paradoxes and puzzles and sense their beauty and humour
- Attracted to complex, multi-dimensional, intractable, dynamic problems that can only be partially addressed and partially resolved
- Engaged in embodied and emotional intellectual practice

Based on my character and personality, I was certain that I possessed most of the qualities of a PAR researcher. I was willing to learn and participate with the participants in seeking alternative methods to improve their livelihoods. Romm (2015) asserts that the PAR approach should include participants, particularly those of marginalised groups, as part of the each of the research process. These participants should contribute to the manner in which information is gathered. The core essence of PAR is to investigate social justice and social change and that is precisely what I intended to do from a transformative paradigm. PAR seeks to explore knowledge from "socially marginalized groups, challenging authoritative power, and empowering the expression of marginalized voices" (Zhu, 2019). Therefore, participatory action researchers should be very careful not to enforce their will contrary to the ideas or thinking of the participants.

To ensure that the participants all partook in PAR, I needed to find different ways for them to participate. Later, I discuss how I used focus groups and in-depth interviews to conduct PAR. Therefore, by occupying the role of a PAR researcher, I would

simultaneously serve as a developmental mentor and critical friend. Mentoring encourages participants to alter their thinking and how they execute their jobs to develop an innovative mind-set. This can be achieve by interacting with individuals and encouraging them to generate solutions to challenges they experience in their work environment (Hollywood *et al.*, 2016). Critical friendship can be simply explained as interacting in a critical reflective manner within a relaxed environment to promote transformative thinking in an individual's or organisation's practice. It is not hierarchical as it requires different skills and values from the individuals (Mackenzie, 2015). These roles needed to be clearly distinguished when I undertook my research, as explained in later chapters.

The informal waste pickers in South Africa play a vital role in the recycling value chain as they effectively remove waste from landfills and kerbsides into the recycling economy (Godfrey, 2021). Integrating waste pickers into the formal solid waste management system requires transformation in power, which requires the relinquishment of some power from the municipality and other stakeholders. Such action will assist waste pickers and waste pickers' organisations to create a better and more sustainable future for themselves (Samson, 2020). Therefore, it is befitting to focus on PAR through a transformative paradigm.

4.6. Research Setting

Municipal solid waste management is a huge problem in South Africa, creating health and environmental issues. With the growing population, land is becoming scarce and landfills are running out of space to accommodate the amount of post-consumer waste (Rasmeni & Madyira, 2019). The Department of Environmental Affairs (DEA) has acknowledged that there are a variety of challenges in waste management in South Africa. The Department has provided several strategies to address these challenges (Van Jaarsveld, 2016). One of the programmes to deviate waste from ending up at landfills is the "separation of waste at source" (S@S) programme (Langehoven *et al.*, 2019). The Drakenstein municipality is one of the municipalities in the Western Cape Province of South Africa that ascribes to the S@S program. The benefits of implementing this plan are as follows:

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- Sustaining natural resources by reusing waste to produce new items

- Reducing the amount of recyclable waste ending up at landfills

- Helping the environment by reducing landfill gas

- Creating employment for those involved in the recycling value chain

In the Western Cape, as illustrated in the diagram below, 76% of the municipalities have an S@S system in place (Langehoven *et al.*, 2019).

Figure 27: S@S within the Western Cape
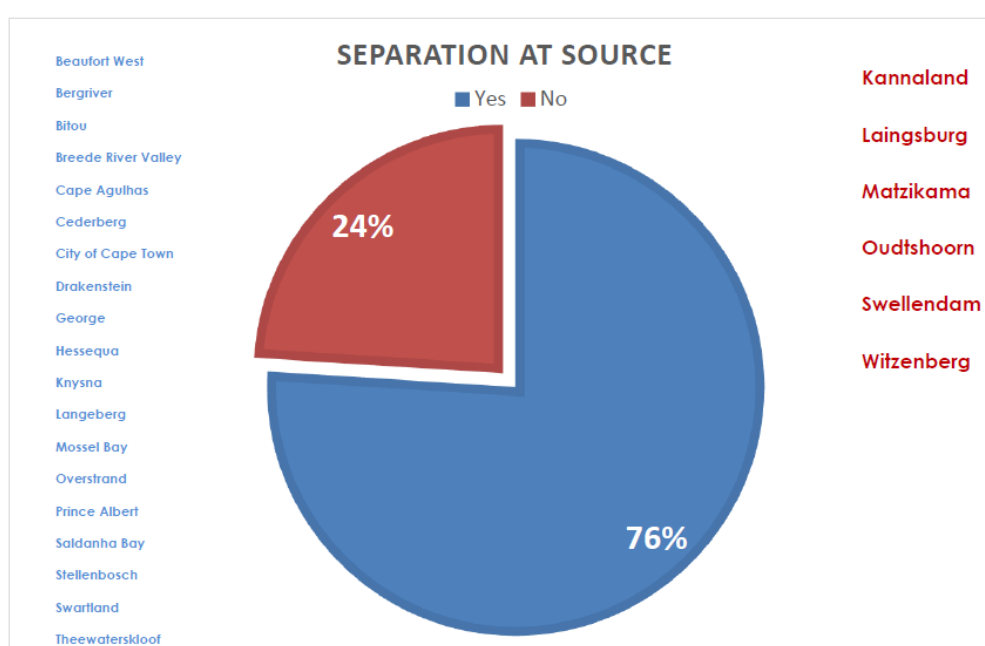
Source: Langehoven *et al.* (2019)

In 2018, the Drakenstein municipality initiated a programme to offer illegal waste pickers collecting waste at the Wellington landfill an opportunity to work legally collecting waste but yet operating within the peripherals of the informal sector. This offer would serve as protection from being chased away from the landfills, as well as a shield from other dangers. The core purpose of this initiative was to offer waste pickers an opportunity to earn an income legally without any harassment. The space provided was enclosed and security was deployed at points of entry. This prevented easy access to the demarcated area. In total 30 landfill waste pickers accepted the

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offer after listening to the rules and regulations of working in the secured space. As illustrated in the figure below, the entire area was not covered but provided some shelter on rainy and/or hot days.

Figure 28: Area allocated to Wellington waste pickers

Source: Researcher

The Drakenstein municipality emphasised that they would not get involved in the operational processes, including the issue of to whom the waste pickers sold their recyclable items. One of the individuals who had in the past bought the waste pickers' recyclable items when they were operating from the landfill was placed in a supervisory role to ensure that the waste pickers upheld the rules and regulations of the municipality. The position was given to her as she knew the waste pickers. The role of the supervisor will be discussed in more detail in chapter five.

Almost a year after the Drakenstein municipality outsourced the management of the Wellington landfill to a private company, less waste started being delivered to the waste pickers. To escalate this problem, the waste pickers were moved to another section that had no shelter (see image below). According to some of the waste pickers, toilet facilities were no longer available to them and they had to urinate and/or defecate in the bush. This created many challenges for this precarious group of waste pickers, which will be discussed in the findings and analysis chapter. Based on the image below, the waste pickers are exposed to the hot sun.

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Figure 29: Wellington waste pickers moved to where there is no shelter

Source: Researcher

Currently, the Wellington waste pickers are occupying space on the material recovery facility (MRF) in Paarl (see image below) where they have access to toilet facilities but have no shelter to protect them from the rain or hot sun.

Figure 30: Wellington waste pickers working at the MRF in Paarl

Source: Researcher

Data collection commenced amongst the Wellington waste pickers six months after they became legal waste pickers, and the researcher continues to mentor them.

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In addition to providing a legal space for the Wellington waste pickers, the Drakenstein municipality also permitted 20 street waste pickers to occupy an MRF in Paarl that was under-utilised by the municipality, as depicted in the image below. To maintain communication with the group, a supervisor was appointed to ensure that the waste pickers abide with the policies of the municipality. The group has adequate shelter (as seen in the image below) and access to baling machines.

Figure 31: The MRF in Paarl allocated to the waste pickers

Source: Researcher

The two groups and the infrastructure provided the researcher with an opportunity to conduct PAR, infusing developmental mentorship, as they would convene daily at the place of work. This created an ideal opportunity to serve as a PAR researcher and mentor as it was possible to frequently visit the groups.

4.7. Target Population

This primary objective of this study is to enhance the livelihoods and entrepreneurial capabilities of waste pickers through developmental mentoring that could assist in establishing an informal training programme. The population consisted of waste pickers in South Africa and, as stated by Saunders *et al.* (2007), a population can be

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a group of members. There are two types of waste pickers. Those who search through the rubbish bins of households and businesses are known as street waste pickers (Schenck & Blaauw, 2011), as illustrated below.

Figure 32: Example of street waste pickers

Source: (Schenck & Blaauw, 2011)

The second group of waste pickers are those who illegally enter landfills to rummage through garbage to search for valuable items that they can sell for a living (Schenck *et al.*, 2018).

Figure 33: Landfill waste pickers working at a material recovery facility

Source: Researcher

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Sekaran and Bougie (2016) mention that the unit of analysis comprises the group of participants to be studied. This research focused on waste pickers who previously collected recyclable waste illegally on the Wellington landfill, and street waste pickers who were allocated space at the MRF in Paarl. These areas form part of the Drakenstein municipality.

4.8. Participant selection

Sampling is a subset of the population, and the method of sampling can be either through probability sampling or non-probability sampling (Bryman & Bell, 2011). Probability sampling enables each member of the population to have an equal opportunity to be selected for the sample. It is widely used in quantitative research and applies numerical data analysis. Non-probability sampling, on the other hand, is where there is a non-zero chance of being selected for the sample (Saunders *et al.*, 2007). The population needs to be identified when applying probability sampling and as such, there is no official number of landfill waste pickers in South Africa. Waste pickers are individuals who do not seek attention due to the activities they undertake. They will discreetly enter landfills to forage through rubbish in search of valorised items to sell to buy-back centres. In 2018 it was estimated that there were about 90 000 street and waste pickers in South Africa (Schenck *et al.*, 2018). I implemented a non-probability sample technique to select waste pickers for this study. As stated in the preceding section, this presented me with the opportunity to conduct PAR in a transformative paradigm with the two groups as they converged daily at their respective workplaces.

My sample therefore comprised of two groups of landfill waste pickers – one group from Wellington and the other group from Paarl. These areas form part of the Drakenstein municipality in the Western Cape Province of South Africa.

4.8.1. Profile of participants

When the data collection started, my sample size comprised a total of 35 waste pickers from the Drakenstein municipality – seven African females from the Paarl group and 28 (including the supervisor) from the Wellington area.

Once the sample was identified, the task ahead was to ensure that the waste pickers were willing to participate in the research process. The Wellington group was dependent on their supervisor for advice and the Paarl group relied on their chief supervisor for guidance. As a point of entry to the group, I introduced myself to the supervisors and explained the purpose of my research. The Wellington supervisor was more comfortable speaking in Afrikaans, and as such I conversed with her in Afrikaans. Afrikaans is one of the 11 official languages in South Africa, spoken by just under half of the Western Cape population (Stats SA, 2012). The Paarl chief supervisor was comfortable speaking in English, despite her home language being isiXhosa. Both supervisors assured me that their group would participate in my research study.

4.8.1.1. Wellington participants

The waste pickers who chose to accept the offer of the Drakenstein municipality to move to a space located near the Wellington landfill were mostly coloured individuals living in informal settlements within the Wellington area. They had been working for years on the landfill with no shelter, except for temporary self-made shelters to protect them from the harsh weather. They all welcomed the opportunity that the municipality offered, but they had to adhere to the rules and regulations. Apart from where they live, they do not have many assets that have monetary value. To save on expenses, all the participants, with the exception of the supervisor, walked to their place of work and back home. The Drakenstein municipality was acknowledged for their entrepreneurial efforts by PETCO, the PET Plastic Recycling Company (South Africa). The waste pickers were called waste entrepreneurs by the Drakenstein municipal delegates and the waste pickers welcomed the new title.

The table below illustrates the demographic breakdown of the Wellington waste pickers. The female supervisor was a coloured female who was responsible for ensuring that the group adheres to the rules as stipulated by the Drakenstein municipality.

Table 21: Demographic breakdown of Wellington landfill waste pickers

Gender:	Total
Male	15
Female	12
Marital Status	
Single	13
Married	6
Living together	4
Divorced, separated, spouse deceased	4
Age	
18 – 24 years	2
25 – 34 years	3
35 – 44 years	15
45 – 55 years	5
56 years and older	2
Level of Education	
Some primary school	21
Primary school completed	
Some high school	6

Source: Researcher

The income of these waste entrepreneurs varied from week to week and was dependent on the market demands. The average income earned by the Wellington waste pickers was approximately R300 during a bad week and R700 during a good week. These figures are slightly higher than those presented by Schenck *et al.* (2018) who indicated that waste pickers earn between R200 during a bad week and R500 during a good week.

The supervisor acted as the spokesperson and advisor for the group. This individual had dual roles as she would purchase most of the group's recyclable items and sell them to the buy-back centre. Those who did not sell to her would sell their valuable items to another buy-back centre. The Wellington participants were mostly coloureds, with the majority of them being male. This group mostly worked individually except those who worked together with their partners. No real teamwork existed as each

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participant worked to earn their own income from the recyclable waste that they sold to buy-back centres. The preferred language was Afrikaans, more specifically "kombuis Afrikaans", which is not the original Afrikaans language but includes some slang expressions. This vernacular is used only in Cape Town among people who live in sub-economic areas. Fortunately, I am familiar with the dialect and was able to communicate with them, although at times they would help me with a word or two. Among the group was a family of three, who later became four members as the one female decided to be a waste entrepreneur and not continue in school. The group further comprised three couples (married or living together) who recycled together. Other participants were either divorced, separated or never been married. The solo male participants' wives were either at home or doing domestic work in the more affluent areas. Some of the participants had criminal records and had therefore chosen to become waste entrepreneurs while others had made poor decisions and had been pressured to find a means to earn an income, thus leading them to waste picking. Waste picking is an alternative means of earning an income and a way to salvage clothing and household items that could be kept for personal use (Schenck *et al.*, 2018).

Figure 34: Group of Wellington waste pickers at work

Source: Researcher

4.8.1.2. Paarl participants

The second group of participants consisted of waste pickers working in the material recovery facility (MRF) in Paarl on the premises of the municipality. Waste from

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households in the Paarl area are transported to the MRF (Rossouw & Du Plessis, 2018). The municipality provided them with the opportunity to collect recyclable items offloaded by the garbage trucks. Once the group had sorted through the rubbish, the garbage trucks were then loaded to offload the waste at the landfill.

This group consisted of seven African females that were originally from the Eastern Cape Province of South Africa. Prior to me conducting research with the group, there were 21 active collectors of recyclable items. These participants were more organised than the Wellington group as they had registered their waste collection activities as a business. All members had an equal share in the income from their waste activities. As a co-operative, the group worked collectively to earn an income from the recycled waste but lacked the necessary skills to generate a profit. The chief supervisor was a member of Women in Informal Employment: Globalizing and Organizing (WIEGO), which is an NPO with the main focus being to help improve the lives of marginalised individuals and businesses in the informal sector. In addition, the Paarl supervisors were members of South Africa Waste Pickers' Association (SAWPA), an organisation that helps improve the lives of waste pickers, with the chief supervisor being the co-ordinator for the Western Cape. Due to the supervisors' affiliation to SAWPA, they preferred to be identified as waste pickers and not as waste entrepreneurs (the term chosen by the Wellington group). Three of the members were regarded as supervisors that would be responsible for certain tasks, and they were among the first to work at the MRF. The other four females were recruited by the three supervisors and would execute tasks that were allocated to them. Six of the Paarl participants lived in the Paarl area and one participant lived 60 kilometres from Paarl in a squatter camp area in Du Noon. All of these females had children that were either living with them or with their grandparents in the Eastern Cape. They had all completed primary school with some high school completed. Level of education is not a deterrent for either group as it is more important that they are able to extract recyclable items from the garbage.

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Source: Researcher

4.9. Data Collection Methods and Instruments

Data collection is referred to as the most important step in the research process. If the data is not collected correctly, the project will be incomplete (Kabir, 2018). Data was collected using qualitative research techniques to obtain a stronger research outcome for this research study (Malina, Nørreklit and Selto, 2011).

MacDonald (2012:34) mentions that "Qualitative research integrates the methods and techniques of observing, documenting, analysing, and interpreting characteristics, patterns, attributes, and meanings of human phenomena under study." Qualitative research is an interpretive act that demands informed reflective cognition rather than simply measuring results through a scoring system (Kuper *et al.*, 2008). It includes notes of the researcher and self-reflection of the study. In addition, qualitative researchers collect data in the natural settings of the participants, observing their behaviour and how they act in their environment (Creswell and Creswell, 2018). It focuses on the entire human experience, involving participatory modes of investigation in understanding of the complexities of the individuals as ascribed by them (MacDonald, 2012).

The table below illustrates my interaction with the waste pickers. On 13 May 2019 I accompanied a group of researchers to the Wellington landfill, which allowed me to engage with the municipal manager as well as the lady responsible for overseeing the

waste pickers, i.e., the supervisor. Data collection officially started on 20 August 2019 when I received ethical clearance from the institution of study, and I am currently interacting with the participants.

Table 22: Interaction with waste pickers

Date	Interview/Group
13 May -19	Introduced to Marilyn
20-Aug-19	Thys (Municipal Manager)
30-Aug-19	Municipal Representatives Madie Koen (Individual)
09-Sep-19	Meeting with municipal worker at WLF Marilyn (Individual) Madie Koen (Individual)
01-Oct-19	Marilyn (Individual) Justin (no longer) Norethan (no longer) Kaylin Ursula Dezel BBC Paarl group
09-Oct-19	Marilyn (individual) Kallie Paarl group no Madie
05-Nov-19	Wellington group intro Ursula Derrick (shot) Paarl group no Madie
08-Nov-19	Supervisor meeting
12-Nov-19	Marilyn (individual) Phillip Nico Paarl group
19-Nov-19	Marilyn (individual) Maria Fontein (second in charge) Collin Julies Nomawethu Noxolo Paarl group
26-Nov-19	Madie business plan talk Nosipho Joseph Arendse Bully
05-Dec-19	Paarl group Paarl trust issues with group Load and offload talk with Marilyn Ann Louw
10-Dec-19	Vuyo (talk of truck) Peter (Pike) poor performance People leaving (Marilyn) Altercation with customer

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Date	Interview/Group
14 Dec- 19	Paarl group
16 Dec to 12 Jan	BREAK
	Spinal operation
06-Feb-20	Kallie Peter (Pike) and Nurethan Marilyn
12-Feb-20	Marilyn on payment Wellington group, females Madie discuss future
18-Feb-20	Madie on SAWPA Paarl group Peter and Nurethan Nurethan (estimates amount) Steyn BBC
04-Mar-20	Marilyn talk about boxes
11-Mar-20	Kallie Phillip Paarl group
	COVID-19
27-Oct-20	Marilyn Peter (Pike) Peter, Joseph and Phillip Madie chat after lockdown
03-Nov-20	Wellington group (SWOT analysis) Paarl group (SWOT analysis)
10-Nov-20	Kallie on income Anna on income
17-Nov-20	Booley complains Booley and Phillip Madie (new workers)
24-Nov-20	Wellington group Madie Paarl group
14-Dec-20	Wellington group
	Break
03-Feb-21	Marilyn (individual) Wellington group Chat with municipal representative
23-Feb-21	Wellington group Marilyn

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Date	Interview/Group
01-Mar-21	Wellington group move to Paarl
18-Mar-21	Municipal Zoom discussion
01-Jun-21	Kaylin and Kallie Solly (middleman)

At the end of December 2019, I underwent spinal surgery that prevented me from conducting site visits as I was unable to sit (and thus drive a vehicle) for long periods of time. The round trip from my place of residence to the Wellington landfill, then on to Paarl and back to my home is a total of 124km and the drive time is close to two hours.

Figure 36: Entrance path to the Wellington landfill

Source: Researcher

The Wellington and Paarl waste pickers suspended their activities by 16 December. This date coincides with the closing of the building industry in South Africa. Usually one or two of the Paarl supervisors would continue working at the MRF until the facility closed and they would resume their recycling activities mid-January.

In March 2020, South Africa went into full lockdown due to the COVID-19 pandemic. Only healthcare workers and other frontline employees were permitted to work. Formal waste collection services were permitted to collect waste, but informal waste pickers were not allowed at the landfills or the MRF. Data collection could not proceed until

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South Africa went from level five to level three lockdown. Even then, I was reluctant to interact with the participants. However, I would regularly contact the supervisors telephonically. It was not possible to contact the waste pickers as they were not in possession of mobile phones. Fieldwork resumed in October 2020. However, the break away from the waste pickers, particularly the Paarl cohort, meant that I had to rebuild my relationship with them. A healthy mentorship relationship is dependent on good communication, enforced by the ability to face challenges by creating positive reinforcements (Curtis & Taylor, 2018). After the lockdown was lifted and waste pickers returned to work, the Paarl group had a few new members as most of the workers and one supervisor did not return as they had found employment elsewhere. One of the female supervisors from Paarl passed away due to a stomach illness. Most members of the Wellington group returned, but those who did not return chose to waste pick illegally at the landfill.

In accordance with the purpose and objectives of the study, I used focus groups, personal in-depth interviews and observation to obtain my data ensuring that I adhere to the protocols of data collection (Townsend, Loudoun & Lewin, 2016). All interaction with the participants was audio recorded and photographed with the consent of the participants. This was to avoid delaying the discussion by taking notes and to rather focus on the discussions without interruption (Blumberg *et al.*, 2011). I engaged with both groups on a weekly basis. In many instances I first visited the Wellington group and thereafter travelled to Paarl to meet with the Paarl group. Prior to meeting the group, I informed the supervisors that I would be visiting and that we could discuss any issues they liked. The Paarl group preferred that I conduct my data collection after 15h00 as it would allow them sufficient time to complete their daily tasks. However, when the Wellington group was moved to the Paarl MRF in March 2021, I would first speak to the Paarl group in the morning, which they agreed to, and then walk to where the Wellington group was located and collect my data there. It should be noted that the Wellington group, including the supervisor, were always eager to communicate with me. All discussions between myself and the participants were recorded with their permission and photographs were taken with their consent. The participants permitted me to use these photographs for my research. Close to 30 hours of discussions with

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waste pickers were recorded and summaries of the recordings were transcribed. Transcribing is the process of reproducing the recorded conversation into a word document. Saunders *et al.* (2009) state that researchers should also document the behaviour and tone of participants in response to a question or action. Data was coded and grouped into themes for analysis purposes (Creswell & Creswell, 2018). Reflective notes were produced based on new developments experienced during the research process. Reflective notes are an important component of PAR, as they enable the researcher to compose his/her thoughts on a situation that may have occurred (Kemmis *et al.*, 2014).

The initial process that was implemented in collecting the data is shown in the diagram below. The municipal manger introduced me to the supervisors. The next stage was to introduce myself to the group and obtain permission from the waste entrepreneurs and waste pickers to engage with them individually and as a group, and to observe them.

Figure 37: Initial process of data collection
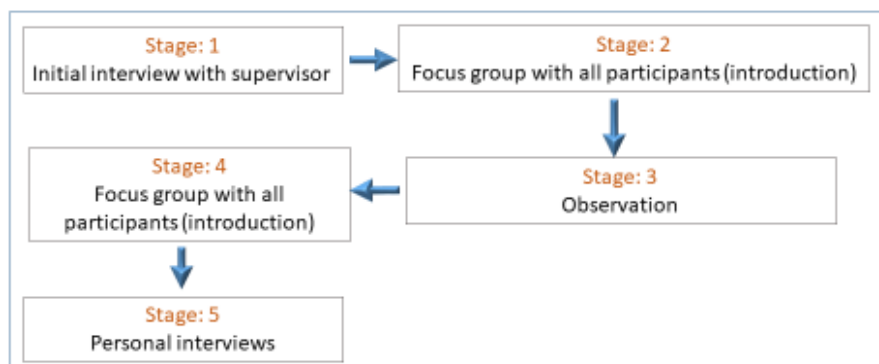
Source: Researcher

Thereafter I observed the group collecting recyclable items and would engage in frivolous talk with them while I too collected recyclable items. Danley and Ellison (1999) note that achieving trust is no easy task. It must be developed among individuals who understand and accept the researcher's personal and professional interaction. I had the opportunity to engage in one-on-one conversations (in-depth interviews) with the waste entrepreneurs and waste pickers. The purpose of each data

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collection method was to accentuate the research objectives and determine how these could be achieved. Thus, the iterative process, illustrated in Figure 38, was followed.

Figure 25: Circular process of PAR
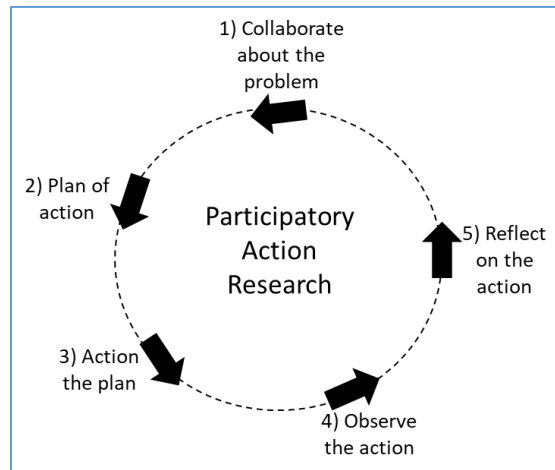
Source: Researcher

Each focus group and in-depth discussion followed a particular template format:

1. Introduction – The objective of the discussion based on the research objective was defined and explained. This allowed the discussion to unfold as the participant started engaging in the dialogue. However, as a PAR researcher I would permit the waste pickers to discuss issues that they felt relevant. Participants were informed that the discussion would be recorded, to which they consented.

2. Discussion Topic – A discussion guide for focus groups was prepared and a semi-structured questionnaire consisting of open-ended questions was used for in-depth discussions. Semi-structured questionnaires comprise a list of themes and questions to be discussed and might vary from participant to participant (Saunders *et al.*, 2009). This will be discussed in more detail in the analysis chapter. In-depth discussions would at times take place unscheduled as a participant might have had the need to speak to me seeking some guidance.

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3. Concluding Remarks – Final remarks and comments from each participant were usually requested. A notification of the next focus group was always scheduled to better prepare the respondents in terms of their time.

After each discussion, I compiled reflective notes to help me understand the discussion and how my influence had shaped the participants' responses. This provided a deeper insight into the analysis (Cassell *et al.*, 2018).

4.9.1. Focus groups

Focus groups are a qualitative research approach that is commonly used in exploratory research. It entails a panel of participants that are guided by a trained moderator who uses group dynamics to explore ideas, emotions and experiences on a particular subject (Blumberg *et al.*, 2011). It is perceived as a cost-efficient method and has become popular in feminist research, health research and in disciplines in education (Nyumba *et al.*, 2018). Focus group participants share common characteristics, which are determined by the purpose of the research study, and purposive sampling is used to recruit participants (Jones *et al.*, 2018). Purposive sampling is when the researcher selects participants who have some knowledge of the topic to be researched (Etikan *et al.*,2016) as in the case of the waste pickers.

The reason why I first implemented a group discussion was to avoid participant inhibition, which could result in a lack of trust (Saunders *et al.*, 2009) and disinclination to partake in the research. I wanted all participants to feel equally important. I evaded extending the focus group discussion for more than one hour so as not to unnecessarily delay the waste entrepreneurs/pickers from obtaining recyclable items. Some of the focus group sessions were interrupted when a garbage van came to offload the rubbish collected. I would always have some form of refreshments when conducting focus groups as there were times, especially in the earlier stages of my research, when the participants were somewhat reluctant to partake in the group discussions. The key purpose of the focus group is to determine the individual responses to a phenomenon which at times could result in a new understanding of the problem experienced (Taylor, Bogdan & DeVault, 2016). The challenge with focus

groups is that participants are reluctant to partake in the discussions and tend to agree with others due to shyness of expressing their thoughts (Cassell *et al.*, 2018). To curtail this challenge, I implemented broader topics before funnelling them to a specific topic of discussion. This created a better rapport with participants and served as an ice-breaker for group (Leavy, 2017). Some researchers argue that group homogeneity could cause participants to be dishonest in their responses for fear of reprisal from the leader or other acquaintances (Nyumba *et al.*, 2018). From time to time, when such challenges prevailed, I would request that the supervisor or participants who continued to assert their views, allow others to speak and suggested that they might benefit from a different understanding. Additionally, I would request the supervisor to exclude herself from the group discussion with the waste pickers as she perceived herself to be the spokesperson for the group. Another reason was that I did not want her to assert her view and dominate the discussion, and I also wanted to the waste pickers to have autonomy in expressing their views.

In business research, participants usually receive a stipend for their attendance in the form of gift cards, vouchers and/or cash (Jones *et al.*, 2018). I provided food as requested by the participants in previous discussions. I brought the participants home-made biscuits, *akni* (an Indian rice and chicken or meat dish), *koeksisters* and *bollas* (deep-fried sweet treats). The purpose of this action was to show them that I valued their participation, to reciprocate them for their participation, provide them with shared power and to improve group camaraderie. During the focus group, we would share the treats, which including some cold beverages in the form of soft drinks and juice. I noticed that this enticed the group to partake in the research while also creating a more informal setting.

4.9.1.1. Focus groups in action

Prior to the commencement of a focus group, a discussion guide was designed with the purpose of addressing one of the research objectives. The questions were constructed sequentially, focusing on the key topics of the research. Questions were progressively broadly structured, creating greater participation, and later the discussion became more focused on the goal of the research (Krueger & Casey, 2015). Based on the iterative circular process of PAR (see Figure 28), questions were

structured in a manner that would facilitate the participants to respond without any evidence of biasness (Nyumba *et al.,* 2018). To improve rapport with the participants, I encouraged them to provide responses, stipulating that there was no incorrect answer but that their opinions and perceptions were of greater value (Krueger & Casey, 2015). In ensuring participant empowerment and engagement, the CLEAR model, developed by Gerry Stoker, served as guide for all focus groups discussion questions. The model accentuates that the CLEAR framework encourages dialogue among participants to provide solutions to possible policy issues or problems (Lowndes, Pratchett & Stoker, 2006).

The CLEAR framework is comprised of the following factors and descriptions (Lowndes and Pratchett, 2006):

Table 23: Participation factors and criteria for participation

Participation factors	Criteria for participation
Can do	Have the relevant resources and knowledge to participate
Like to	It is central to their identity and interest to participate
Enabled to	Provided with the opportunity to participate
Asked to	Invited to partake to derive participants' opinions
Responded to	Aware that their opinions have been considered

Source: Lowndes & Pratchett (2006)

Through the implementation of the CLEAR framework, I was able to attract the participants to the focus group discussion as they anticipated some benefit for their livelihoods. This enabled rich information to be extrapolated from the group discussions as all group participation was audio recorded with the consent of all participants. The group discussion was scheduled mostly on Tuesdays between 11h00 and 12h00 as this was not the busiest day and time for the Wellington participants. Unscheduled garbage delivery would occasionally disrupt the sessions as the waste entrepreneurs would scramble around the garbage to collect items of value to them. The more they collected, the more their income would be. During the winter season, not all waste entrepreneurs would be at their place of work resulting in fewer than 10 participants partaking in the scheduled focus group. The Paarl participants were first scheduled on a Tuesday between 13h00 and 14h00 but later

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the participants requested that I visit them at 15h00. This is because after the group discussion, they were not in the spirit to continue working but preferred to prepare themselves to leave for home. I would inform the supervisor of my visitations before meeting with them, because at times, the waste pickers were reluctant to speak to me as they needed to complete tasks that were allocated to them by the supervisor.

Figure 38: Focus group discussion in an informal setting

Source: Researcher

Focus group sessions with the Wellington group were very seldom held in an enclosed space, but I made certain we were always in a shaded area. We would sit in a circle and usually one of the waste entrepreneurs would hold the audio device. This was done in order to involve them in the group. The Paarl focus group would be conducted in an enclosed office space or in the building where the bailing was done. In Paarl, all data collection was done under a roof covering.

Focus groups were usually followed by in-depth interviews either on the same day or on another day. Waste entrepreneurs would invite me, at times, to converse with them privately to accentuate on the problem that had been discussed during the focus group. Sometimes they wanted to discuss a new problem. These private discussions developed rationale in understanding their perspective in more detail (Showkat & Parveen, 2017).

4.9.2. Individual in-depth interviews

The term "in-depth interview" has been associated with numerous connotations. It was previously known as "elite interview", but this suggested only conversing with elite status individuals. Another name was "focus interview", but this was too closely associated with "focus group discussion". Anthropologists refer to this type of interview as an "ethnographic interview", while sociologists refer to it as a "depth interview". However, many refer to it as a "semi-structured interview" (Newcomer, Hatry & Wholey, 2015). For this research, I prefer to use the term "individual in-depth interview" or simply "in-depth interview". The rationale behind this is that I mostly conducted unstructured interviews with the participants.

4.9.2.1. Individual in-depth interviews in action

Individual in-depth interviews allowed for reciprocity between the participants and me, which enabled an open discussion of their responses (Kallio *et al.*, 2016). The primary objective of conducting in-depth interviews was to acquire further insight into the needs of the participants and to identify their skills. During the in-depth interviews I would find myself learning about the participants' perceptions of a particular matter. The participants, on the other hand, would be the teachers providing me with insight into their world (Milena, Dainora & Stancu, 2014). Unstructured discussions were also undertaken and all discussions were recorded with consent. Consent was requested verbally and the participants never objected (Brounéus, 2011), even to being photographed. Discussions were undertaken in the preferred language of the participants and at a place where they felt safe and comfortable being honest and open.

Many of the Wellington waste entrepreneurs were eager to talk about their past and life history. This provided me with information of their skills and capabilities but also identified their needs. In-depth interviews enabled the participants to speak freely, allowing me to fully understand their views without any interruptions (Hour, 2015). Although there were times that the interview discussions were not always planned, the objective related to the research study was always introduced into the discussion. During my many visit to Wellington, the first person I usually spoke to was the

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supervisor. This was as a courtesy out of respect, as she was the individual responsible for the daily activities of the waste entrepreneurs.

Figure 39: In-depth discussion with a supervisor

Source: Researcher

Thereafter I would freely, without the supervisor tailing me, speak to one of the waste entrepreneurs. At times the interview or conversation with a participant would carry and longer than anticipated (Boyce & Neale, 2006). There were times when more than one waste entrepreneur was eager to be interviewed, merely because they wanted to discuss a problem with me relating to either the environment or their waste-picking process. Before leaving, I would always indicate with whom I would be interacting interact during my next visit. Unlike the Wellington waste entrepreneurs, the Paarl group members were less likely to speak to me alone without the supervisor being present. However, the supervisors were always willing to engage with me. More group interaction took place with the Paarl group than with the Wellington cohort as the supervisors were always present. However, when I requested to speak to them individually, they were willing to do so, but only on request. This will be discussed in more detail in the analysis chapter. The in-depth interviews followed a four-stage funnel approach (Roller, 2020), as illustrated in the figure below:

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Figure 40: A funnel approach to guide development
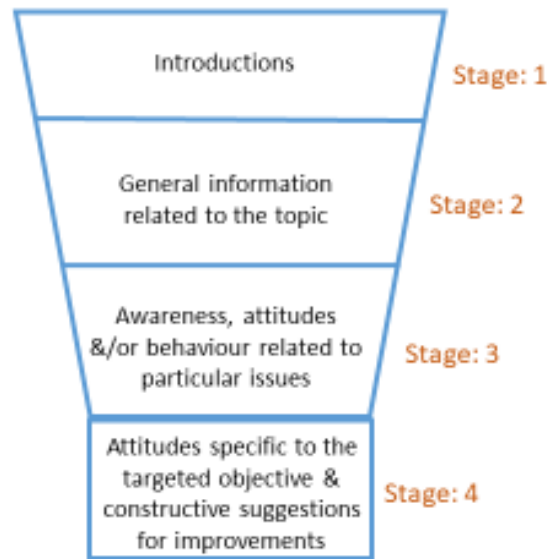
Source: Roller (2020)

Stage 1: Introductions

The researcher introduces him/herself and provides a brief overview of the objective of the discussion. He/she also takes advantage of the opportunity to become acquainted with the participants.

Stage 2: General information related to the topic

The researcher provides some background information on the topic and attempts to ascertain the perceptions of the participants by asking well-defined questions related to the topic.

Stage 3: Awareness, attitudes and/or behaviour related to particular issues

During this stage, the researcher engages with the participants in revisiting their attitudes to the topic or objective, and whether they are in agreement.

Stage 4: Attitudes specific to the targeted objective and constructive suggestions for improvements

In this final stage, the objectives are magnified to provide a scenario to the participants. This allows the researcher to collect the behaviour and thoughts as expressed by the

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participants and determine if their attitude has changed. Waste pickers discussed their current experiences and desires, and some mapped out how they wanted to achieve their desired outcomes. They provided their reflective thoughts on a situation and we openly discussed the best alternative if a similar situation were to occur.

Roller (2020) further states that by applying the four-stage funnel approach, the objectives of the research are likely to be achieved as this is an effective method of achieving the objectives. The last data collection technique that was applied was observation. This entails observing the participants in their environment, as well as how changes to the environment affect their pattern (Cassell *et al.*, 2018).

4.9.3. Participant observation

Observation took form in observing the participants in their natural environment and recording how they reacted to any form of change. Participant observation allowed me to observe how the participants interacted and behaved with one another (Creswell & Creswell, 2018). A crucial element of participant observation is recoding what is observed (Novikov & Novikov, 2013). Additionally, it provided me with insight into the system the waste pickers had adopted to collect recyclable items. This fostered a relationship with the waste pickers as they felt empowered by teaching me how to separate the various plastic items. By engaging in participant observation, I found myself standing on heaps of rubbish or hopping over puddles of water to observe the waste pickers erecting makeshift shelters.

Figure 41: Observing a waste entrepreneur resting during a hot sunny day

Source: Researcher

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A key element of participant observation was to monitor and evaluate whether the participants implemented changes that were discussed either during the focus groups or during in-depth interviews. This also provided insight into how new policies (Newcomer *et al.*, 2015), such as the wearing of masks during COVID-19, and the implementation of rules as stipulated by government in ensuring social distancing.

4.10. Interaction with Municipal Officials

Data collection among the waste pickers would not have been possible without the authorisation of the Drakenstein municipality. The Drakenstein municipal manager and his team are responsible for the placement of waste pickers in Wellington and Paarl. It was their initiative to allocate part of the municipal land to help empower a group of potential entrepreneurs to legally collect recyclable items. It was therefore courteous of me to provide regular feedback to the municipal officials and to inform them of the challenges experienced by the waste entrepreneurs.

As stated earlier in the chapter, I held a discussion with the municipal officials. During the discussion I presented my research objectives and research questions that I wished to address with the waste pickers. Interviews were conducted with the "gatekeepers" of the various sites, as well as the other municipal managers. Zoom discussions were arranged to ensure that social distancing was observed at the convenience of all parties. Finding an appropriate time to convene a discussion over Zoom would at times pose a challenge. These interviews and group discussions were recorded and will be analysed and discussed in the chapters to follow.

4.11. Data Analysis

Data analysis is the process of systematically grouping and reducing large amounts of data to be able to draw some logical interpretation (Kawulich, 2004). The process includes managing the data, constructing patterns, and applying statistical techniques (Blumberg *et al.*, 2011).

Data analysis applied thematic analysis based on the components of the SLF. For example, factors relating to the environment would be grouped under vulnerability

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context of the SLF. These themes are discussed in more detail in the following chapter. Thematic analysis is extremely flexible as a qualitative analysis tool, and is used to identify, analyse and report patterns within the data (Braun & Clarke, 2006). Themes are clustered codes that occur numerous times in the data and as such thematic analysis merges two concepts, namely recurrence and importance. All audio recordings of interviews with participants were transcribed. Themes were extracted from the transcripts in congruence to the research questions and objectives. The more often the recurrence of a code from the data, the more likely it would be included in a theme (Buetow, 2010). The Wellington waste entrepreneurs were Afrikaans speaking, and the audio was translated into English during transcription. This provided a challenge since no transcription software could be used, as the language spoken by waste entrepreneurs is not proper Afrikaans. The conceptual framework served as a guide when analysing the data. The following steps, as proposed by Braun and Clarke (2006), were adopted:

1. Familiarity of the data

    Transcribe the recorded information and identify initial ideas.

2. Initial code generation

    Generate code from the data

3. Theme construction

    Construct codes for potential themes

4. Theme review

    Verify that themes are relevant based on the entire data set.

5. Provide names for themes

    In this stage, each theme is named and refined to present an overall picture of the data.

6. Produce report

Based on the final theme, a report is produced based on the data provided by the participants.

The data was analysed in various stages. Firstly, the data extrapolated was related to the collection of valorised items. I asked the participants to explain the process to me. This data enlightened me about their environment and the opportunities and

challenges they faced. The vulnerability context of the Sustainable Livelihood Framework (SLF) provides an overview of shocks and trends experienced by the participants in the environment (Morse & McNamara, 2013).

The next stage involved obtaining demographic information on the participants, which provided me with information on how to approach them, asking questions about their children or even grandchildren. Importantly, the information facilitated in understanding the participants' human capital and what capabilities they possessed. Guided by the SLF and the attributes of the Capability Approach, as mentioned in the preceding chapter, I was able to provide the participants with some mentorship in improving their livelihood assets. Livelihood generation is vital in the rehabilitation of vulnerable individuals or communities (Narula, Magray & Desore, 2017).

The next step was extrapolating data where waste entrepreneurs discussed the structures, policies and processes they needed to adhere to as stipulated by the municipality. Pejorative policies were discussed, which contributed to understanding the bureaucratic landscape of the participants and helped to establish whether policies were supportive of the needs of the waste entrepreneurs, such as granting access to municipal assets or providing incentives to help individuals improve their sustainability (Serrat, 2014).

Thereafter, data was analysed to determine the needs of the participants and what skills they desire in relation to the waste recycling process. Information was analysed in determining the willingness of waste entrepreneurs and waste pickers to commit to some type of training programme. This information was crucial in cementing the establishment of developed mentorship.

The analysis is presented in four tiers. Firstly, discussions focus particularly on the Wellington waste entrepreneurs, followed by the Paarl waste pickers and then the discussions with municipal representatives. Lastly, there is a discussion of my reflective thoughts and how this research altered my ontological and epistemological stance on the world.

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Once the data has been interpreted and documented, the results of the findings will be discussed with a few of the respondents to validate the results. The preliminary results will be presented to the municipality and their feedback will be added to this report.

4.12. Ethical Issues

PAR permitted close interaction with the waste entrepreneurs and waste pickers. Blumberg *et al.* (2011) state that it is imperative to ensure that no harm comes to the participants. According to Creswell and Creswell (2018), ethical issues and practices should be implemented and anticipated to protect the participants, researcher, sponsors and other stakeholders who are directly or indirectly involved in the research study.

Ethics in research is concerned about the welfare of the participants and the way the data is collected. Research ethics therefore also relate to how data is stored, processed and analysed, and whether the writing up of the research findings is done in a moral and responsible manner (Saunders *et al.*, 2007). Prior to conducting the research, I sought the approval of the Humanities and Social Sciences Research Ethics Committee (HSSREC) of the University of Western Cape where I am registered as a student (see appendix), as well as the approval of the Drakenstein municipality. The rules of the municipality were that I notify them of my visits so that the relevant municipal officials were aware of my presence at the various sites. To ensure that I adhered to the ethical considerations as approved by the university, the following three guidelines, as recommended by Blumberg *et al.* (2011), were implemented:

1. Explain the benefits of the research study to the participants

Participants should be informed about how their contribution will help in the development of new knowledge, as well as what risks, if any, they could be exposed to (Creswell & Creswell, 2018). As stated earlier in the chapter, I spoke to the supervisors and highlighted the benefits, purpose and objectives of the research study.

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Although they pre-approved the research on behalf of the group, I requested that they explain to the group the reasons for my research.

2. Explain participants' rights and their protection in partaking in the research study

No-one should be coerced into participating in a study and participants should volunteer their participation. Participants must be respected, as must the site where the research is conducted. All involved in the study must be treated equally and the researcher should avoid bias (Creswell & Creswell, 2018). Working with precarious individuals, I ensured that I treated them with respect and in a dignified manner. I could not force a time for any waste entrepreneur to partake in an in-depth discussion but had to wait for a suitable time when they were not busy with their daily activities. I assured the participants that they would not be denigrated in my report and that their identities would be well protected. This included protecting them from any mannerisms or questions that would diminish their self-respect or exposing them to physical or mental stress (Sekaran & Bougie, 2016).

3. Obtain informed consent from each participant

Without informed consent from the participants, this research would not be possible. Once the purpose of the research and the participants' rights were explained, consent in a written form was required. Informed consent refers to when the participants freely give permission to partake in the research study (Saunders et al. (2009). The participants were informed that they were allowed to stop their participation at any time during the data collection process (Sekaran & Bougie, 2016). To prove that no deception was involved during the research, I will provide a brief report to all who participated in the research study (Blumberg *et al.*, 2011).

4. Compensation for participation

Much discussions in qualitative research have been undertaken based on the consequences of providing some monetary value to participants who vulnerable to individuals with power (Surmiak, 2020). To ensure that the integrity of the research was not compromised, the researcher opted not to provide any financial compensation. However, in most instances the researcher would provide some

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refreshments or supply lunch to the waste pickers. As compensation was not mandatory, the waste pickers were under no obligation to attend any discussions. It should be noted that the waste pickers were willing participants who were eager to partake in discussions and mentoring sessions as they were absorbing new knowledge. There were times when the discussion would abruptly end due to a truck offloading waste. Furthermore, the waste pickers never asked for money for their time or even requested a loan from the researcher.

The waste pickers and waste entrepreneurs agreed that I could utilise and display the photographs taken of them in the research study. They further consented that I may identify them as they wanted their story to be communicated.

4.13. Conclusion

The inception of this chapter discussed the transformative paradigm as a means to understand the phenomena and the participants as a marginalised group by focusing on the discriminatory nature, inequalities and social injustices experienced (Mertens, 2012) by the waste pickers. To achieve this, I employed Participatory Action Research as a research approach.

PAR aligned well to the purpose of the research, as developed mentorship was the vehicle to help establish the capabilities and abilities possessed by both groups. PAR for this study was key in listening to, facilitating and empowering waste entrepreneurs, as well as producing new knowledge of developmental processes undertaken by the participants (Chevalier & Buckles, 2013).

The sample design was non-probability and purposive, as the areas in which the participants operated were accessible with the permission of the Drakenstein municipality. A total of 35 waste entrepreneurs and waste pickers formed part of the sample and as a PAR researcher, I interacted with them in their natural environment to explore their reactions to challenges (Sekaran & Bougie, 2016). This provided rich information on my participants.

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Primary data was collected through in-depth interviews, focus groups and observations aimed at determining the capabilities and functioning opportunities capable of being possessed by the waste entrepreneurs. In-depth interviews were also conducted with individuals operating formally in the waste sector, which included workers at buy-back centres and municipal officials, in order to establish a well-structured environment in which the waste pickers and waste entrepreneurs could function. This provided a stepping stone for the development of mentorship as the participants felt at ease communicating their sentiments without feeling victimised. Observation as a data collection method dispensed insight into the natural environment of the participants. Focus groups furnished the waste entrepreneurs/pickers with a voice and a sense of empowerment (Baum *et al.*, 2006; Zhu, 2019) whilst in-depth interviews allowed me to mentor the participants to develop themselves as entrepreneurs. Through in-depth interviews a trust relationship was established, which forms the core of developmental mentorship (Curtis & Taylor, 2018).

At the data analysis stage, the relevant information garnered from the literature review was incorporated for interpretation purposes. To strengthen the validity of the data, the findings were discussed with some of the stakeholders and comments were added to the report. Through this process informant verification was purveyed (Saunders *et al.*, 2007). All data collected was carefully stored for use during the analysis stage of the research. The data is available to interested parties.

The subsequent chapter focuses on analysing the findings through the Sustainable Livelihood Framework. This framework enabled me as a developmental mentor to explore the lives of the waste entrepreneurs/pickers, the challenges and opportunities they face and how developmental mentorship can help them to improve their self-esteem, self-control and social justice.

Chapter 5: Findings and Analysis of Waste Entrepreneurs/Pickers

5.1. Introduction

In the preceding chapters, Participatory Action Research (PAR) was theoretically discussed, which accentuated the viability in applying it to this research study. A circular process of PAR was explained in chapter 4, depicting how the research was guided. This circular process will additionally be illustrated in this chapter.

This chapter discusses the general perception of waste pickers and provides evidence as to how waste entrepreneurs/pickers perceive themselves. Through understanding the environment of the participants, this becomes the start of a mentor and mentee journey. This journey is to establish a collaborative activity prior to any learning being undertaken (Awaya *et al.*, 2003). To understand the waste entrepreneurs/pickers and their environment, the Sustainable Livelihood Framework (SLF) is applied as part of the analysis process. The outline of this chapter is as follows:

Section 1: Vulnerability Context

The first section of this chapter examines the waste entrepreneurs'/pickers' past experiences working illegally at the landfill and ultimately becoming legal waste recyclers. This provides an overview of their natural environment and how they physically and emotionally managed the transition. The chapter formulates a comparison of the waste pickers' environmental circumstances when they were illegally foraging on the landfill to their environment at a designated area as legal waste entrepreneurs/pickers. Challenges and opportunities are discussed based on narratives from the participants.

Policies and structures influence the livelihood assets and are closely linked to the vulnerability context (Serrat, 2017) of the waste pickers. As such, section two will discuss the structures and policies that impact on the sustainability of the waste pickers.

Section 2: Policies and Structures

The analysis in this section extrapolates the waste entrepreneurs'/pickers' adherence to municipal policies and structures.

Section 3: Livelihood Assets

This section provides information on the different assets that are embedded in the livelihood assets, namely human, social, physical, natural, and financial assets/capital (GLOPP, 2008).

This section examines the educational levels of the waste entrepreneurs/pickers, exploring determinants for leaving school, as well as any additional training acquired over the years. This information produces insightful information on each participant's human capital and his/her capacity for development. Included in human capital is the health status of individuals, which was determined through dialogue with them in understanding their current health conditions and if they suffered from any chronic sicknesses. To understand their current social capital, I scrutinised the social aspects of the waste entrepreneurs/pickers by obtaining information on their buyers, life outside the recycling facility, and their interaction with one another. The waste entrepreneurs'/pickers' natural capital is discussed, followed by an analysis of their financial status and how they could ameliorate their finances. This allows for an understanding of their financial capital and their astuteness towards business dealings. Lastly, physical capital encompasses the transport used, access to adequate water supply and sanitation, as well as how information is communicated (DFID, 1999). Although Morse and McNamara (2013) mention that physical capital can be part of human capital, I have discussed these aspects under the various assets as mentioned.

Section 4: Livelihood Strategies

This section provides strategies to improve the livelihoods of the participants based on what they want and the recommendations they brought forth. However, this section is further expounded in the next chapter.

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Section 5: Conclusion

Two very distinctive groups of waste pickers participated in the research and therefore the analysis shall first offer insight into the Wellington group and will thereafter focus on the Paarl group. This section discusses the differences and similarities of each group and furnishes insight into how they address opportunities and inhibiting factors that affect their sustainability and entrepreneurial intentions.

Participants were requested to reflect on the group and in-depth discussions and during the next in-depth interview they were asked to individually provide their reflective thoughts. Reflective thoughts by the participants will assist them to gain more insight into their current situations and how to better comprehend the action they have taken (Chukwu, 2015). These reflective thoughts and actions executed by the participants are recorded in this chapter. This chapter also documents instances where participants were reluctant to undertake certain actions based on the facilitation or recommendations. The research provides evidence that when participants reflect on the knowledge shared with them, they become new knowledge producers as they help improve their current situation through development based on their experiences (Goodyear, 2013). Chukwu (2015:40) further emphasises that PAR has been "identified as involving a spiral of self-reflective cycles of planning a change, acting and observing the process and consequences of change, reflecting on these processes and consequences leading to a repeat of the cycle". Therefore, some of my reflective thoughts will be furnished in this chapter to emphasise the importance thereof. I provide a separate chapter for my reflective thoughts as well as as the reflexive action taken. The reflective notes were composed immediately after each site visit or at times between one interview and the next.

The keystone of the analysis for each section is developmental mentorship, which focuses on the capabilities of each waste entrepreneur/picker. This is executed by focusing on the Capability Approach through implementation of the following normative exercises (Robeyns, 2016):

1) Appraising individuals' health, happiness and comfort

2) Evaluating and assessing social interaction

3) Designing policies and proposing social change in society

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For each section of the SLF, themes that were extrapolated from the transcripts are discussed. Each theme was constructed based on the sub-themes. Direct quotations are utilised to extract the richness of the information and, where necessary, Afrikaans quotations are translated into English in order to provide insight into the themes and sub-themes constructed. No names are mentioned in the analysis to protect the identity of the participants. A summary of discussion for each theme and sub-theme is discussed before continuing on to the next theme. Prior to discussing the next section, a summary of each category that constitutes the component of the SLF is discussed in relation to the waste pickers. After each of the five sections, the chapter concludes with a summative discourse.

5.2. Section One: Vulnerability Context

This section firstly analyses the physical landscape of the participants and proceeds to analyse the challenges and opportunities experienced in their past and current environment. The highlighted area in the figure below depicts the vulnerability context discussed.

Figure 42: Sustainable Livelihood Framework

Source: DFID (1999)

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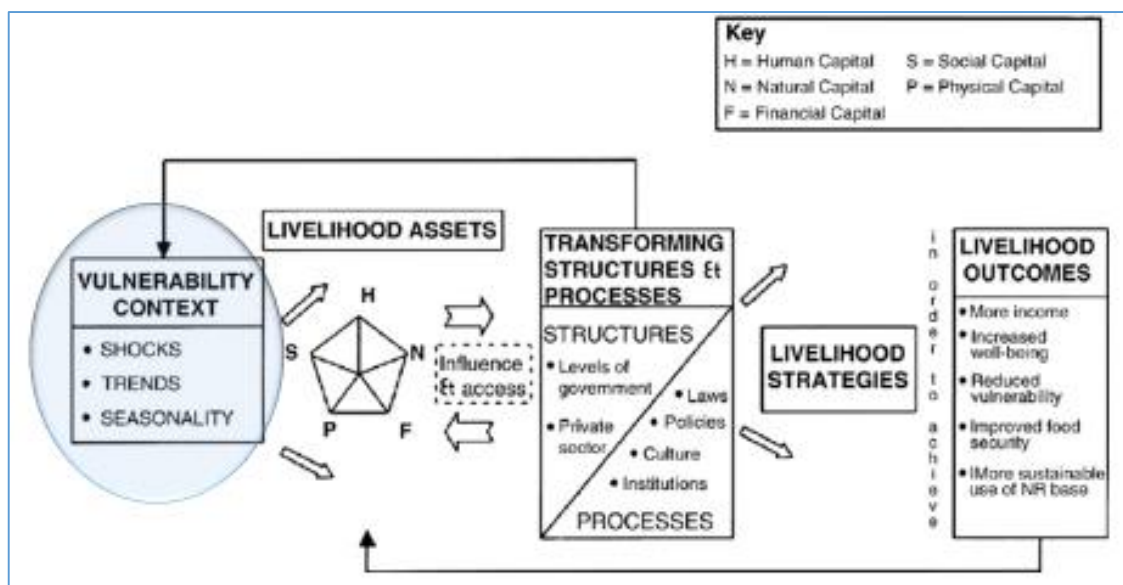
The sample of waste entrepreneurs/pickers were operating in the Drakenstein municipality that forms part of the Cape Winelands district, which is about 60 kilometres from the city of Cape Town. It forms part of the Western Cape, the fourth largest of the nine provinces in South Africa. The Drakenstein municipality expands within a radius of 1538km^2 and comprises towns such as Paarl, Wellington, Saron, Gouda, Hermon, Mbekweni and Simondium. Additionally, it includes micro rural nodes in the vicinity. (Drakenstein Municipality, 2020). Those living in poverty are mostly African females and people from rural areas with no education. The food poverty line in 2017 was R531,00 per person per month (Western Cape Government, 2017). The report further mentions that unemployment is constantly increasing and the Drakenstein municipality has the highest unemployment level of all municipalities in the Cape Winelands district. However, the municipality has a large cohort of artisans, which is set to grow with continuous artisan training. To help address the unemployment issue, the municipality has reduced restrictions on informal trading. The municipality has permitted kerbside trading, road intersection trading and weekend trading on condition that the traders adhere to certain protocols as stipulated by the municipality (Drakenstein Municipality, 2020).

Figure 43: Drakenstein forms part of the Cape Winelands district

Source: Drakenstein Municipality (2020)

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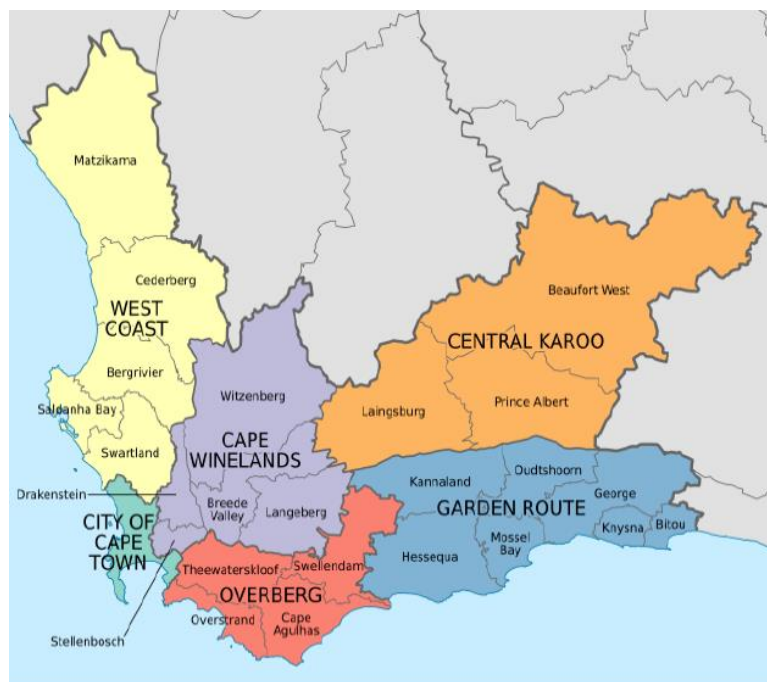
The Drakenstein municipality has a major problem in terms of waste management. The Wellington landfill is running out of space and it has been predicted that the landfill will reach its capacity in 2022 (Volshenck, 2020). The Wellington landfill is located in an industrial area and is almost three kilometres away from the nearest shopping centre. An unpaved road leads to the landfill (as depicted in the figure below), making it difficult to enter with a motor vehicle during rainy days. I experienced this myself many times, as the road has potholes and becomes very muddy.

Figure 44: Road leading to the entrance of the landfill

Source: Researcher

On very rainy days, puddles are formed and at times entry with a motor vehicle becomes impossible. Most vehicles that enter the landfill are trucks, off-road vans (four-wheel drive) or normal vans.

5.2.1. From illegal waste pickers to legal waste entrepreneurs (Wellington participants)

For many years, waste pickers have been illegally entering the Wellington landfill to forage for valuable items to sell, despite a security presence. As reported by the participants, the waste pickers would enter the landfill at night and forage for valuable

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goods. The weak waste pickers would be regularly robbed of their collected items by gangs waiting for them to exit the landfill. Resistance would result in individuals being badly assaulted, with stabbings being common. Waste pickers decided to make the landfill their home with makeshift shelters (shacks) to protect them from the harsh weather. Their shelters were erected out of sight of the limited number of municipal security guards tasked with preventing illegal entry. Most of these shacks were erected behind the landfill.

The vastness of the landfill made security efforts difficult to execute and security was only focused on areas where dumping was active. In 2017 and 2018 there were more than 100 illegal waste pickers roaming the landfill, filtering through the waste for recyclable items to sell to any person(s) interested in buying them. This group was comprised mostly of Africans and coloured people, with no white or Asian people present on the landfill. The supervisor further indicated that there were plenty of items on the landfill that they deemed valuable, ranging from laptops and mobile phones to small appliances such as microwaves, fridges, etc. She and her husband had been actively involved in illegally entering the landfill to buy items from the waste pickers. Most times the informal buy-back operations or third parties (those who bought items from the waste pickers to sell to the buy-back centres) would wait for the waste pickers to exit the landfill to engage with them. Nzeadibe, Anyadike, and Njoku-Tony (2012) report that waste pickers at dumpsites are more vulnerable to monopsonistic tendencies of middlemen as they are easily accessible to buy the recycled items. For the majority of the waste pickers, this was favourable as it was easier to meet a buyer and not leave the landfill. This facilitated easy entry back to their shelter location. The waste pickers living illegally on the landfill had no access to clean water or sanitation.

When asked about how they had lived on the landfill, the following are a few responses as provided by the Wellington participants:

Theme 1: Difficulties of life on the landfill

- *"Dit was n swaar lewe daar bo, ons is geluk om hier te wees"* (Life on the landfill was difficult, we are grateful to be here (referring to the allocated place provided by the municipality)

- We sleep in a make-shift shack and would go to an isolated place where no-one can see us relieving ourselves" (translated)
- "*Ons lĕi op die stoort terein en maak kinners, dus mos koed in die aand*" (we lay at the landfill and make babies as it is cold at night).
- Life is different on the landfill, not like here. We now live better lives
- We would find more items and make more money when we were there (pointing to the landfill) but it is very dangerous there (referring to the landfill)

Although this theme can be broadly defined, the following sub-themes were grouped together to formulate theme 1. Responses from the waste pickers were converted into English.

Sub-themes derived from theme 1	
Sub-themes	**Some responses from the waste pickers**
Poor health conditions	The smells and fumes can make you sick The smell of rotten meat makes me throw up
Harsh weather	The sun can make you tired and thirsty, sometimes there is no water nearby When it is cold, we make a fire away from the securities to keep us warm
Drug addiction	I know of people who sell their goods just to buy drugs The drugs help with fighting the cold weather
Suffer physical abuse	Gangs would fight for the items we collected I would work together with my husband to prevent being attacked
No sanitation facilities	No toilets were available, so we did our thing away from where we work Where we stayed on the landfill, we would walk a distance to relieve ourselves We had no water available

Summary discussion and analysis of theme 1 and its sub-themes:

The fumes from the trucks caused poor health conditions, resulting in lung infections. One waste picker reported due to the combustion of the trucks and his unhealthy

lifestyle, he and a few others had developed lung infections. He would receive medication from the local clinic when he was able to attend. Additionally, the fumes that emanated from the garbage also contributed to an adverse effect on their health. Landfill sites discharge a wide range of harmful pollutants such as leachate and gases and particulate matter that can cause human illnesses (Mothiba, 2016). Additionally, missing a meal was a common occurrence, although they always looked for some edible food amongst the garbage. There were those who admitted that they would often go without a proper meal. Hunger has an adverse impact on an individual's health, causing poor cognitive and physical development, low productivity and in some cases mortality (Masset, 2011).

Contributing to elements that could geminate poor health was the harshness of the weather. The hot sun and the cold weather had a negative impact on their physical wellbeing. Participants made the following remarks (translated from Afrikaans to English):

"It is extremely cold at night so you cover yourself with cardboard boxes"

"My wife and I worked all day on the landfill, we are accustomed to the heat of the sun"

"We had to cover our faces from the sand that blew in our faces"

Waste pickers were vulnerable to extreme weather conditions which impacted on their livelihoods (Auler, Nakashima & Cuman, 2014) and quality of life.

Figure 45: A glimpse of part of the Wellington landfill

Source: Researcher

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The lack of adequate protective clothing and proper training on how to handle hazardous material that ends up on the landfill can have detrimental effects on waste pickers' health (Gutberlet & Uddin, 2017). Those who are sick or injured are less productive, resulting in a reduction in income. Females are more vulnerable as they are prone to more infections due to lack of proper sanitation, and they also suffer abuse from their male counterparts. One participant stated that his daughters were not allowed on the landfill, so they would stay home. He was one of the waste pickers who never stayed on the landfill but lived in an informal settlement in Wellington.

It must be noted that participants would joke about the harsh life on the landfill but at the time of the interview, they all agreed not to go back permanently. Some participants indicated in private that when they did not make enough money during the week, they would stealthily enter the landfill and swiftly assemble items to sell. The overall response from the waste entrepreneurs was that they were fortunate enough not to be operating on the landfill. An overall reflection by the waste entrepreneurs can be summarised as echoed by one participant who admitted that, when reflecting on his past life on the landfill, he felt that he had lost his dignity and was only interested in collecting enough recyclable items for food, drugs and alcohol. "You don't really think of the future; you live each day as it comes."

Based on the data, waste pickers admit that that there are much more recyclable items that are more easily available, but the challenges are not worth going back to such a, "'n lewe van skarrel" (life of scavenging) as summed up by the participants.

During my regular interaction with the waste entrepreneurs, I would occasionally remind them of how they had improved their lives from the time of the landfill. I would emphasise that while they were living on the landfill, they never anticipated that their lives would change to a point where they were welcomed and respected for their activities. This reminder would encourage them to push forward when faced with adversity or challenges that they deemed impossible to overcome.

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When I mentioned to the participants that I wished to visit the landfill to observe the waste pickers, they discouraged me and told me it was very dangerous, despite one or two male participants offering to accompany me. The other participants insisted that it would be non-beneficial for me to go to the landfill as they feared for my safety. This further accentuated their fear of life on the landfill and the negative life they had left behind. However, a few months later, I drove through the landfill and was astounded by the number of valuable items that could have been recycled. The municipality was not to blame for this, as at the time of my observation, the management of the landfill had been procured by a third party. More information on the third-party management system is given later in the chapter. While I was driving along the back roads of the landfill, I did not observe any shacks or waste pickers. I climbed to the top of the landfill, and all I witnessed was enormous piles of waste. This made me reflect on my earlier discussions with the waste entrepreneurs when they notified me that more recyclable items were to be found on the landfill.

5.2.2. Officially recognised as legal waste entrepreneurs

In mid-2018, the solid waste and landfill manager decided that he was prepared to integrate the informal and illegal waste pickers into the formal solid waste management system. The plan was to offer the illegal waste pickers on the landfill an opportunity to legally but informally collect valorised items and sell these to their buyers, with no money due to the municipality. In Paarl, at the material recovery facility (MRF), the manager assembled about 20 waste pickers and offered them the opportunity to use the facility for their waste recycling activities.

5.2.2.1. Wellington landfill waste pickers

The municipal manager and a few municipal officials had converged on the landfill and explained to interested waste pickers what they intended to achieve. Waste pickers had been informed that they would be registered on the municipality's database as waste pickers and would be provided with identification badges and bibs to identify them at their new location, as well as safety boots and gloves. Most importantly, they would partake in a waste recycle training programme. The municipal manager had assured them that they would be provided with waste from the waste trucks that

collected waste in the areas and that the gatekeepers would be instructed that any dumping containing valuable items should be off-loaded in the designated area. The aim was to reduce waste going to the landfill as well as to integrate the waste pickers into the formal waste recycling sector. The benefit to the waste pickers was that they could collect valuable items from the waste without being harassed by municipal officials or other waste pickers. Uncertainty had overwhelmed the interested waste pickers and resulted in them seeking guidance from one of their trusted buyers. Some of the participants remarked that when they had seen this white man coming to talk to them, they had felt nervous and apprehensive in trusting him as they knew they were illegally on the property (landfill). The lady from whom the waste pickers sought guidance had assured them that she would be present at the next meeting and would determine what was required of them. She had approached the municipal manager during another meeting and had been appointed as supervisor of the group. At that particular meeting, the waste pickers had been informed of the rules and regulations they had to follow if they wanted to recycle at the designated area. They had also been informed that the lady buying their goods would be responsible for addressing their needs. She would represent them and address their concerns to the municipal officials. There were a few that later expressed their disapproval to me of her appointment during individual in-depth interviews. As one participant commented, "*We had no choice in the matter; she was never one of us, she used us*." It should be noted that this was not the opinion of the majority of the waste entrepreneurs.

A total of 31 waste pickers had accepted the offer and committed to upholding the rules. The majority of illegal waste pickers had not attended the meeting, as reported by the supervisor. The municipal managers had registered the selected waste entrepreneurs on their database of waste recyclers and provided identity badges. The identity badges were to be used as proof at the entry station of the landfill, permitting them easy entry to the waste area. Another reason for the identity badges was that should police officials see them with items acquired from the waste area, they could produce proof that the items had been legally obtained.

During my first discussion with the municipal manager in May 2019, approximately six months after the waste pickers had left the landfill, he was very optimistic about the decision to include the waste pickers in the formal sector and therefore the appointment of the supervisor was strategically correct. From an observational perspective, the waste pickers showed great respect to the municipal manager by talking softly one another. He was eager to introduce me to the supervisor and asked her to assist me in my data collection. The supervisor told me that the manager was a good man, who gave these people a second chance to help themselves. "He is not involved in the operations aspects and allow them to sell to whom they want," she remarked. The waste entrepreneurs appeared content in the designated area but the supervisor informed me that the municipal manager had initially wanted to move them into the storage area but had decided against it as it was not ready for them and it would be too small for the trucks to dump inside. She further remarked, "The area where they are now is conducive for us. There is a toilet and water at our convenience, something they never had on the landfill."

Figure 46: Wellington waste entrepreneurs' designated area

Source: Researcher

Fewer than half of the waste entrepreneurs had shelter and the others were without shelter. However, during hot days or rainy days, those with permanent shelter would share their space with those without shelter. When asked for their thoughts on the

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designated area, the waste entrepreneurs made the following comments, which are recorded and categorised under the following theme:

Theme 2: Waste entrepreneurs' workplace

"This place is far better than what we had"

"I feel like someone that goes to work every day because of this place"

"We have water and a toilet, but we must keep it clean"

"We enjoy it here; I'll never go back"

"Here we are cared for, no-one harasses us"

"….although we sometimes quarrel among ourselves; it is better here"

Sub-themes derived from theme 2	
Sub-themes	**Some responses from the waste pickers**
Sanitation facilities	We have a toilet that we can use We can use the toilet but we must keep it clean
Shelter to protect from extreme weather conditions	The shelter protects us from the rain When it is hot we can rest under the shelter Our items are protected from getting wet
Work without harassment	No-one bother us, besides when we argue among each other As a female, I am protected against other people
Abiding by the rules	The rules are there to protect us I don't always agree with the all the rules but every workplace has rules

Summary discussion and analysis of theme 2:

The current site where the waste pickers find themselves provides for the basic needs such as shelter, water and sanitation facilities. Basic needs, according to Maslow's hierarchy of needs, are encompassed in the bottom two tiers of the hierarchy.

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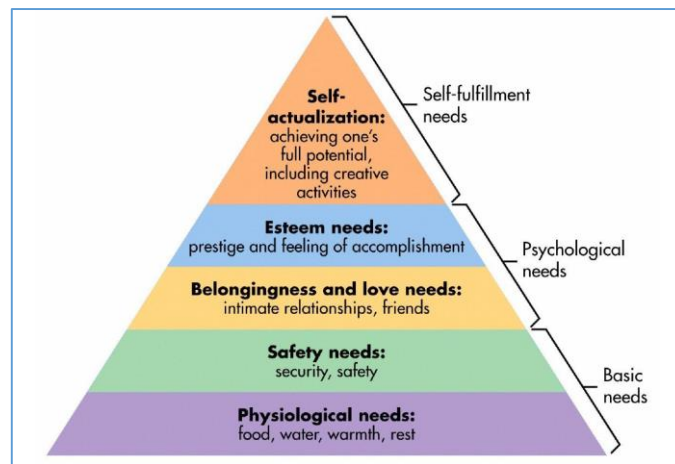
Source: McLeod (2018)

Moreover, the newly appointed sites, for both the Wellington waste entrepreneurs and the Paarl waste pickers, offer a place of belonging and love as depicted in the hierarchy of needs in the figure above (McLeod, 2018). The Wellington waste entrepreneurs stated that although they worked individually, they did help one another, whereas the Paarl group worked as a unit and all money earned was equally divided.

The next section will provide insight into the Paarl waste pickers; more specifically, how they acquired the right to recycle waste at the MRF.

5.2.2.2. Paarl (MRF) waste pickers

As waste generation increases annually with the increase in population and urbanisation, the primary place of waste disposal remains landfills, which cause health and environmental concerns (Moh & Manaf, 2014). To combat this dilemma, the Drakenstein municipality embarked on an integration programme to integrate informal waste pickers into the formal solid waste management system. The municipal manager reported that the material recovery facility (MRF) was made available to the informal waste pickers to recycle waste offloaded by municipal trucks and private individuals and companies. However, according to one of the supervisors, "*We had a meeting with the municipal manager and asked him if we can utilise space on the MRF as we are involved in recycling and engage with the community in creating awareness of waste recycling.*" When I asked whether she and her people saw themselves as an

initiative of the municipality, she remarked, "*We were doing recycling before but we never had a proper place. Most of us are members of SAWPA* (South African Waste Pickers' Association) *so we asked the municipality for space. We are helping them with their waste problem*." The facility is equipped with two baling machines and a conveyor belt that transports recyclable items from the top level to where the baling machines are located. Municipal refuse trucks discharge solid waste collected from the surroundings areas at the MRF, permitting the waste pickers to assemble valuable recyclable items to sell. Only solid waste is dumped at the demarcated area, and waste such as garden refuse is dumped at a separate location. All vehicles and walk-in individuals must sign in at security. The facility is equipped with sanitation and running water, making it very comfortable for waste pickers to execute their recycling activities. As depicted in the figure below, the MRF provides an office for the waste pickers, as well as shelter to protect them from the harsh weather.

Figure 48: Paarl MRF
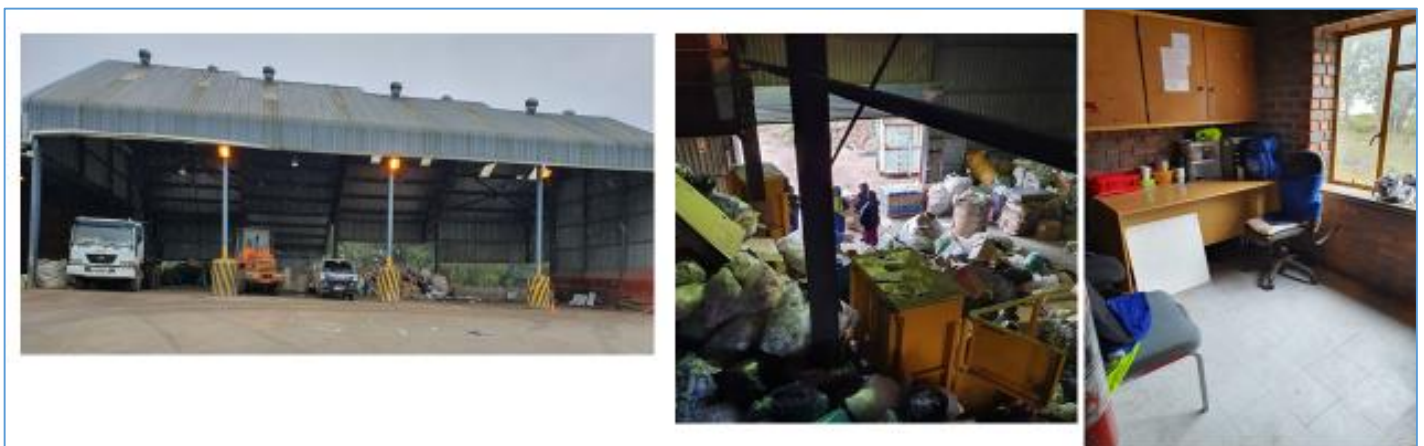
Source: Researcher

Despite both groups having a facility that meets the basic needs of waste pickers, other challenges to the vulnerability context were prevalent. When asked which recyclable products were poor sellers, the following remarks were made by both the Wellington supervisor and the Paarl representative:

Theme 3: Demand and supply – Price factor

> "We are having difficulty selling printed paper, no-one around here wants to buy it"
>
> "Our buyers have told us that they have an abundance of newspapers and cannot buy more"
>
> "We receive a lot of dirty paper in the waste, but we cannot keep it….now it goes to the landfill"
>
> "We don't collect newspapers; no-one buys them"
>
> "It is better to collect items that we can sell"

Recycled newspapers were difficult for the waste pickers to sell at a good price to buy-back centres (BBCs). Lack of demand for a particular recyclable item is one of the significant vulnerabilities experienced by the waste entrepreneurs/pickers. They require a closer relationship with the BBCs and need to increase their network of BBCs.

Summary discussion and analysis of theme 3:

In July 2017 China announced the "Green Sword" or "National Sword" policy, which bans the importation of specific categories of solid waste and places a restriction on contaminated recyclable materials. The policy came into effect on 1 January 2018, accompanied by a reduction in the number of imported waste licences. This policy has had a huge impact on the international market for recyclable items, implying that the waste of many countries will remain in those countries (Alademi, 2020). The global market for recyclable items affected South Africa and thus affected waste pickers in terms of demanding more money for their recyclable items, as well as the demand for those items.

To overcome this vulnerability context, I suggested that the group find another BBC outside the Drakenstein area, such as the BBC in Kraaifontein. The Wellington group was dependent on the guidance of their supervisor, and whatever market information she related to them was readily accepted. The Paarl group, on the other hand, accepted my suggestion and found a potential BBC that would buy their recyclable newspapers.

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On the other hand, when asked about the sales of other recyclable items, participants responded as follows:

<p style="text-align:center">Sub-themes derived from theme 3:</p>

"The best price we get is for aluminium"
"The BBC buys all other items from us at different prices"
"We get a fair share from the middleman, who sells to the BBC"
"We sell our glass directly to Consol"

The Wellington group was divided in terms of to whom they sold their recyclable items. One group (the majority) sold their items to the supervisor, while the other group sold directly to a BBC operating in the area. The BBC was prepared to come and collect their items if the quantity was sufficiently profitable. However, those who sold to the supervisor received less for their items than those who sold to the BBC. The waste pickers were under no obligation to sell to the supervisor, but they preferred to sell to her as she provided them with loans on request. One participant informed me that they sold their items to the supervisor so that they would be favoured and she would take care of them. The BBC charged a fee to collect the recyclable items, which the waste pickers had agreed upon. Most waste pickers were aware of the price per kilogram for the various items, as provided by the BBC, and were able to provide estimates of the load collected. The supervisor, unlike the BBC, did not provide them with a breakdown of the items sold. The majority were content with the amounts paid by the supervisor and were not interested in finding another BBC to which they could sell their recyclable goods.

The Paarl group, on the other hand, was more proactive in procuring the best prices from other BBC centres operating outside the Drakenstein area.

5.2.3. Vulnerability context affecting both groups (Wellington and Paarl)

Another vulnerability context that affected all waste pickers was the coronavirus (COVID-19). The lockdown at level 5 was announced on 23 March 2019 and

commenced on 27 March 2019. This meant that only emergency staff was validated to operate. Waste pickers were not permitted to collect recyclable items. Although many organisations supplied food to vulnerable communities, the sampled waste pickers did not receive any food parcels from organisations intending to support the waste pickers. The majority of the sampled waste pickers did not possess a mobile phone and therefore communicating with them was extremely difficult. Although I was in contact with the supervisors to try and get food and money to the waste pickers, some waste pickers later reported that they had received no food or money from the supervisors as they were not contactable. I asked the waste entrepreneurs how they had survived without collecting recyclable items, and they responded as follows:

Theme 4: COVID-19

"People in the neighbouring areas provided us with food"

"The people I do odd jobs for gave me money and food weekly"

"I would do odd jobs and get food and money"

"Every week there was a group of people that handed out food parcels"

Based on the responses, the majority of waste pickers depended on charity to help them through this vulnerable stage. Fortunately for others, the people for whom they regularly did gardening and light maintenance work supplied them with food and money. When the opportunity presented itself, I reminded them of the benefits of saving for times of need. Although, at this stage of their lives, they were barely earning sufficient income to sustain their livelihoods, I encouraged them to work towards saving money and opening bank accounts. This came to fruition later in their lives, as discussed in the next chapter, and through developmental mentoring it became a reality for some of the participants.

Summary discussion and analysis of theme 4:

The resilience of the waste entrepreneurs is evident as the majority of them returned to the workplace after the hard lockdown. However, both groups suffered loss of life unrelated to COVID-19. Additionally, some waste entrepreneurs did not return after waste pickers were permitted to once again collect recyclable items. The following comments were made by the waste entrepreneurs:

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Theme 5: The effects of COVID-19 on returning back to designated area

> "They went back to the landfill"
>
> "He is doing drugs again, and knows he cannot come here"
>
> "They think this place is a waste of time as they can make more money on the landfill"
>
> "We don't know why he is not coming back; he ignores us"

Although some ardently believed that they could make more money by returning illegally to the landfill, I encouraged them to reflect on self-esteem and self-control. Self-esteem is when an individual seeks the respect of others and conducts him/herself in a dignified manner (McLeod, 2018). I accentuated the changes they had implemented:

- Washing their hands before attending a focus group discussion, something they had never done before
- Not swearing as often and showing respect to one another
- The respect shown by the municipal officials
- The acknowledgement they received for their contributions to recycling

Self-control, on the other hand, is related to a variety of behaviours. It permits an individual to override strong tendencies and control behaviour, thoughts and emotions (De Ridder *et al.*, 2012). I pointed out that their willingness to delay an immediate reward (returning to the landfill) in order to acquire additional benefits through delayed gratification (Cheng, Shein & Chiou, 2012) is a prevailing example of self-control.

Summary discussion and analysis of theme 5:

Cast and Burke (2002) discuss self-esteem as an individual's positive disposition, which researchers have categorised as a self-motive. The waste entrepreneurs continued to reinforce positive behaviour through self-improvement. They were more health conscious despite their vulnerable working environment. By exercising self-control, the waste entrepreneurs remained at the newly designated area and did not

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return to being illegal waste pickers. Individuals with low self-control are likely to become unemployed or law breakers (Moffitt *et al.,* 2011).

The vulnerability context of the waste pickers frames the external environment in which they exist, while vulnerability of livelihoods in the sector is commonly related to government policies and socio-environmental factors over which the waste entrepreneurs/pickers have limited or no control (Nzeadibe *et al.,* 2012). During October 2020, the Wellington waste entrepreneurs were once again confronted with a precarious situation when the operations management company that had been appointed by the municipality in early 2019 decided to move the group to another area below the landfill. The following responses were recorded:

Theme 6: Sense of estrangement from municipality (Wellington group)

"They don't care about us"
"We are moved to a place with no shelter and they restrict us from using the toilet"
"They don't care about us…it feels like we are back on the landfill"
"We have no shelter and work in the rain"

Figure 49: Newly allocated area on the Wellington landfill

Source: Researcher

The waste entrepreneurs complained that the area did not provide them with shelter, especially on hot days when the temperature can rise to 40 degrees Celsius.

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Figure 50: Self-made shelters

Source: Researcher

Waste entrepreneurs felt depressed and were waiting to be addressed by the municipal manager. They asked me to assist them with the situation and asked for my advice. Most of the original group left as they felt unhappy. My advice to them was to be patient as they needed to request a meeting with the municipal manager. The current situation is expounded on in the next chapter.

Summary discussion and analysis of theme 6:

The waste entrepreneurs were resilient to challenges experienced in terms of negativity of how others perceived them but were extremely vulnerable when being included in a process but not being consulted. Individuals leaving the designated areas to illegally collect recyclable items provided sufficient evidence of their disappointment in the municipality. However, after consultation with the municipal officials, it emerged they were unaware of the move and undertook to speak to the waste entrepreneurs. The company to which the municipality had outsourced the management of the landfill had moved the waste entrepreneurs without consulting the municipality. The lesson learnt is that through proper communication, the waste entrepreneurs ultimately understood the reasons for moving them to another location.

Further communication between the municipality and the waste entrepreneurs confirmed that the waste entrepreneurs would be transferred to the MRF in Paarl and that they would share the facility with the Paarl group.

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Theme 7: Welcoming the chance to move (Wellington group)

> "We are excited to move as it will be better there than here"
>
> "We will have to work as a team"
>
> "We need to prove that we are good at recycling"

The above are some of the comments provided by the waste entrepreneurs. Their supervisor, on the other hand, was concerned about them going on their own as she saw herself as a motherly figure. I responded by informing her that with her guidance and my mentoring, the waste entrepreneurs would be able to manage themselves. The waste entrepreneurs were apprehensive as to how they would get to the MRF in Paarl. At the time of relocating the recycling operations to Paarl, only 17 waste entrepreneurs were present and willing to move. The others had decided to either return to the landfill or seek some other type of sustainability.

Sub-themes derived from theme 7	
Sub-themes	**Some responses from the waste pickers**
Work smart	We are going to work better than in the past
	We need to work smarter
Work as a unit	We need to work as a team to show the municipality that we can work together
	If we work as a unit, we will be able to make more money
Set goals and work towards them	We need to focus on saving money by earning more money
	We must set goals that we can achieve

Summary discussion and analysis of theme 7:

Over the years, the group came to depend on me as a mentor. When they were informed of the move, the group collectively decided that I should be informed and provide guidance on how best to proceed. Some comments made by the waste entrepreneurs during a focus group discussion:

"Ons het vertroue in jou, en weet jy sal ons help om beter te wees" (we trust you and we know you will help us to be better)

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"We depend on your guidance as you think of us"

"Will you be there when we move, so we have someone we trust?"

These comments provide proof that the steps of developmental mentorship are crucial. The steps as explained in chapter three are outlined below:

Table 24: Five tiers of mentoring

Tier of mentorship	Activities involved in each stage
1. Acquaintance	Meet potential mentees Establish platonic relationship Develop some trust through relationship building
2. Introductory	Introduce role as a mentor Provide subtle mentorship with the approval of the mentees Create a mentor and mentee relationship. Trust building continues
3. Interactive	Each person's roles are clearly defined Boundaries are formed and ethical considerations need to be practised Information is shared and personal relationships are established Mentor disseminates knowledge based on interaction with mentees
4. Maturity	Relationship development reaches its peak Knowledge dissemination and knowledge acquisition are circulated between the mentor and mentees Mentees need to become less dependent on the mentor
5. Rekindling	The relationship between the mentor and mentee dissolves gradually Both parties are receptive to the advice from the other Parties support each other in their endeavours Friendship bond strengthens

Source: Researcher

Each of the above steps were thoroughly and patiently executed before progressing to the next step. When the participants arrived at the newly located site, one participant who had acquired a mobile phone called me to inform me that they had arrived. They requested that I ask for more tools and bags. However, I informed them that my role was simply to facilitate and mentor them and that the onus was on them to communicate, through their representatives, their needs to the municipal officials. I introduced them to the Paarl group who were distancing themselves as they were apprehensive about what would happen to them. The municipal officials later

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communicated that each group would receive their own waste to sort through for recyclable items. The picture below illustrates the area where waste was being dumped. Once the valuable items had been retrieved, the trucks would load the garbage to dispense at the landfill.

Figure 51: Wellington group's new workplace in Paarl

Source: Researcher

5.2.3. Concluding thoughts on vulnerability context

The vulnerability context refers to individuals functioning in an environment beset by inhibitors that adversely affect their sustainability. This comprises three categories, namely shocks, trends and seasonality, which can affect the internal and external environments of those living in poverty (Twigg & Greig, 2001).

Trends

This refers to the availability of resources, as well as population density, economics, technology and politics, and therefore trends are key to any individual's livelihood (Mazibuko, 2013). While operating on the landfill, the waste pickers had been confronted by various obstacles. As waste pickers procreate, they become more vulnerable in seeking more income to sustain a growing household. When the waste entrepreneurs were assigned to their new area, they were exposed to new technology in terms of equipment such as a baling machine, trucks, etc. to help them earn a better income. Trends can therefore positively impact on an individual's life, causing him/her

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to be less vulnerable (DFID, 1999). Their ability to adapt to their new environment demonstrates their freedom to make decisions without being harassed. Under the auspices of the mentor, waste entrepreneurs were able to apply their faculties of reasoning freely to convert themselves from waste pickers into waste entrepreneurs (Ikebuaku & Dinbabo, 2018). Mentorship further provided the waste entrepreneurs with the ability to identify positive trends and to apply resilience when confronted with trends that would negatively affect their vulnerability.

Shocks

Shocks include natural, health and economic shocks (Serrat, 2017). Natural shocks are natural disasters, such as the drought period experienced in 2017 in the Western Cape. Health shocks include the COVID-19 pandemic which untowardly affected the waste entrepreneurs. During the total lockdown period, none of the waste pickers were permitted to collect recyclable items. The economic impact caused many to return to illegal waste picking. As a mentor, I highlighted the importance of them preparing themselves for unpredicted shocks and market volatility. This would include ensuring that they took care of their health and wore the required protective clothing. More information on health issues is discussed in section three under "livelihood assts". The waste entrepreneurs were presented with protective clothing, giving them the capability to protect themselves. Functioning or acting on this capability autonomously was dependent on how they would pursue the goal to improve the quality of their life (Alkire, 2005). Mentorship provided guidelines to the waste entrepreneurs in terms of facilitating the functional process to improve their quality of life.

Seasonality

Seasonality encompasses seasonal shifts in prices, production, food availability and employment opportunities (Twigg & Greig, 2001). The Paarl group would take their lunch break at 13h00 on most days. Based on observation, they came to their place of work with a packed lunch prepared at home, indicating that they did not eat food found among the waste. On the other hand, the Wellington waste entrepreneurs were observed eating food found among the waste. This was not a common occurrence but after speaking to them about the disadvantages of eating unclean food, many

abstained from this practice. One of the components of the Capability Approach that I applied was the assessment of an individual's wellbeing (Robeyns, 2016). Comparing the different lunches brought to the workplace by the Paarl group provided a level of assessment for each group. Robeyns and Byskov (2020) mention that to evaluate an individual's wellbeing, one need not take into account the number of resources available but rather how they utilise it and what they desire to become. The waste pickers capitalised on the opportunity of forgoing the landfill willingly to become waste entrepreneurs. They demonstrated the attributes of entrepreneurs but still required lots of development to function or act as entrepreneurs.

In terms of vulnerability presented by the environment, the participants, particularly, the Wellington waste entrepreneurs, underwent various stages. Janssen *et al.* (2006) postulate that vulnerability is embedded in natural hazards and can be delineated as the characteristics of individuals or groups that have the ability to predict, contend with, withstand and recover from the impact of a natural disaster. The waste entrepreneurs/pickers were faced with market price volatility, harsh weather conditions and being moved around without proper communication, and they managed to precariously sustain themselves. The development of self-esteem and the exercise of self-control provided a platform for their metamorphic transition – from illegal waste pickers to recognised waste entrepreneurs. The Drakenstein municipality contributed to some of the vulnerabilities suffered by the waste entrepreneurs/pickers, yet the municipality continues to provide a life source through the accommodation of land space and waste. If it were possible, I would have liked to motivate those who were no longer part of the programme to continue and have self-control as illustrated by the current group. As effectuation entrepreneurs, waste pickers were able to adopt to changes brought upon by the environment through pursuing new opportunities and learning from it (Matalamäki, 2018).

The next section analyses the policies and structures as set out by the municipality and other stakeholders in terms of their influence on the waste entrepreneurs'/pickers' sustainability.

5.3. Section Two: Transforming Structures and Processes

The transformation of structures and processes happens at all levels (from macro to micro) and comprises institutions, organisations, legislations and policies that influence individuals' livelihoods (Twigg & Greig, 2001). The Drakenstein municipality is an institution that implements policies and procedures that households and businesses need to follow. The section under "Transforming Structures & Processes" is highlighted as depicted in the figure below.

Figure 52: Sustainable Livelihood Framework
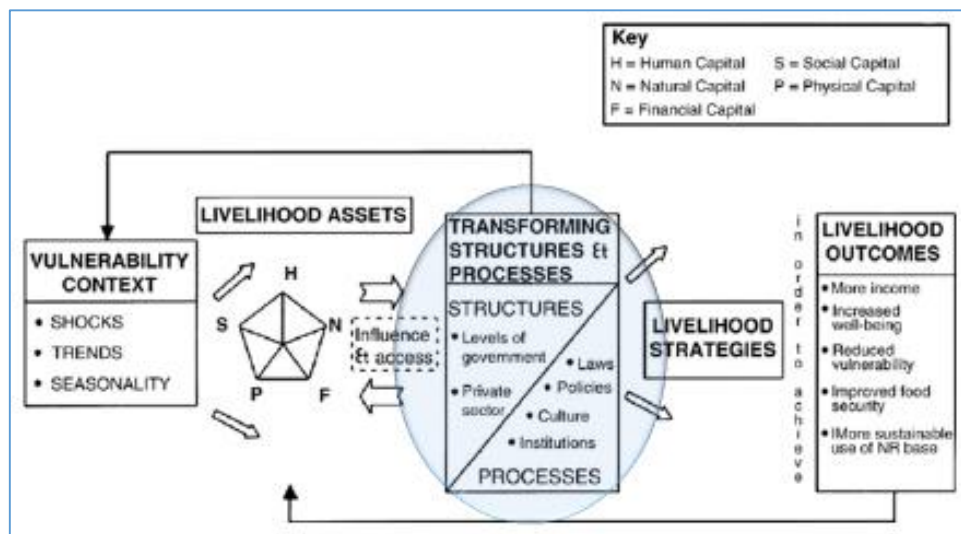
Source: DFID (1999)

Waste pickers previously operated illegally on the landfills; however, the Drakenstein municipality decided to uplift those willing to abide by certain policies. These rules were applicable to waste pickers who were seeking space to conduct their waste recycling activities.

Some of the rules that applied to both groups were:

- No fighting will be tolerated. Anyone caught fighting will have to vacate the premises and will not be allowed to return.
- No intoxicating drugs or alcohol permitted on the premises.
- Any individual who is caught on the landfill may not return to the premises.

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- Individuals may not be intoxicated while working on the premises.

Members of both groups were expelled from the designated areas by the supervisors after consultation with a municipal delegate, as they failed to adhere to the rules. The municipality is strict when it comes to the implementation of the rules, which the waste participants had no part in drafting. One of the municipal officials stated, *"We can't have individuals on the MRF or landfill that do not obey the rules. We don't ask for their money; all we request is that they obey the rules."*

When the participants were asked for their thoughts about the general rules for operating in the designated areas, the following comments were provided:

Theme 8: Rules facilitating self-improvement

"The rules help us to be better"

"The rules make us different from those on the landfill"

"We work better because of the rules, no fighting"

"Every place has rules, so we have rules here to protect us"

Participants further emphasised that the rules helped them to work together. When disagreements occurred, the fact that they might be expelled from their workplace prevented them from escalating arguments, and one party would usually decide to walk away from the other instead of arguing.

Summary discussion and analysis of theme 8:

Some researchers argue that policies are not always in favour of the poor (Mazibuko, 2013). However, in this particular instance, the waste entrepreneurs/pickers were in favour of the rules as stipulated by the municipality. However, the general rules were not a panacea to self-improvement. Some policies had led to waste entrepreneurs leaving their workplace as they were not in favour of the rule instructing them to move to a different site. During late 2019, the municipality contracted out the maintenance and operational functions of the Wellington landfill to a third party. Waste entrepreneurs in Wellington were not happy about this, as not all trucks with waste

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came to offload at their work stations. Additionally, the third party enforced certain rules that impacted on the waste entrepreneurs' ability to improve themselves.

Theme 9: Policymakers must consult all parties

"The municipality could have consulted with us about new management"

"We are told what to do without any consultation"

"They just tell us without our input…we know the system"

"We are not children, they can first talk to us"

Waste pickers expressed disappointment in the municipality for leaving them in the care of a third-party organisation. They further expressed that they were receiving significantly less waste as they believed that the security guards were not doing their jobs correctly.

Sub-themes derived from theme 9	
Sub-themes	**Some responses from the waste pickers**
Acknowledgement through involvement	The municipality must recognise our efforts to help them We received awards for our recycling efforts but the municipality doesn't always acknowledge us
Our input could be beneficial	We can provide good feedback We know this type of recycling so they must talk to us
Consultations could lead to improved outcomes	If they communicate with us, then we will be happier Consult with us and we will provide outcomes

Summary discussion and analysis of theme 9:

The waste entrepreneurs/pickers wanted to be treated with respect through engagement with them on issues relating to their work areas. They wanted acknowledgement for their involvement and wanted to provide input in decision-making processes. In terms of the capability approach, functioning is what individuals aspire to do or become (Ikebuaku & Dinbabo, 2018). The waste entrepreneurs/pickers,

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through developmental mentorship, expressed their willingness to participate in policymaking process. The Capability Approach comprises functioning that influences individuals' lives, such as providing their opinions on matters that pertain to their sustainability (Alkire, 2015). The waste entrepreneurs/pickers were eager to disseminate information on what they realised as important to their sustainability. This was spurred through developmental mentorship which focused on empowerment. Empowerment allows individuals to have more control over their work. Ultimately, as the mentor, I want to create shared influence which is broader in scope than empowerment (Ragins, 2016) as this would ameliorate the relationship between waste entrepreneurs, municipalities and other stakeholders involved in waste management. The waste entrepreneurs/pickers would prefer to be included in all decision-making processes, as this would provide them with a sense of empowerment and would improve their self-esteem.

A supervisor also expressed that some policies stifled their ability to be more efficient. The Paarl group wanted to employ more individuals but the municipality had refused, and this also affected the Wellington group as they had to relinquish individuals that were not registered on the municipal database.

Theme 10: Ability to run operations without municipal involvement

"We must be able to run operations without interference"
"We want to employ individuals that can help us"
"We work harder as they told us that only the original group can work"

The participants complained that the municipality did not permit them to run their operations freely. This could be because waste entrepreneurs operate on an informal level and therefore need to be regulated and assisted through social policies (Chen, 2005).

Summary discussion and analysis of theme 10:

Waste entrepreneurs/pickers turned to me for guidance about them being restricted from employing additional workers. I explained that any additional worker needed to be cleared by the municipality. Since they were working collectively, any additional

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resource would impact on their profitability. The law of diminishing return outlines that at a certain level of output and with the additional labour, productivity remains constant and profits start diminishing due to the extra labour that needs to be paid (Mohr, 2015). Furthermore, any individuals who enter the premises without having been cleared by the municipality pose a security risk. This made them understand that they could not permit anyone on the premises without authorisation from the municipality.

The Wellington supervisor was responsible for ensuring that the waste entrepreneurs adhered to the policies and rules as stipulated by the municipality. It is therefore appropriate to report on the findings under this section. Additionally, in chapter 3, I proposed that the first step to developmental mentorship is acquaintance. In this stage knowing the mentees and establishing a level of trust are tools for effective mentorship (Qian *et al.*, 2014). To know my participants, I started my first in-depth interview with the Wellington supervisor before embarking on interviews with the rest of the group. It was also a sign of respect to first approach the supervisor and seek permission to interview the rest of the participants.

During an in-depth discussion with the Wellington supervisor, I asked her the following questions: Why have you decided to be here with the waste pickers? How do you benefit from this? The following are anecdotes extracted from discussions with the Wellington supervisor:

Theme 11: Community worker (Wellington)

"I was always a person who always worked in the community, so I knew these people's struggle and with the municipal manager I could help them and explain the rules to them"

"These people need someone to guide them; my husband and I have always been involved with them since the time when we started buying their collected items on the landfill"

"I am like a motherly figure to them. I listen to their problems and advise on what they can do"

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To support this theme, the participants commented as follows with regard to the Wellington supervisor:

> ➢ "She is here to help us improve our lives"
>
> ➢ "She teaches us how to recycle better"
>
> ➢ "She makes sure we get our safety stuff from the municipality"
>
> ➢ "She gives us money in advance, then we pay her when we sell our goods"
>
> ➢ "She is a good person who wants us to make something of ourselves"
>
> ➢ "She is okay; you can talk to her"

Based on the participants' remarks, it is evident that they perceived the supervisor as a community worker – a member of the community of waste entrepreneurs on the Wellington landfill.

Summary discussion and analysis of theme 11:

Many of the participants respected the supervisor and sought her guidance. As a mentor and a PAR researcher, it was best to include the supervisors in the facilitation process until a trust relationship could be established between the waste entrepreneurs and myself. Trust is a psychological state that permits individuals to expose their emotions and feelings voluntarily. Mutual trust and commitment is required to either serve as a positive inducer or a negative inhibitor of the relationship. Later discussions with the waste entrepreneurs revealed a different perception of the supervisor.

Theme 12: People in power abuse their power

"She is here for her own benefit"

"She brought other people to help collect cardboard"

"No-one can question her"

"She gets rid of the people who don't sell to her"

After an in-depth discussion with the waste entrepreneurs who were not selling to the supervisor, the supervisor approached me and informed me that she could not please everyone and that some people would speak ill of her. My advice to her was that she

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must continue to do her work and that we could discuss strategies that could improve communication with the entire group.

<u>Summary discussion and analysis of theme 12:</u>

Based on the findings, a few waste entrepreneurs had distrust in the supervisor. Based on my observations, the waste entrepreneurs who had been expelled from the allocated work space were those individuals who were not selling to the supervisor. The supervisor reported that they had left due to their failure to abide by the rules. One waste entrepreneur had been expelled from the designated area due to a quarrel between him and the site manager. He would arrive at the designated area almost on a daily basis but would always be denied entry. On request of the rest of the waste entrepreneurs, I spoke to the site manager who conceded and gave permission for the participant to return.

5.3.1. Concluding thoughts on structures and processes

Structures applicable to this research study refer to the premises owned by the Drakenstein municipality, which was responsible for setting the policies and rules, providing infrastructure and executing functions affecting the livelihoods of individuals (Serrat, 2017). Thus, third-party management organisations and BBCs form part of the structures as they have an influence on the sustainability of waste entrepreneurs. Evidently, without the premises provided by the Drakenstein municipality, the waste entrepreneurs would either operate illegally or acquire space privately.

Processes entail policies and regulations that assist in securing livelihoods and which can generate positive outcomes for entrepreneurs (Kabir *et al.*, 2012).

Most municipalities exclude the waste pickers when discussing policies relating to waste management. Chen (2005) posits that the involvement of those in the informal sector should be participatory and inclusive, allowing for policies to be developed through consultation. Policymakers should encourage and support those in the informal sector to develop into more formal structures. The Paarl waste pickers formed a co-operative to help improve their sustainability endeavours. The concept of freedom

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in terms of the Capability Approach states that individuals need rights and opportunities to strengthen their capabilities and as such, should have the freedom to choose outcomes that could improve their lives (Sen, 1999). As a mentor, I would encourage dialogue among waste pickers to increase their knowledge base through shared influence (Ragins, 2016), as well as motivate them to have open discussions with municipal officials. In the next section (section 3) the analysis focuses on the livelihood assets of the waste entrepreneurs/pickers.

5.4. Section Three: Livelihood Assets

"A livelihood is the set of capabilities, assets and activities that furnish the means for people to meet their basic needs and support their well-being. The building of livelihoods reflects and seeks to fulfil both material and experiential needs" (Kabir *et al.*, 2012:1). The first asset that is analysed is human assets or capital, as it plays a more pivotal role than land in shaping livelihoods. The lack of human assets limits the interaction of individuals when it comes to engaging with others outside their working environment (Hua *et al.*, 2017). The livelihood assets consist of human assets, natural assets, social assets, financial assets and physical assets as highlighted in the figure below.

Figure 54: Sustainable Livelihood Framework

Source: DFID (1999)

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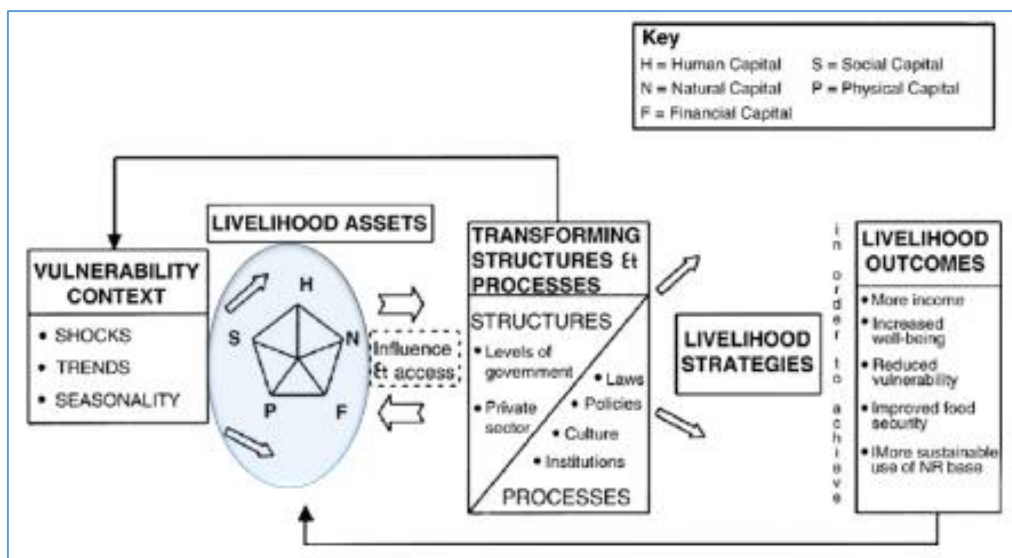
5.4.1. Human capital

The analysis will focus on human capital as well as human capability. Sen postulates that both human capital and human capability focus on humanity but there are differentiations and similarities. Human capital distillates on the agency of human beings in supplementing production possibilities. Human capability arouses the substantive freedom of individuals to live their lives with value and to enhance their true choices (Smith & Max-Neef, 2011). Human capital encompasses an individual's knowledge, skills, ability to work and good health. Education can facilitate how individuals utilise the available resources and assets to convert these into opportunities that could improve sustainability (Kabir *et al.*, 2012). Even though waste pickers are perceived by the Drakenstein municipality as entrepreneurs, many admitted that they lacked entrepreneurial skills.

When the Wellington waste entrepreneurs accepted the offer of the municipality to vacate the landfill and become legal waste pickers, a two-day training session relating to waste minimisation was provided by the municipality. The participants were given clothing (blue jackets and pants), gloves and safety boots, which they wore to the training. Additionally, transport to and from the venue and snacks were provided to the waste pickers. Training was held under the aegis of the Drakenstein municipality, which sourced a professional waste manager from the Western Cape government to conduct the training session.

Figure 53: Waste entrepreneurs on the first day of training offered by the municipality

Source: Researcher

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Theme 13: Training on how to sort waste

"We were taught the different categories of plastic, differences between PET 1, HD5, HD2, etc."

"We all went on a training session"

"The training was to show us how to sort the waste"

"It was interesting; we have a certificate to say we know how to sort waste"

"We used to sort but this was more detail"

"They explained the different types of plastic"

On completion, a certificate of attendance was furnished to those who had completed the training (see figure below).

Figure 54: Certificate of attendance

Source: Researcher

Participants stated that apart from being shown how to sort waste, which most claimed they had learnt from other individuals while they were recycling on the landfill, they

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were taught how to use some of the items to make ornaments. Many reported that they did not have the time to make ornaments from the recyclable items but preferred to earn an income collecting valorised items to sell.

Some participants stated that they were now teaching others how to sort the plastics and other recyclable items. The training was welcomed by the participants and some commented that they had dressed up for the training in order to boost their dignity. One waste entrepreneur mentioned, "*Dit was lekker om 'n nuwe uniform aan te trek. Dit llat jou goed voel"* (It was nice to wear a new uniform. It made me feel worthy).

Summary discussion and analysis of theme 13:

To many, the certificate represented recognition for what they were doing but more significantly it gave them a sense of empowerment. My reflection on the training is that these individuals are prepared to acquire knowledge as long as it is practical in nature and they perceive it to be beneficial. This presented me with the opportunity to state that whatever future training will be presented, it should be largely practical and in agreement with the participants and be perceived as beneficial to them.

Although a demographic breakdown was documented in the previous chapter, the theme below provides insight into the low education levels of the participants. The Wellington waste entrepreneurs in particular reported low educational qualifications in comparison to the Paarl cohort. Nonetheless, the most common explanations for low educational levels were as follows:

Theme 14: Rationale for low education level

"Was not willing to continue school"

"Had to go and work to help in the house"

"Stayed with grandparents who were not helpful"

"I wanted to work"

"Could not afford to pay for school stuff"

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Generally, participants acknowledged that there had not been enough money to send them to school and that they had needed to work to help with household expenses.

Summary discussion and analysis of theme 14:

The vast majority did not complete Grade 12 and therefore did not hold professional positions before becoming waste pickers. Some of the Wellington participants were unable to provide a signature and asked the supervisor to initial on their behalf. Another participant was unable to provide a "proper" signature, instead making an X on her consent form. The Paarl group, on the other hand, were able to read the consent forms and were able to sign them without assistance from the supervisor. Participants had left school for various reasons, mostly due to financial constraints and unstable family structures. Some of the females reported that they had left school because they fell pregnant and were obliged to take care of their children. Simpson (2018) posits that capabilities contain attributes that give individuals good reason to value life, such as the ability to live in a clean environment, self-respect, and equal opportunities. These capabilities are the bedrock that assist individuals to make particular choices in pursuit of a particular lifestyle. Most of the participants had been deprived of pursuing a good education and as such were limited in their choices. The limited educational background should not be treated as a disability, but rather assistance should be provided in the form of mentorship and training to develop improved skills. Most of the participants' skills were limited to blue collar skills. These included:

Theme 15: Variation of skills

Domestic service
Gardening work
Labourer on building sites
Farm worker

Many of the female waste entrepreneurs had worked on farms picking fruit. A few male participants reported that they had spent more than 10 years in prison and upon their release had decided to work on farms. Others had opted to become waste pickers.

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Summary discussion and analysis of theme 15:

Although a few participants mentioned that they had previously worked for formal organisations, they had been employed on a contract basis without the privilege of medical aid or a provident/pension fund. The jobs held by these waste entrepreneurs were in line with their level of education. Apart from the supervisors, none of the waste entrepreneurs possessed a laptop or desktop computer. Those who were exposed to computers had limited knowledge. The Paarl group had a donated laptop but were not able to compute their daily or weekly totals in Excel. To improve the waste entrepreneurs'/pickers' livelihoods, skills development relating to their field should be promoted. This is evident based on the training that the municipality offered as skills development.

During a focus group discussion, participants were asked what skills they would like to acquire.

Theme 16: Skills development

"Would like to learn how to use the baling machine"

"Health and safety course"

"Financial literacy"

"Business management"

The participants demonstrated willingness to learn new skills. They emphasised that the additional skills would enable them to be more productive.

Figure 55: Needs development identified

Source: Researcher

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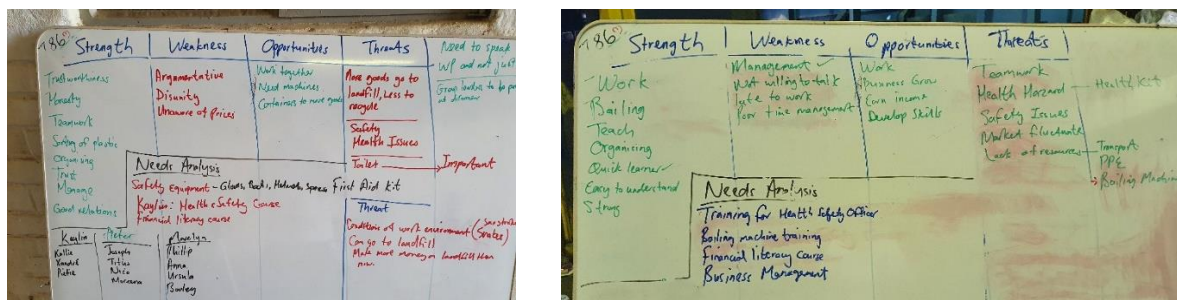
Summary discussion and analysis of theme 16:

The willingness displayed by the participants is encouraging for the development of a training programme. Government should encourage skills development as this would furnish the waste entrepreneurs/pickers with the ability to increase the capacity of waste recycled, thus reducing the amount of solid waste ending up on the landfill. If the capability exists for training waste entrepreneurs/pickers, then it would be advantageous for them to exploit the opportunity freely to improve themselves. Skills development is associated with the wellbeing of the individual.

In terms of the waste entrepreneurs' health condition, many were able to collect recyclable items. The older participants were slower in collecting their items and would sit in a crouching position while sorting. Most waste pickers would usually bend down to sort through the waste.

Theme 17: Underlying health issues

"Serious cuts on hands due to broken glass"

"Lung infection"

"Infection from no toilet facilities"

"Regular stomach problems"

Based on observation, most of the Wellington waste entrepreneurs either had no front teeth or rotten teeth. Prior to moving to Paarl, they reported encountering snakes and rats while sorting through the garbage. During my many visits I would enquire about participants that were not present on the site and would be informed that they were sick. I observed many times how waste entrepreneurs would consume beverages and food left in the household garbage, which would lead to various stomach infections. Waste entrepreneurs were not comfortable wearing gloves while sorting through waste as they claimed it distracted them from being more efficient in their collection activities. During the COVID-19 period, waste entrepreneurs would work without masks or gloves, yet they acknowledged that they should be careful not to contract the virus. The eyesight of one of the Paarl supervisors deteriorated to the point where she was

unfit to work on the site. Fortunately, she had children to serve as her caregivers. When participants are sick and cannot work, this affects their income, which ultimately affects their quality of life. One participant cut his hand on a broken glass item while scavenging through the waste. Without proper healthcare, he developed an infection, resulting in him having to attend the day clinic. He was unable to work effectively, resulting in loss of income.

Sub-themes derived from theme 17	
Sub-themes	**Some responses from the waste pickers**
Ill health results in loss of income	If you are sick, you can't work No-one will give you money if you can't work
Depression	I feel depressed if I see my condition It is depressing that I can't give money to my mother
No health plan	We don't have medical aid You must go and sit all day at the clinic

Summary discussion and analysis of theme 17:

All waste entrepreneurs/pickers are exposed daily to vulnerability factors when sorting through the waste (Mamphitha, 2012). Females are more prone to infection in comparison to their male counterparts (Sheheli, 2012). As the findings reveal, when the participants are unable to work due to health reasons, they receive no income, which affects their quality of life. Capabilities in terms of the Capability Approach signify an individual's ability to capitalise on the opportunities that are available. However, an added segment to the Capability Approach is the functioning (ability to do) (Simpson, 2018). The capability to earn an income is available to the waste entrepreneurs/pickers, but if they are unable to earn an income (functioning) due to health reasons, support from government is needed to alleviate the initial cause of the illness. The municipality provides the waste entrepreneurs with protective clothing, but their refusal to wear that clothing provides evidence that they need to improve their self-control, which would induce delayed gratification (Cheng *et al*., 2012). During a group discussion, I underlined the importance of washing hands after collecting valorised items from the waste in order to reduce the chance of contracting any

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infections. Further communication with the group on the wearing of protective clothing followed. Some wore their gloves while others maintained the gloves served as a hindrance. Needless to say, in order for the waste entrepreneurs to improve their quality of life, they need to be more health conscious in their hazardous environment. Sen (1999) postulates that through improved education and health, individuals are likely to have the freedom to achieve more, resulting in a better quality of life.

Many individuals who live in vulnerable conditions are more susceptible to abusing illicit drugs and other substances (UNODC, 2011). However, over-indulgence in alcohol consumption was predominantly found among the Wellington group.

Careful discussions highlighting the priority of drinking less to maintain a healthier life resulted in participants admitting that they had altered their lifestyle. One particular participant reported that he had stopped drinking during the week and had reduced his alcohol intake over weekends. When waste entrepreneurs curtail their drinking habits, they will be able to perform their work activities more diligently, ensuring improved quality of life.

5.4.2. Natural capital

Natural capital is closely associated with the vulnerability context but focuses on the individuals' resource availability and factors that could either positively or negatively affect their livelihoods (DFID, 1999).

The natural environment of the waste entrepreneurs/pickers is the work area where they work. Exposure to harsh weather was discussed earlier in this chapter under vulnerability context. However, if the area where the waste entrepreneurs work creates some deceleration to their income, it would be appropriate to initiate some sort of intervention.

Theme 18: Heavy rains reduce productivity output

"The rain prevents us from working"

"We have no proper shelter to work when it rains"

"We have to impose on the group's space to work"

"After the rain we must spend the entire day laying out the boxes"

The rain would impact on the income of the waste entrepreneurs as they found it challenging to work effectively. Most of the Wellington waste entrepreneurs would not be at the work site during heavy rainfall. As one participant stated: "It does not make sense to work as we stand around." The photograph below provides evidence of the wet cardboard laid out to dry after the rain.

Figure 56: Wet cardboard laid out to dry

Source: Researcher

Another attribute that contributes to the poor health of the waste entrepreneurs/pickers is the bad smell that emanates from the solid waste.

Summary discussion and analysis of theme 18:

If waste entrepreneurs are not properly attired for heavy rainfall, this could impact negatively on their health. Health deterioration, as previously discussed, could impede their livelihoods. The municipality should assist in improving the area for the waste entrepreneurs.

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5.4.3. Social capital

Social capital has been explained as individuals working co-operatively and collaboratively. It comprises features such as trust, norms and networks that are able to improve the efficiency of a society through enabling co-ordinated actions (Bhandari & Yasunobu, 2009).

Social capital can be a productive resource that can be applied strategically by those who struggle for economic survival (Onyx, 2014), as in the case of the waste entrepreneurs. In terms of working dynamics, there was a clear distinction between the Paarl waste pickers and the Wellington group prior to them moving to Paarl. The Wellington cohort would work individually, except in the case of one couple who would work together.

Theme 19: Working individually (Wellington)

> "It is better, I keep to myself"
>
> "The two of us work together for now"
>
> "I prefer to work alone, most of them are lazy"
>
> "Each person for himself"

The Wellington group acknowledged that they had little confidence in one another when it came to being able to work as a group.

<u>Summary discussion and analysis of theme 19:</u>

To maintain a good relationship with one another, the Wellington group would work individually. The group admitted that working alone implied that when they were injured or sick, their level of production decreased and they would earn less money. As a mentor, I explained the benefits of working together by discussing the strengths of each group member. This made them ponder the benefits and they informed me that they would henceforth work as a group. It was through their own realisation that they decided to work as one after I demonstrated to them the strength of the Paarl group working as a unit. Trust is a key component of social capital (Onyx, 2014) and the Wellington waste entrepreneurs had to develop trust amongst themselves. As the

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waste entrepreneurs/pickers, who are living in poverty, develop more capabilities, they may capitalise on the economic and social opportunities despite being isolated from additional resources, and they must act collectively to achieve developmental goals (Ansari, Munir & Gregg, 2012).

On the other hand, the Paarl group worked as a team as they were registered as a co-operative established by the four Paarl supervisors. Initially there were 20 waste pickers, including the supervisors, working at the MRF. However, as one supervisor mentioned, "The coloured people had a problem with us telling them how we operate." The waste pickers gradually started leaving until there were four supervisors and four other ladies left. When asked why the others had left, one supervisor said, "I don't think they trusted us." This provides evidence that trust is a key component of social capital. When the Wellington group worked as a single unit, they admitted that they managed to achieve more.

<p style="text-align:center">Theme 20: Working as a team</p>

"Working together has resulted in us making more money"

"As a co-operative, we work together to achieve our goal"

"It is better to work as a group"

The findings indicate that once the Wellington group started working as a team, they were able to achieve more economically and strengthen the group as a unit. The atmosphere was less volatile than when the group worked individually, as it was unnecessary for them to compete against one another when collecting recyclable items.

Summary discussion and analysis of theme 20:

Team creativity is influenced by two components of social capital: bridging and bonding. Bonding social capital is embedded internally in the group, which is rich in strength as the group pools its resources together, allowing the group to make ends meet. Bridging social capital refers to the external network resources that range across diverse boundaries, which will allow the group to make progress (Ansari *et al.*, 2012). One of the Paarl supervisors was a prominent member of the South African Waste

Pickers' Association (SAWPA) and she relied on SAWPA connections to help strengthen the co-operative that she had started. The rest of the team benefitted from this connection.

Theme 21: Utilising network connections

> "We only know two BBCs but depend on our supervisors"
>
> "I contact BBCs outside the area to sell to"
>
> "SAWPA arranged a meeting with the municipality to provide us with space"
>
> "People want to fund us, so I show them what we do"

The ability to explore beyond the Paarl and Wellington region is dependent on the ability of the group. When I asked the participants, particularly the Paarl group, how they knew about the place where waste recycling was carried out, the following responses were given:

> "My neighbour works here and told me to join"
>
> "My family member brought me in"
>
> "A friend of my mother gave me this job"

<u>Summary discussion and analysis of theme 21:</u>

Social capital in the context of sustainable livelihoods refers to the resources individuals depend on in order to achieve certain outcomes in terms of their livelihoods (UNDP, 2015). This is evident from the finding that individuals relied upon other waste pickers to help them become waste pickers. Additionally, the group depended on the supervisor to provide more BBCs and other stakeholders to help improve their economic situation. Thus, individuals used bridging as a tool of social capital to achieve a more sustainable livelihood.

Theme 22: Interpersonal relationships between waste entrepreneurs/pickers

> "We help each other to load our goods on the van"
>
> "We live in the same place, so we are friends"
>
> "We been together for a long time, so we know each other"
>
> "We like to tease one another"

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Social capital includes relationships between colleagues or those who struggle together for survival (DFID, 1999).

Summary discussion and analysis of theme 22:

Initially the Wellington waste entrepreneurs worked individually as they had trust issues. However, as they became more familiar with one another, and through intense discussions about their similar paths, they realised that it would be beneficial for them to create a trust relationship and work together to achieve a similar goal, as this would make them less vulnerable. A trust relationship presents a strong feature of social capital, and social relations enable individuals to create a synergetic relationship to pursue shared objectives (Gudmundsson & Mikiewicz, 2012).

Theme 23: Relationship between waste entrepreneurs/pickers and BBC

"The BBC holds my money and pays me at the end of the week"

"The (BBC) lends me money"

"He will come and fetch the goods if we have a lot"

"We been selling to him for years"

"We don't sell directly to him; our supervisor sells to him"

Summary discussion and analysis of theme 23:

It is evident that based on the findings, the waste entrepreneurs had a positive relationship with the BBC. It should be noted that the Wellington group did not directly support the BBC but sold their goods to the supervisor, acting as a middleman. The supervisor would in turn sell the items to the BBC.

Earlier in the chapter, I discussed the waste entrepreneurs' perceptions of the municipality and the Wellington supervisor. The responses in this regard were as follows:

"The supervisor lends me money"

"The supervisor wants to control everything"

"The supervisor is now helping us"

"The municipal manager is a good person"

"They are nice but the others are sometimes unreasonable"

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The relationship between the supervisor and the waste entrepreneurs improved as the supervisor provided better pricing. I engaged with the supervisor and waste entrepreneurs by explaining the valuable assets that each could contribute to improve their livelihoods. Bonding and bridging social capital was discussed earlier, but linking social capital is when individuals create relationships outside their community, such as those doing research and the organisation involved. The Paarl group aimed to use affiliated organisations to derive sponsorship and funding. One supervisor mentioned that they were patiently waiting on a sponsor to give them a truck for their recycling activities. Many times when I visited the site, I found that one of the supervisors was not present as she was attending meetings or conferences and the other supervisor was left to manage the processes. She later reported that thanks to her role in the particular organisation, they had sponsored the co-operative with a laptop. It would be beneficial for both groups of participants to acquaint themselves with individuals or organisations outside the waste community that could offer them guidance that would enhance and improve their current precarious situation.

5.4.4. Financial capital

Financial capital is dependent on the income earned by waste pickers. Included in financial capital is the ability to save, availability of credit and other income obtained (Serrat, 2017).

Before discussing the income of the waste entrepreneurs/pickers, I want to focus on the expenses incurred by these individuals. Everyone has expenses. Mohr (2015) posits that consumption will always be positive even when income is zero. Participants admitted that they had to work hard to cover their expenses.

Theme 24: Expenses incurred

"Food, water and electricity is R800"

"I must pay the water where I stay"

"I have to buy food and pay for other stuff"

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Summary discussion and analysis of theme 24:

Some participants declared that they would salvage "good food" from the waste to eat as a meal as a means of covering some food expenses. Participants would also ask for loans from neighbours. "If I ask for R10, then by the end of the week I must pay back R20". I would constantly remind the waste entrepreneurs that they needed to manage their money and not try to live above their means.

The waste entrepreneurs'/pickers' main source of income was from selling recyclable items found while foraging through the waste. When I questioned the participants as to whether they would seek other employment, most of them said that they preferred to recycle. "*It is better than working on a farm. You make good money* (working on a farm) *but only work for a few months. It is not permanent. This work is permanent.*"

Theme 25: Income generated

"I earned R500 this week, that was good"

"I made R350 last week"

"I expect to make R320 this week"

"As a group we made R20000 for the month"

I requested that the waste entrepreneurs attempt to keep a record of their income, which was not easily achieved. The figure below provides evidence of the fluctuation in income earned by one particular participant.

Figure 57: Income of a waste entrepreneur

Source: Researcher

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Summary discussion and analysis of theme 25:

The income of the waste entrepreneurs fluctuated as it was dependent on various factors such as their health, the weather, the demand for products, and resource availability (Schenck *et al.*, 2018). Based on the figure below, waste entrepreneurs could earn up to R5000 in a good month and as little as R1300 during a quiet month.

Figure 58: Monthly income of a waste entrepreneur

Source: Researcher

Since deciding to work as a group, the Wellington cohort managed to earn more than they had in the past. The tables below (April to June) were supplied by the middleman to whom the waste entrepreneurs sold their items. He also took on the role of supervisor of the group.

Table 25: Month: April 2021

Items Collected	Week 1 Amounts in kg	Week 2 Amounts in kg	Week 3 Amounts in kg	Week 4 Amounts in kg
K4 (Cardboard)	5400	5640	5600	2020
PET	839	795	1250	1400
HD	736	547	760	760
Mixed Plastic	692	483	780	760
White Paper	471	390	920	800

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Cans	370	334	300	270
Newspaper	1400kg for the month			
Total	**33717 kg**			

Source: Researcher

Table 26: Month: May 2021

Items Collected	Week 1 Amounts in kg	Week 2 Amounts in kg	Week 3 Amounts in kg	Week 4 Amounts in kg
K4 (Cardboard)	5900	5820	6040	4020
PET	1150	1200	805	820
HD	820	760	580	1020
Mixed Plastic	0	0	1900	920
White Paper	900	1700	920	1620
Cans	620	520	480	520
Newspaper	0	0	0	0
Total	**38025 kg**			

Source: Researcher

Table 27: Month: June 2021

Items Collected	Week 1 Amounts in kg	Week 2 Amounts in kg	Week 3 Amounts in kg	Week 4 Amounts in kg
K4 (Cardboard)	840	6080	3740	690
PET	1380	1100	820	158
HD	760	850	800	760
Mixed Plastic	1600	880	1240	1140
White Paper	1700	800	0	0
Cans	670	580	420	320
Newspaper	0	1550	1600	920
Total	**46250 kg**			

Source: Researcher

Based on the tables, the waste entrepreneurs increased their totals for each month from 33717 kg in April 2021 to 46250 kg in June 2021. The increase of 12533kg of

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items helped to increase their income. The municipal manager confirmed that less waste had been diverted to the landfills, as illustrated in the table below.

Table 28: Recycling diversion tons (July 2020 to June 2021)

	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	TOTAL
Paarl	6.16	12.72	28.22	25.5	16.08	9.22	22.18	31.08	35.22	17.62	21.38	21.88	**247.26**
Wellington	23.34	30.43	23.8	31.98	26.6	23.06	37.24	50.5	36.26	30.6	21.92	24.02	**359.75**

Source: Researcher

The table illustrates that the Wellington group was operating more efficiently in their recycling activities and surpassed the Paarl group in generating a higher income.

With regard to the Paarl group, the supervisor stated that their income varied between R15000 and R20000 per month, which needed to be equally divided among all members of the group. As previously noted, there were originally four supervisors (members) but after the passing on of one member and ill health of another, the co-operative consisted of two active members (supervisors). In addition to the two active members, after many of the waste pickers left the work site due to incorrect management decisions made by the group, only four waste pickers remained. Contributing to the lack of trust and commitment was the fact that individuals would receive payment for their recycling activities monthly. One supervisor admitted that people wanted to get paid weekly and that was why some had left. After much deliberation with the supervisors, they decided to pay the waste pickers every fortnight as this could help retain waste pickers. Waste pickers reported receiving R2000 each at the end of each month, with many agreeing that they needed to generate more income. Despite the meagre income, there were participants who indicated that they would not relinquish the opportunity to be a waste picker at the MRF. "*It is better to get every month between R2000 and R2500 than to work for a short period and earn more money but then when there are no more fruits to pick, there will be no income*", was the response of one participant. Another participant left the MRF as it was not financially beneficial to her, as she had to travel more than 50km daily to Paarl.

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During my sessions with the waste entrepreneurs, particularly with the Wellington group, I would suggest that they attempt the following in relation to saving their money:

- Save the additional funds made during a good week for times when they need it most
- Collect more recyclable items as a group and store them for the end of year when they are not working, since this will provide an income
- Open a bank account to save money
- Spend less on purchasing additional alcohol to consume over weekends

After being moved to the Paarl MRF, the Wellington cohort working as a group and decided to implement some of my suggestions.

Theme 26: Strategy to save

"We have a container with aluminium that we will fill and sell it before we close for December"

"We assemble the white paper and at the end of each month we sell it"

"We don't pay for transport as we made an agreement to collect the newspapers and that covers our transport cost. It has no impact on our weekly money"

"I have opened an account and have a life policy"

Although only two of the Wellington waste entrepreneurs opened bank accounts, this shows that they were willing to improve their lives.

Summary discussion and analysis of theme 26:

The ability to save provides evidence that the waste entrepreneurs were learning to control their finances. Lusardi (2015) postulates that an inability to save and plan for the future, as well as poor borrowing behaviour are linked to ignorance of basic financial concepts. The waste entrepreneurs require many financial lessons to manage a business but it starts with the ability of the individual. Through proper and consistent mentoring, they will soon be able to manage their finances in a more successful manner. This would largely be dependent on their willingness to acquire

knowledge and to implement it. Having the ability to save provides some self-gratification as noted by one participant: "I didn't think I would be able to save as I made so little in the past." She added, "It makes me feel good, knowing I can save." This indicates that through saving, the participant improved her self-esteem. Another participant said that when she realised her income was surpassing that of previous weeks, she decided to save her money. "It is unnecessary to spend money that you can do without for now; I think it is good to save," was her response when I questioned her action to save. The more an individual earns, the more he/she will spend, although not has more as the additional income (Mohr, 2015). In other words, as a person's income increase, the person is likely to increase their spending as they have more money. In most cases, the additional spending will be less than the increased in income. People are able to save if they manage their income correctly. Saving is the ability to apply self-control through exercising delayed gratification in lieu of something more valuable, for example sustaining one's future.

Despite the participants admitting that they enjoyed what they were doing, many reported that they would sometimes be absent from the site for various reasons. Absenteeism affects the income of the individuals.

Theme 27: Absenteeism affects income

"I got paid less this week because I was off for two days"

"I only got paid R700 because I was off one day. I got R1000 last week"

"You can expect to get paid less if you take off"

"Although she is a member of the co-operative, she doesn't get paid because she doesn't work"

Summary discussion and analysis of theme 26:

These are some of the reasons for the waste entrepreneurs being absent from the work site:

"I wasn't feeling so well, so decided not to come"

"I don't work Saturdays"

"I needed to rest"

"I didn't have money to come"

In further in-depth discussions, most participants admitted to drinking large amounts of alcohol, which would prevent them from working, particularly on a Monday. Others reported that they were using drugs but had decided to reduce their intake as they needed to work. One of the attributes of self-actualisation is when people focus on overcoming their bad habits and take responsibility for their actions while committing to work (McLeod, 2018).

5.4.5. Physical capital

Physical assets were conflated under the different assets that were discussed. UNDP (2015) accentuates that physical assets consist of access to roads, safe buildings, water and sanitation availability, access to information and clean energy. Physical assets refer to physical objects whereas human capital refers to attributes related to the individual. Social assets denote the network established among individuals and groups. In this report, physical assets are discussed under the vulnerability context and the natural assets.

5.4.6. Concluding remarks on livelihood assets

Livelihood assets, comprising human, natural, social, financial and physical capital, were discussed based on the findings of the research. Findings were derived through PAR methods which serve as a medium for understanding waste pickers. Lax and Krug (2013) state that participatory methods serve as a tool to understand those individuals on a local level and function as an intermediate within which social values can be blended with scientific strategies.

Functioning and capabilities are fundamental conceptions of the Capability Approach. Capabilities are elements that allow an individual to do things and become someone, whereas functioning directs the individual on how to achieve this (Robeyns, 2017). Through the application of the Capability Approach, this report is able to identify the capabilities of the waste entrepreneurs/pickers. Additionally, mentoring serves to

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establish techniques that can enhance their capabilities so that they may improve their current living conditions. In relation to the livelihood assets, inherent capabilities are not only about doing or the ability to do something, but rather the freedom and opportunities created from an amalgamation of personal abilities, as well as political, economic and social environmental effects. Internal capabilities are trained and developed abilities and attributes which are improved upon through interaction with these environments (Nussbaum, 2011).

The livelihood assets can be applied as an empowerment tool of individuals as it can enable them to strengthen their livelihood conditions by improving on their capabilities (Ludi & Slater, 2008). Capabilities are true freedom and true opportunities to achieve functioning. To elucidate on this, Robeyns (2017) explains that as travelling is the functioning, the true opportunity to travel is the corresponding capability. Capability determines the choice or freedom an individual possesses regarding whether he/she wants to travel or not. The distinction between functioning and capabilities is the achievement on the one hand and the freedom and choice one has on the other hand. The figure below depicts the livelihood framework completing a pentagon.

Figure 59: Pentagon of the livelihood assets
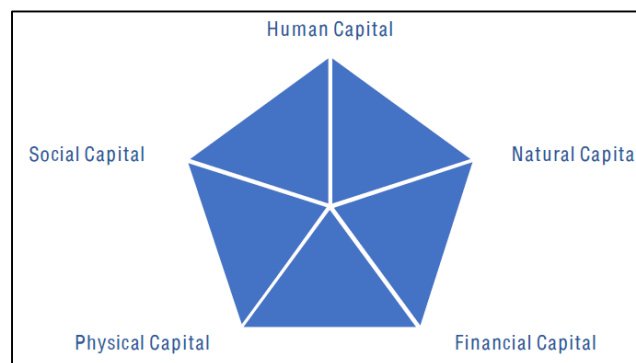
Source: UNDP (2015)

Based on the findings of this research, each of the capitals plays an integral part in determining the assets (capital) of the waste entrepreneurs/pickers. Additionally, the findings provide sufficient evidence that an overlap exists among each of the livelihood capitals. These overlaps are discussed as the findings of each capital are summarised.

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Human capital was first discussed where four themes were unravelled from the findings. The first theme is determining the initial training provided by the municipality. This type of training is imperative as it guides waste pickers to sort waste in the correct categories. BBCs are meticulous in ensuring that they do not receive items that are mixed. For example, waste pickers must remove the tops of plastic bottles during their sorting process. Moreover, the training served as a catalyst for future training and demonstrated their willingness to learn and implement new methods that would help improve their efficiency in the collection of recyclable items. Important to note is that the sacrifice made by the Wellington participants to exercise self-control through delayed gratification came to fruition two years after accepting the municipality's offer. Their quality of life and income significantly improved. Adding to this success is their ability to do things that are not part of their natural disposition. Grenny *et al.* (2013) discuss a study that explains that delayed gratification predicts long-term success and those who apply it are more skilled at avoiding short-term temptation. Those who delay short-term temptation occupy themselves with specific techniques and remain focused on the long-term outcome. Similarly, the Paarl cohort remained focused on recycling and creating awareness in local communities of the benefits of recycling, despite losing a number of waste pickers.

The second theme is based on the formal education levels acquired. Most of the participants had some level of high-school qualification. Their lack of formal education did not prevent them from striving to live an honest life and earn a legitimate income. In terms of the capability approach, the waste pickers had made some transformational changes as individuals and as a group through exercising their freedom of choice, abilities and opportunities to improve their wellbeing (Clark, Biggeri & Apsan, 2019), which set the scene to the third theme – skills development.

The participants displayed eagerness in acquiring new skills that would enhance their livelihoods. Some were interested in health and safety, as they were regularly confronted with injuries in the vulnerable working environment. Others intended to focus on more direct skills pertaining to their type of operational activities, such as operating the baling machine. The baling machine compacts the waste collected,

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allowing more items to be transported, which will save the waste pickers in paying for additional transport costs. The ability to freely attain new skills is dependent on the opportunities presented to them by the municipality and other concerned stakeholders. Waste entrepreneurs/pickers demonstrated the capability to commit to training – thus a "can do" attitude – and as such will be able to fulfil a certain training skill ("functioning") (Gasper, 2002). However, if they do not have the capability despite the opportunity, then this would be disastrous to the waste entrepreneurs. Good mental health is a capability that would permit the functioning to occur.

Underlining health issues (the fourth theme), associated with drug and alcohol abuse, can prevent waste entrepreneurs from operating heavy machinery. Those who are constantly sick are not as efficient as those participants who have better health. A healthy life is a strong component of human capital (Serrat, 2017) as it impacts on the ability to work. When waste entrepreneurs do not work, they are unable to improve their livelihoods.

Human capital has attributes that support the identification of physical, social and financial capital. Physical capital is the availability of water and sanitation as well as communicative tools, to name a few (Serrat, 2017). Physical assets include infrastructure that can affect individuals' ability to reach their work place, which can impact on their productivity (Mazibuko, 2013). Without clean water and access to sanitation, individuals are likely to suffer from infections or ill health. Good health is an attribute of human capital. Moreover, social capital is dependent on how individuals interact, share knowledge and create networks (Bhandari & Yasunobu, 2009). Individuals who work and are able to adapt to change are features of human capital. Similarly, financial capital includes the ability to work with money and earn an income (UNDP, 2015). To enhance financial capital, human capital is required.

Natural capital provides insight into the environmental factors that influence the livelihood of the waste entrepreneur. Much of their environment were discussed under the vulnerability context. Nonetheless, one important theme surfaced from the data collected: Harsh weather conditions reduce productivity outputs. Heavy rains cause a

decrease in the production of the waste entrepreneurs when they are unable to work under a shelter. Paper and cardboard can only be bagged once it is dry. When the Wellington group was working without any shelter, the harshness of the sun prevented many from sorting through waste when the heat became unbearable.

In terms of overlap with the other assets, physical capital can be conjoined with natural, financial and human capital. When waste pickers do not collect recyclable items, these items will end up on the landfill, causing a variety of environmental concerns. The value of recycling and the contribution thereof has drawn the attention of various stakeholders to provide support to waste pickers and reduce the diversion of waste to landfills (Morse & McNamara, 2013).

Social capital provides much insight of the development of the waste entrepreneurs/pickers in terms of their ability to utilise the strengths of the group as opposed to their own strengths. The first theme explores the reasons as to why the Wellington group preferred to work alone. To create a sense of unity, I used the example of how ants work in unison. Imagine an ant working alone – how little it would accomplish. Working as group helps to utilise the strengths of others, resulting in improved productivity, greater efficiency and better income (Bhandari & Yasunobu, 2009). The second theme – working as a team – emphasised not only the advantages of working together, but also discussed bonding and bridging as attributes of social capital. When participants utilised their networks, they were able to increase their network base and improve their leverage with BBCs. The third theme, utilising network connections, can encourage other stakeholders to help build bridging social capital that could be beneficial to the participants. Multinational corporations can help capability development by transmitting capabilities through knowledge dissemination (Ansari *et al.*, 2012). More specifically, tacit knowledge will be a good starting point, based on the limited formal education of the waste entrepreneurs/pickers. Bonding can exist among individuals who are working on their own, where they are willing to help one another by loading others' goods or selling on their behalf (Schenck *et al.*, 2018). Bonding can "serve as a safety net; bridging ties with people across diverse social divides can provide links to institutions and systems and enables people and

communities to leverage a wide range of resources than are available in the community" (Bhandari & Yasunobu, 2009:21). This is embodied in the fifth theme, namely relationships between waste entrepreneurs/pickers and BBCs and other stakeholders. Social capital can be affected by vulnerability contexts such as shocks. Due to the hard lockdown implemented, many participants were left to fend for themselves. Some were fortunate to rely on their external networks, outside the waste circle, for some financial and food assistance. One advantage of applying the Capability Approach is to advance social progress. It can prevent policymakers from making incorrect assumptions about the way individuals live their lives, what is of value to them and what societal and governmental support is required, particularly for those in vulnerable conditions, to flourish (Robeyns, 2017). Many scholars assert that social capital is a required ingredient for community development and bridges the gap between the poor and the resources available from external groups and institutions (Ansari *et al.*, 2012). This is a form of social capital known as linking, which is where individuals have ties to, and network with, others who occupy diverse social positions and power (Bhandari & Yasunobu, 2009). Social relationships are important to individuals' wellbeing and as such the Capability Approach evaluates policies based on the impact on the individual (Robeyns, 2003). Long-term shocks can have an effect on many capitals, including social and human capital as individuals migrate to other areas (Morse & McNamara, 2013). The findings provide evidence that many individuals did not return to the work site after the lockdown was relaxed.

Social capital is dependent on natural capital. When the waste entrepreneurs were moved to a different location, some participants did not return, which in turn affected their financial capital. Economic empowerment can possible be attained through financial and physical capital, while cognitive and political empowerment are prone to focusing on human and social capital (Ludi & Slater, 2008). The strengths of individual human capital clustered together allow for richer social capital as participants work together to pursue their shared objectives (Gudmundsson & Mikiewicz, 2012). "A group that is systematically socialised to have low aspirations and ambitions will perhaps not put certain capabilities on its list, thereby telling themselves that they are unachievable, whereas objectively speaking they are achievable, albeit perhaps only

after some social changes have taken place" (Robeyns, 2017:139). This is supported by the findings, i.e. when the waste entrepreneurs were reluctant to work together as a group, they had little aspiration to achieve more than anticipated. However, after moving to a different site, and losing some members who did not join in the move, the new group was able to change their dynamics and work together, achieving much more, and thus proving that social capital is reliant on human capital.

Financial capital refers to the waste entrepreneurs'/pickers' ability to earn an income for the core purpose of sustaining their livelihoods. Generally, the main source of income for households could well be paid employment, hence financial capital (Morse & McNamara, 2013). Four themes were extrapolated from the findings. The first theme explored was expenses incurred by the participants. This provided insight into how much money was needed for them to survive. The results prove that although they did not have house bond repayments or car loans, some were not able to cope without incurring debt. Mentoring facilitated in providing some suggestions to assist the waste entrepreneurs/pickers to manage their income without continuously making loans with high-percentage returns. Selling recyclable items was the primary source of income for the participants, which was presented as the second theme – income generated. The average weekly income was between R350 and R500 per week, which is similar to the findings of Schenck and Blaauw (2011). However, while I was mentoring and advising the Wellington waste entrepreneurs, their income increased to between R650 and R1000 per week. This does not imply that they were no longer in poverty or had improved their wellbeing. According to the capability approach, wellbeing should be understood in relations to a person's capabilities and functioning (Robeyns & Byskov, 2020). Nonetheless, an improved income helped to boost the self-confidence of the waste entrepreneurs and made them feel happy. Happiness is an attribute of the *happiness approach* or the subjective wellbeing approach as preferred by empirical academics, and is also a functioning as selected by the Capability Approach (Robeyns, 2017). However, generating an income is only possible if individuals have good health. Nussbaum (2011) generates 10 central capabilities that are required to provide individuals with a dignified life. One of the 10 capabilities is bodily health – the ability to have good health with adequate nutrients and shelter. The next theme,

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absenteeism affects income, demonstrates that if waste entrepreneurs are not working, they will not receive an income. Being able to seek medical care improves the capability of health. To be healthy, a set of functionings need to be addressed (Robeyns, 2017). Many waste entrepreneurs would be absent from work due to ill health caused by substance abuse. Morse and McNamara (2013) mention that financial capital includes income, expenses and savings. A savings strategy emerged as a theme from the data. The ability to save empowered the participants and encouraged others to follow. As a group, the savings entailed not only immediate income but also the ability to save items that could be sold when they were in need of additional finance. The Paarl group would store all glass items in a container and once completely filled, they would contact the agent to collect the items. The allowed them to save on transport costs as well as receive additional income from the collected glass. Here again, the ability to implement delayed gratification proved beneficial.

Sufficient evidence is available from the data that displays overlaps of financial capital with other capitals. Good health is a component of human capital, which can affect the financial capital of an individual. Similarly, with a strong social capital, financial capital will be strengthened, if correctly applied.

Based on the findings, there exists a deep association between the capitals of the livelihood assets. I propose that the diagram of the livelihood assets should change from the original pentagon to the circular diagram as illustrated below.
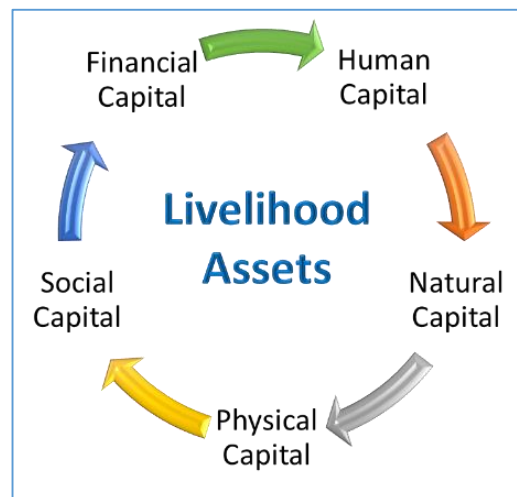
Source: Researcher

These capitals interrelate across space and time, and individuals may diminish or escalate some at the cost of others (Morse & McNamara, 2013). Each can be studied on its own but the overlaps should be highlighted in future studies. The next section discusses how the various livelihood strategies were applied through developmental mentorship and PAR in order to produce outcomes.

5.5. Section Four: Livelihood Strategies and Outcomes

Thus far, I have discussed the component of vulnerability shocks, transforming structures and processes and livelihood assets of the waste entrepreneurs/pickers. These are crucial in the development of individuals, particularly those who are in precarious or vulnerable circumstances. These components are paramount to identifying inhibiting or encouraging features that affect the livelihoods of the waste entrepreneurs/pickers.

Livelihood strategies invoke active outcomes which could result in improved wellbeing, increased income and reduction in vulnerability (Serrat, 2014). One of the objectives of this research study is to facilitate, through PAR, improved sustainability and entrepreneurial development for the waste entrepreneurs/pickers. Through the application of the circular flow of PAR (see figure below), the livelihood strategies

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based on the waste entrepreneurs'/pickers' desired outcomes are explained in this section.

Figure 25: Circular process of PAR
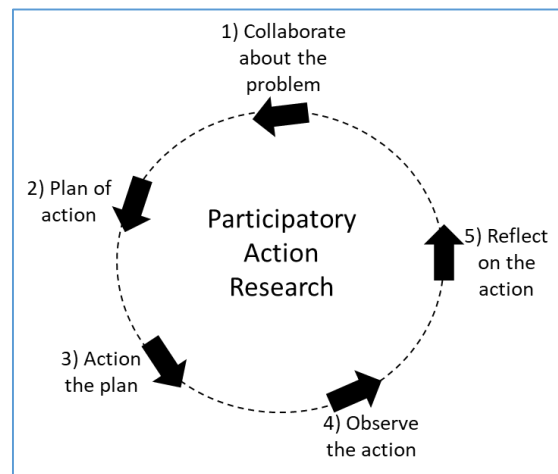
Source: Researcher

Livelihood strategies are important in deriving effective poverty reduction strategies (Sun *et al.*, 2019). Livelihoods can be understood as the assets, capabilities and activities needed to earn an income or sustain oneself (Paudel *et al.*, 2017). The Sustainable Livelihood Framework (SLF) provides direction as to what needs to be observed and how to apply it. Two approaches have been documented: The first is by the DFID, which applies the SLF as an analytical tool, while the UNDP and others apply it to facilitate training programmes and plan well-grounded projects (Morse & McNamara, 2013). The SLF additionally provides an alternative perspective to developmental and poverty studies. Individuals undertake a range of choices and activities to accomplish their livelihood outcomes on the basis of asset endowment. Simultaneously, internal and external influences will have an important impact on the vulnerability context and the transforming structures and processes (Sun *et al.*, 2019). The SLF consists of five elements, three of which were discussed earlier in this chapter. The vulnerability context, livelihood assets and the transforming structures and processes provide directive for livelihood strategies and outcomes of the waste entrepreneurs/pickers. To provide some structure to the livelihood strategies and outcomes, the discussion will once again focus firstly on the vulnerability context.

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5.5.1. Vulnerability context

As mentioned previously, themes were extrapolated from the data. In terms of the vulnerability context, these themes are presented in the table below:

Table 29: Themes derived from the vulnerability context

Vulnerability Context
T1: Difficulties of life on the landfill
T2: Waste entrepreneurs'/pickers' workplace
T3: Demand and supply – Price factor
T4: COVID-19
T5: The effects of COVID-19 on returning to designated area
T6: Sense of estrangement from municipality (Wellington group)
T7: Welcoming the change to move (Wellington group)

The first two themes are related to the transition from illegal landfill waste pickers to legal waste entrepreneurs. Theme two demonstrates the satisfaction the waste entrepreneurs displayed, implying that no impeding factors were prevalent. However, with regard to theme three, the waste entrepreneurs felt stress and were worried about improving their sustainability. As a PAR researcher, I sought to facilitate an outcome with them that would provide some relief. PAR is research into practice, undertaken by and with those involved in PAR. The purpose thereof is to investigate a problem and act on it in a way that enhances that practice (Gittins, 2019). Based on the circular process of PAR as portrayed in Figure 25, the first step is to collaborate about the problem.

Step 1: Collaborate about the problem

The problem that all participants agreed upon was that they were not able to sell some of their collected items that were not in demand by the BBCs. At the time, the problem was systemic as a result of China prohibiting the import of recyclable items.

Step 2: Plan of action

As a mentor and facilitator of PAR, I engaged the participants to provide insight as to how the problem could be addressed (Kemmis *et al.*, 2014). At the next meeting, most of the waste entrepreneurs did not have a plan of action. In fact, some were honest

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enough to admit to not giving it much thought after our previous meeting. Their reasoning to this was that they had sufficient items that they were able to sell. I used that reasoning as a plan of action to address the problem. After all, this small group, working individually without technological machinery, would not be able to alter the global market. Nonetheless, the plan was to sell more of the products in demand and store those products that were less in demand until the demand for products changed. This stage was important, as the plan of action needed to be communicated so that all participants were aware of how to execute the plan and remain committed. Items of great demand would be the focus of collection and as they depleted the available resources, the focus would shift to the next item demanded and so on. The item in most demand was aluminium, which the waste entrepreneurs admitted was not available in large quantities like cardboard and plastic. No timelines were set despite the importance thereof at this stage. My reasoning was that market predictions are best left to economists and not to novice entrepreneurs.

Step 3: Action the plan

The core objective of this stage is to provide some solution to the problem (Pardede, 2018). The waste entrepreneurs continued as planned under the tutelage of their supervisor, who played a key role in ensuring that they remained focused.

Step 4: Observe the action

During my weekly visits, I would observe the items collected and record the amount of money earned by the waste entrepreneurs. In most cases the amounts were similar and those who earned less money had not been at work regularly. During one visit, the Wellington group reported a much lower amount than before and this was because the BBC was doing inventory clearing. The supervisor explained that when the BBC storage facility became a fire hazard, it was not able to buy items until it reduced its stock. They needed to sell the recyclable items to the recyclers. In essence, from the original problem, a new problem emerged. I proposed they contact other BBCs but the supervisor was reluctant and indicated that the waste entrepreneurs were not too concerned about the minor setback. The new problem was a short-term interruption, and as a PAR researcher I was prohibited from enforcing my advice on the group. The

waste entrepreneurs continued to collect the recyclable items as originally planned but kept most in storage until such time as the BBC was fully operational.

Step 5: Reflect on the action

All the participants and I took part in the reflective process. The reflective process was based on the reflective cycle of Gibbs (2013). This reflective cycle is comprised of six stages (Wain, 2017), as discussed in the previous chapter.

- Description: recounts the event as accurately and impartially as possible based on the power of observation
- Feelings: identifies spurred emotions and thoughts experienced of the event
- Evaluation: evaluates optimistic and pessimistic attributes of the experience
- Analysis: offers personal interactions against published literature and research
- Conclusion: encapsulates responses to the events or action and ponders on what was learnt, as well as what reactions or responses would be best in future
- Action plan: contemplates specific actions to undertake based on the knowledge and experience. This could include incorporating some type of beneficial training

The participants did not provide much information other than stating that they would have liked to have received some support from the municipality and other stakeholders as their activities were helping to alleviate the pollution problem. Undoubtedly, they were pleased about the guidance brought in to help with the situation and would preferably implement this action should a similar situation occur in the future.

With me as a PAR researcher, the waste entrepreneurs embraced the vulnerability shocks with minimal stress. It could be that they experienced greater challenges when working on the landfills. As this was my first intervention with the waste entrepreneurs, I concede that I was overwhelmed as I wanted everything to work as planned. Although the intended plan was for the group to devise a plan of action, it should be noted that I could not instil my ideas upon the waste pickers, but that as a PAR researcher I could only facilitate the process of their action and present some suggestions, Ultimately, it was the choice of the participants and they had the freedom to do as they saw fit and

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implement their actions. Developmental mentorship can only be effective when trust, communication and collaboration are formed between the mentor and mentees (waste entrepreneurs/pickers).

It is important to note that the PAR processes occurred concurrently as the problems presented themselves. Action undertaken to solve a problem was not sequentially taken but would overlap other actions. Focus is drawn to theme 6: Sense of estrangement from municipality, to illustrate the employment of the PAR process.

Step 1: Collaborate about the problem

Waste entrepreneurs/pickers alleged that the municipality would make decisions without consulting them. They suspected that they have become a burden to the municipality and felt some resentment towards certain officials of the municipality. This was largely attributed to the move they had to undergo. The move brought up a sense of degeneration as they had no shelter and limited access to sanitation facilities. Additionally, the resentment escalated towards their supervisor as the group thought she was withholding information communicated to her by municipal officials. The supervisor requested that I share the waste entrepreneurs' unhappy comments with her as she genuinely wanted to assist them. Power relations between the researcher and those involved in the research must be balanced to avoid bias (Zhu, 2019). To the supervisor, I emphasised the importance of the confidentiality that she and I shared, as well as the confidentiality that I had with each participant.

Step 2: Plan of action

With the problem clearly defined, the group was tasked to propound a plan of action. A lesson that I learnt from the previous exercise was that it is preferable to collect some of the ideas before concluding the group session. Those thoughts could always be revisited after individuals had adequately pondered the recommendations. Collectively it was decided that all communication from the municipality would be conveyed to the group. Two representatives from the group, including the supervisor, would be part of the communication process. To accelerate the process, the group elected me to communicate the request on their behalf. Additionally, they wanted the

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municipal officials to be aware that they were opposed to the move and were seeking some recourse. It was agreed that while the action of the plan would be undertaken, they would continue to collect recyclable items without creating hostility towards any member in or outside the group. One member was expelled by the manager appointed at the landfill due to an altercation with the manager. The group wanted the manager to forgive that member and grant him entry to the site, as the member would frequently request entry. Thanks to my intervention, he was granted entry to the site and allowed to continue to collect recyclable items to sell.

Step 3: Action the plan

I deliberated with the supervisor and assured her that if she requested the site manager to allow the ousted participant to return, the group would acknowledge her for her efforts. This could strengthen her position as a supervisor who was concerned about the group. I set up a meeting with the municipal representatives in order to provide feedback on the waste entrepreneurs' concerns and to elucidate any issues based on the municipal programme.

Step 4: Observe the action

The site manager permitted the ousted participant return on condition that he abide by the rules. During the meeting, the municipal officials were astounded by some of the allegations made by the waste entrepreneurs. They acknowledged that better communication would assist in the elimination of any pejorative sentiments from the group by accepting the additional two representatives. The waste entrepreneurs accepted the oversight of the municipal officials in terms of the waste entrepreneurs' vulnerable conditions and associated ill health and reduction in productivity. The municipality further suggested that moving the group to the Paarl MRF would prove beneficial to the waste entrepreneurs.

Step 5: Reflect on the action

The municipal officials communicated their disappointment in the waste entrepreneurs but realised that it was paramount to include them in any communication that impacted their lives. The waste entrepreneurs were elated that their needs were being

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addressed and that they were feeling a sense of empowerment. However, after conversing with the group about the efforts and monetary strain incurred by the municipality in order to foster the group on their premises, the waste entrepreneurs were disappointed in their actions and the emotions initially expressed in relation to the municipality. Collaboratively, they announced that in future, they would first focus on the good before allowing themselves to denounce the municipality's efforts.

As the researcher, I curtailed any negativity towards either party and focused my attention on the task at hand. Action inquiry should be pursued with the primary goal of solving a problem, with minimal attention invested in emotions (Chevalier & Buckles, 2013). The objective was to improve communication, build empowerment among the waste entrepreneurs/pickers, and improve relationships among the waste entrepreneurs, the municipality and the supervisor. Although some plans were put in place to eliminate the problem, similar problems would occur and while attending to the problem, new problems would emerge. If a similar situation should present itself, I would first employ confidence of the municipality among the waste entrepreneurs to avoid any hostile actions.

PAR is a process in which the facilitator must ask questions and adopt methods that will inevitably address the problem (Chevalier & Buckles, 2013). Robeyns (2016) accentuates three normative exercises of the capability approach:
1) Appraising individuals' health, happiness and comfort
2) Evaluating and assessing social interaction
3) Designing policies and proposing social change in society

Reflecting on the normative exercises of the Capability Approach, the waste pickers reported that they were happier at the MRF than they had been at the landfill and were more comfortable in their new workplace.

Social interaction improved as dialogue opened up between the relevant parties, making them feel less vulnerable. Although the municipality moved the Wellington group to Paarl without proper consultation, the Wellington group welcomed the move

as it would provide more opportunities – for example, improved communication with municipal delegates and working as a group. The municipality should permit the waste pickers to be part of the decision-making process, particularly regarding policies that relate to the waste pickers.

5.5.2. Transforming structures and processes

The themes constructed for this segment are presented in the table below:

Table 30: Themes constructed from the transforming structures and processes

Transforming Structures and Policies
T8: Rules facilitate in self-improvement
T9: Policymakers must consult all parties
T10: Ability to run operations without municipal involvement
T11: Community workers
T12: People in power abuse their power

Although some waste pickers/entrepreneurs agreed that some of the rules instituted by the municipality helped to improve their relations with one another and how they conducted themselves in their workplace, others had a different opinion. They would rather have the municipality consult with them and together construct a set of rules. As one waste picker stated, "*We are not children.*"

Theme 9: Policymakers must consult all parties and have similar underlining connotations, as highlighted in theme 6: Sense of estrangement from municipality. Under theme 6, PAR discussions emphasised the disapproval expressed by the waste entrepreneurs when they were transferred to another location at the Wellington landfill. The similarities within these themes provide evidence that one incident can escalate into several problems. During group discussions, more than one problem can be identified as participants reflect on the problem and identify other problems. The aim of PAR is to facilitate the participants in finding workable solutions to problems identified. The outcome for theme 9 was the commitment of the municipal officials to be transparent and maintain open communication with the waste entrepreneurs. Another problem that the waste entrepreneurs/pickers identified was that they wanted

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to run operations without municipal involvement (theme 10). They asserted that if they required additional manpower, the municipality should not deny them or at least the municipality should make some compromises.

Step 1: Collaborate about the problem

Waste entrepreneurs/pickers wanted the autonomy to be able to employ additional labour at their discretion.

Step 2: Plan of action

The plan was to request a meeting with the municipal delegates to address the problem.

Step 3: Action the plan

During a brief meeting with the municipality, the representatives were informed that the municipality had initiated a programme permitting a group of waste pickers to work on their premises. The primary objective was to offer a safe space for waste pickers to collect, sort and sell recyclable items without being exposed to so many vulnerability issues. The municipal officials conceded that they would have no involvement in the BBC utilised by the waste entrepreneurs/pickers. However, they would not sanction the supervisors employing any random person. Only those who were originally listed at the time they left the landfill and agreed to work at the designated area, would be permitted. The stringency to this matter was based on an incident that occurred on the municipal premises, where recently employed waste pickers that were found doing drugs. The municipal officials felt that this could escalate to where the original group, who were making good progress, could be attracted to doing drugs on the premises. Furthermore, the municipal manager iterated that it was the municipality's responsibility to ensure the safety and wellbeing of the groups working on their property.

Step 4: Observe the action

Those individuals that were employed by the supervisors had to vacate the premises. Although the waste entrepreneurs/pickers were not entirely satisfied with the outcome,

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they understood the implications of new individuals entering the site. Three waste pickers who had never been present at the Wellington work site were now working alongside the waste entrepreneurs. These individuals were registered by the municipality at the time of inception of the programme and were thus permitted to work on the site.

Step 5: Reflect on the action

The waste entrepreneurs understood the municipality's policy on new people entering the site. After consulting with them, they understood the complexities involved, as it would become difficult for the municipality to keep regular track of those employed. With regard to the Paarl group, many waste pickers started working at the site and after a few months left for various reasons. The Paarl supervisors were particularly displeased with the decision made by the municipality. As mentioned previously, they were of the impression that they were offering a service to the municipality and were not part of the programme initiated by the municipality. Individuals leaving the MRF would result in a shortfall of labour. The municipality should consider revisiting their policy on who is permitted to work with the current groups. A screening process for new applicants can be decided on by the municipal delegates and the supervisors. Some compromise need to be reached to prevent the waste pickers/entrepreneurs from recycling less due to insufficient manpower.

This section discussed transforming structures and policies and derived that relevant changes that were implemented. These changes were advantageous to all stakeholders. The municipality reaffirmed their commitment to their programme and committed to changing policies, including feedback provided by the waste entrepreneurs. The Wellington waste entrepreneurs were moved numerous times but eventually they were placed at a site where they were capable of improving their current livelihoods.

5.5.3. Livelihood assets

The livelihood assets are various capitals and capabilities comprising physical and social resources as well as activities that facilitate in sustaining one's life (Scoones,

2009). These assets help understand the capabilities of the waste entrepreneurs, which, if correctly developed through mentorship, can help improve their livelihoods.

The themes constructed, as indicated in the table below, are extrapolated from the data through in-depth discussions and focus groups. Themes 13 to 17 are closely related to human capital whereas theme 18 is based on natural capital. Themes 19 to 23 are associated with social capital and lastly, themes 24 to 27 are based on the financial capital of the waste entrepreneurs.

Table 31: Themes constructed from the livelihood assets

Livelihood Assets
T13: Training on how to sort waste
T14: Rationale for low education level
T15: Variation of skills
T16: Skills development
T17: Underlining health issues (H)
T18: Harsh weather conditions reduce productivity output
T19: Working individually
T20: Working as a team
T21:Utilising network connections
T22: Interpersonal relationships between waste entrepreneurs
T23: Relationship between waste entrepreneurs and BBCs (s)
T24: Expenses incurred
T25: Income generated
T26: Strategy to save
T27: Absenteeism affects income

In terms of human capital, waste entrepreneurs identified certain skills that they would like to acquire – theme 16: skills development.

Step 1: Collaborate about the problem

During a focus group session, waste entrepreneurs highlighted preferential skills that would be desirable for their development. In particular, a few participants mentioned that they were interested in learning how to operate the baling machine, which

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compacts the recyclable items. If goods are baled, the waste entrepreneurs would be able to negotiate better pricing from the BBC (Viljoen, Schenck & Blaauw, 2012).

Step 2: Plan of action

The site where the Wellington waste entrepreneurs operated did not have a baling machine. The plan was that when they moved to the new location, they would request the municipality to provide them with training in the operation of the baling machine. No time allocation could be set as no specific date was specified for the move to the new location.

Step 3: Action the plan

When the Wellington group moved to Paarl, they were informed that there were two baling machines that could be utilised. Some individuals did receive training in the operation of the baling machine.

Step 4: Observe the action

Two participants approached the Paarl group members, who were in the process of baling their goods, and asked if they could observe the baling procedure. Thereafter they were taught how to bale the recyclable items. However, at the time when they intended to utilise the baling machines to bale their goods, the machines required servicing. The municipality is responsible for repairing the equipment as they are the owners. However, if the baling machines are not working, it becomes the responsibility of the supervisors to report this to a municipal delegate. Although the machines were serviced later, the Wellington group did not use the baling machines as the BBC was prepared to except their items in bags.

Step 5: Reflect on the action

The waste entrepreneurs were elated that they were able to operate the baling machine. They felt a sense of empowerment as they were able to do something they had never done before.

Sen communicates that the Capability Approach is the ability to do, and functioning is the act of doing (Robeyns & Byskov, 2020). The waste entrepreneurs had the ability

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to acquire many skills that would enhance their development. Relevant parties must not underestimate their abilities and should encourage skills development.

In terms of social development, the Wellington waste entrepreneurs were accustomed to working individually, perceiving themselves as single entities. After much in-depth discussions on the importance of group dynamics, the individuals, without being coerced, decided to form two groups. This was working well and when they moved to Paarl, the group decided to work as one unit. The outcome of this strategy to work in unison proved advantageous, as discussed earlier. When the waste entrepreneurs heeded the suggestions presented during the mentoring process, the outcomes greatly enhanced their ability to improve their financial situation as well as their quality of life. In other words, by working as a group, the income was shared among the group, as the supervisor of the Wellington group would buy the recyclable items from them. The group managed to negotiate a better price for the different items, which the supervisor agreed to. The more items they sold, the more money they made.

5.6. Section Five: Conclusion

The purpose of this chapter was to present the findings and analyse the data based on the Sustainable Livelihood Framework (SLF). The SLF therefore served as a framework in constructing themes based on the findings. Each of the themes were discussed under the various components of the SLF.

In terms of the vulnerability context, the majority of the waste entrepreneurs/pickers were able to cope with the vulnerability shocks and trends. This was largely due to the flexibility of the municipality in listening to the waste entrepreneurs' concerns, particularly the Wellington cohort. This group proved resilient to various environmental, economic and social changes. However, a number of waste entrepreneurs were unable to adapt the volatility of certain shocks and trends, in particular, the effects of COVID-19. Although initially, the majority returned to the site after lockdown, due to slow progress in terms of waste sorting and selling, many returned to seeking employment in different sectors such as farming. Some returned to illegal waste picking on the Wellington landfill as a result of their impecunious conditions and sought to supplement their income elsewhere.

The Drakenstein municipality transformed their structures and processes to help improve the livelihoods of the waste pickers. Moreover, the municipality continued its commitment to improving the quality of life of the waste entrepreneurs/pickers by heeding their suggestions. Despite some waste entrepreneurs/pickers not being amenable to certain policies enforced by the municipality, the participants continued to improve their wellbeing by capitalising on the opportunities presented. Working with what they have, they focused on the controllable aspect in order to continue sustaining themselves. Sarasvathy (2001) states that effectuation entrepreneurs are actor dependent but uses their abilities to dicsover new opportunities to exploit. In essence, government and other stakeholders should listen to the needs of the waste pickers and amend their policies to create synergy among all parties.

Developmental mentorship enabled waste entrepreneurs/pickers to improve their livelihood assets by identifying their capabilities and developing their skills. Waste entrepreneurs/pickers were able to differentiate their strengths and weaknesses and learn how to improve on their weaknesses. What was interesting and a milestone in the developmental process was the identification of the weaknesses from peers. Each individual was capable of accepting the constructive feedback without displaying animosity and further narrated that they would improve themselves. Mentoring assisted in the process of eliminating unwarranted weaknesses. Social dynamics improved as the waste entrepreneurs and the Drakenstein municipality received an award in 2019 for their recycling innovation. When the waste entrepreneurs committed to working as a group and improving their financial literacy through mentoring, they were able to improve their income and their quality of life. The findings indicated that each of the capitals within the livelihood assets had some degree of dependence, which is diagrammatically illustrated in the figure below.

Figure 60: Proposed livelihood assets structure
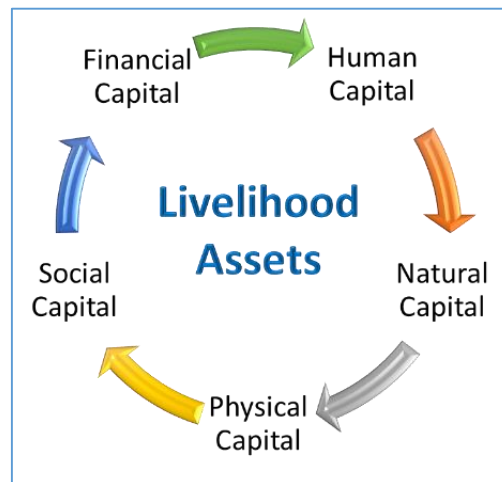
Source: Researcher

The next chapter will discuss how the entrepreneurial capabilities of the waste pickers were identified and cultivated through developmental mentorship. It will focus on the primary research objective as a roadmap in illustrating the synergetic relationship between developmental mentorship and the Capability Approach. In terms of developmental mentorship, the following chapter will accentuate how the steps as constructed in the conceptual framework chapter have aided in identifying how functioning, an action of the Capability Approach, can be implemented. Additionally, the mentoring process enabled a sense of trust and a working relationship with the waste entrepreneurs/pickers which helped identify entrepreneurial traits that could be further developed.

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Chapter 6: Using Developmental Mentorship to Cultivate Entrepreneurial Capabilities

The Capability Approach (CA), as constructed by Sen, places intrinsic value on individuals by stating that any developmental effort should focus on the expansion of the capabilities of each individual (Ikebuaku & Dinbabo, 2018). From a CA perspective, it is possible for entrepreneurship to be a human functioning that contributes towards increasing the set of human capabilities by acting as a resource and a process (Gries & Naudé, 2010). This chapter discusses the entrepreneurial capabilities of the waste pickers and how, through developmental mentorship, these capabilities or freedoms (opportunities that individuals have) can serve as a catalyst in developing the functioning (anything that individuals can do or be) of waste pickers. Sen's Capability Approach entails two normative claims, the first of which is that it is morally important for individuals to have the freedom to achieve wellbeing. Secondly, wellbeing should be understood in terms of individuals' capabilities and functioning (Robeyns & Byskov, 2020). Alkire (2005) states that a central tenet of the Capability Approach is that human beings are the ends of development; similarly, they also happen to be directly or indirectly the means to all production.

Another tenet of the Capability Approach is that human beings have a distinct ability to convert resources into functioning. This is referred to the conversion factors which influence the degree to which an individual is able to convert a good or service into a functioning (Robeyns, 2017) as illustrated in Figure 63. The conversion factors consist of the following (Robeyns, 2005):

a) Personal conversion factors – individuals have disparate characteristics. These characteristics will influence the conversion to function. Example: One of the waste pickers had a visual impairment that affected her ability to sort through the waste. She had been recruited by the chief supervisor, but as time went on, she was unable to continue to work as a waste picker.

b) Social conversion factors – social factors comprise policies, social hierarchies, power relations, gender, etc. Applying these factors will influence the individual's ability to function

c) Environmental conversion factors: The climate, geographical location, etc. play a role in how individuals' function.

Figure 61: A stylised non-dynamic representation of a person's capability set and his/her social and personal context
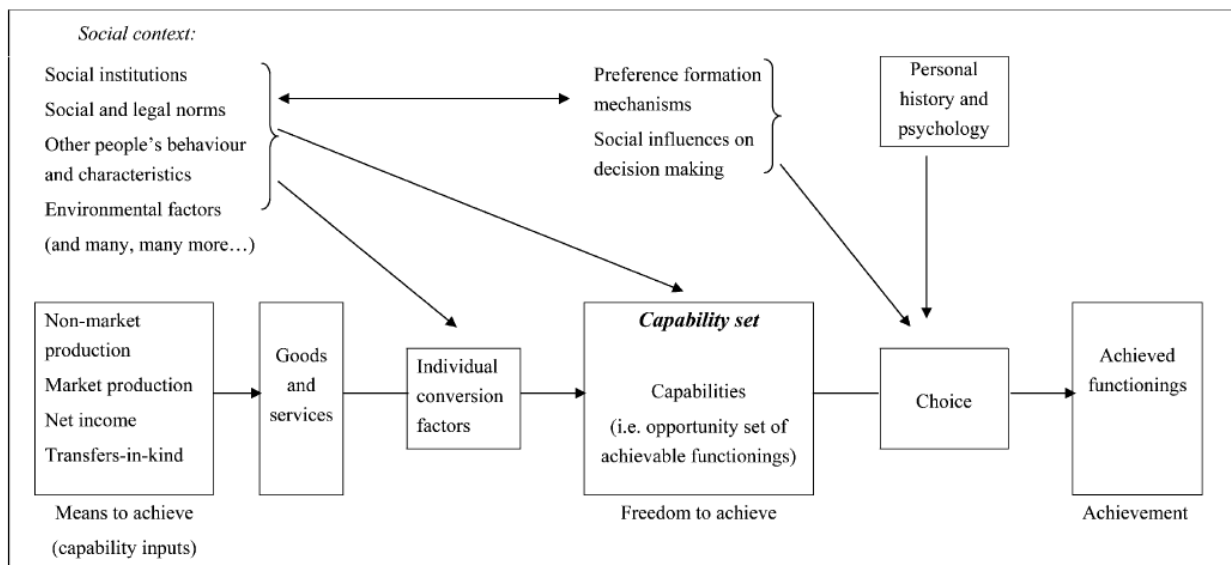
Source: Robeyns (2005)

These conversion factors determine the capability set or vectors of potential functioning which are in the realm of the individual, while others might be out of reach for the individual (Osmani, 2016). The variation of the conversion is determined by the capabilities of the individual (Crocker, 2003). A person with one hand might have more difficulty in collecting recyclable items than a fully able-bodied person. Robeyns (2005) explains that the characteristics of goods and services are what individuals would be interested in, as specific characteristics enable functioning. In other words, particular goods and services are viewed as capability inputs or means to achieve certain functioning. Choice, as depicted in the figure below, plays an important role as it is enables the individual to act on his/her capability in achieving a desired outcome.

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I support the framework of Robeyns (2005); however I will focus on the means to achieve, freedom to achieve, choice and achievement to discuss the entrepreneurial capabilities, as well as identify the lack of functioning among waste pickers. A primary strength of the Capability Approach is to expand the freedom of deprived people (waste pickers) by identifying their lack of access to relevant resources and options for them to choose what is important to them (Alkire, 2005). In order to achieve this, it is my role as a developmental mentor to nurture the waste pickers' entrepreneurial capabilities to help improve their achieved functioning (outcomes). The preceding chapters discussed mentorship and developmental mentorship, and this chapter accentuates my role as a developmental mentor as a capability input and a means to enhance the entrepreneurial capabilities of the waste pickers (see figure below)

Figure 62:Conceptual model of capability approach to developing capabilities
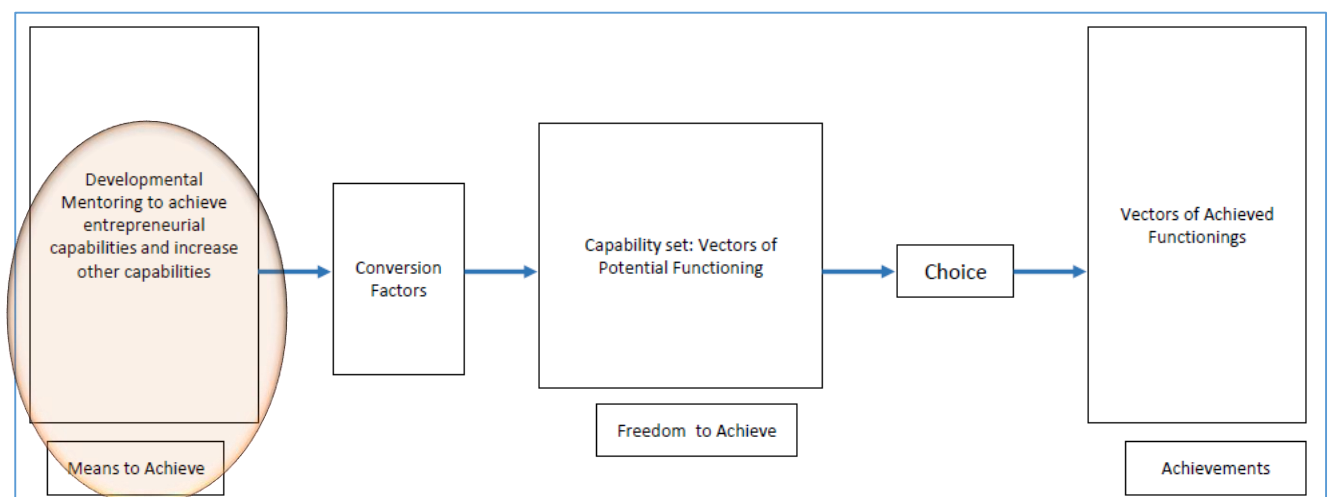
Source: Adapted from Robeyns (2005)

6.1. Means to Achieve

Development broadens the ambit of human choices. Whether development is desirable or undesirable, significant or insignificant is based on the individual's freedom and priority (Gasper, 2002). The means to achieve can be any type of goods and services, such as business incubators that offer support to start-up enterprises (Lesáková, 2012). Additionally, Tembe (2018) posits that business development and training support to relevant individuals can serve as a means to identify opportunities. "The best interpretation of what Sen means by 'capability' is that it connotes a certain

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sort of possibility or opportunity for functioning" (Crocker, 2003:9). The Drakenstein municipality offered waste pickers in the area the opportunity to utilise its premises and equipment to help improve their well-being, not just their income. The Capability Approach is built on the premise that income is not a pivotal means to measure poverty reduction but rather the opportunity or freedom that includes multiple functions (Alkire, 2005), such as the opportunity to live in a crime-free environment (Sen, 1999). The space the municipality made accessible to the waste pickers offered a place to work without facing victimisation or discrimination, which is an enabler to wellbeing.

6.1.1. Municipality as a means to achieve – a source of capability input

The senior manager of the Drakenstein municipality and the site manager of the Wellington landfill was confronted with an uncontrollable number of illegal waste pickers scavenging on the landfill. Within a few months of his appointment, the senior manager met with the illegal waste pickers to offer them a place to work and earn an income as he was not willing to expel them from the landfill without providing them with a secure place to work. The meeting was facilitated by the supervisor of the group. The picture below depicts communication between the senior manager and the supervisor.

Figure 63: Senior municipal manager and the Wellington supervisor

Source: Researcher

The municipality supplied those waste pickers with sufficient waste for them to sort through and find recyclable items to sell. Additionally, to develop their entrepreneurial

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capabilities through upliftment, the municipality gave them protective clothing and name tags, and stated that the municipality would not get involved in their operational processes. Waste pickers were at liberty to sell to whom they desired without interference from the municipality. The work area opened daily at 08h00 and closed at 17h00. The site was closed over weekends, but the trucks would offload waste on a Saturday, so on the Monday there would be sufficient recyclable items for the waste pickers to sort through. One of the participants commented, "*The municipality is helping us out with the place here, as we don't pay rent, we don't pay for water or buy electricity. Everything is from them. The car that brings us to work is from the municipality and we don't pay anything, it's just for free.*" In a later interview with the supervisor, she acknowledged that transport was no longer being provided by the municipality and that they had to arrange their own transport to and from the MRF. Others stated that the municipality had given them a new start to live a more dignified life. This implies that the wellbeing of the waste pickers had improved as they were able to attain improved functioning.

Figure 64: Waste pickers work with protective clothing

Source: Researcher

This initiative came at a cost to the municipality. As stated by the manager: "*There is a high cost to keep these waste entrepreneurs on the site. Included in the costs are*

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the equipment, transport and manpower to ensure that the waste is dropped and later collected." Each year the manager must provide a budget and, as the manager claimed, "*We must provide evidence of the expense of the waste pickers*", but the approval process is always challenging. Based on the above photograph, the waste pickers were working with protective clothing supplied by the municipality twice a year. In the background, one can see the concrete wall protecting the waste pickers from the landfill. Due to the innovative thinking of the Drakenstein municipality, many recycling organisations applauded them for their efforts in helping to integrate the waste pickers into society. The municipality served as a catalyst to reduce the poverty levels of the waste pickers by helping them improve their wellbeing by increasing their capabilities. To expand the capabilities of the waste pickers, the municipality organised a training session for all waste pickers to attend. The workshop included effective recycling procedures and alternative methods of generating an income.

PETCO, a recycling company, presented the Drakenstein municipality and the waste pickers with the Innovative Recycling Award for 2019 (see image below).

Figure 65: Award for recycling innovation presented to the Wellington group and municipality
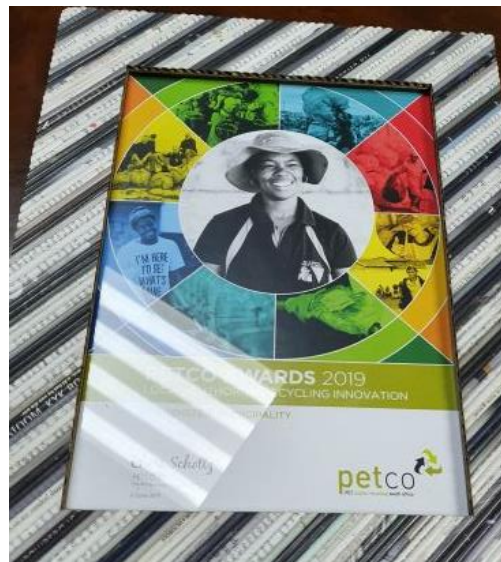
Source: Researcher

The municipality has been instrumental in the development of the waste pickers and many have echoed these sentiments. To help boost their self-esteem, the municipality opted to call those waste pickers working at the designated area "waste

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entrepreneurs". This was a welcome gesture, as they admitted that this new designation had improved their self-esteem. Nonetheless, some of the waste supervisors felt that the municipality could offer more assistance, such as:

- Offer a stipend to the waste pickers for the efforts in reducing the amount of waste ending up at the landfills
- Allow supervisors to employ more waste pickers so that more money can be made, allowing them to earn more than a measly income
- Supply more equipment and better infrastructure to protect the waste pickers from the weather and to protect the recyclable items from the rain
- Improve communication with the waste pickers; inform them of changes and the implementation of new rules in advance

The sustainability of both groups is dependent on the relationship with the municipality as the municipality has supplied the waste entrepreneurs and the co-operative with a safe and secure place to work, as well as the resources relevant to their survival. It is therefore pertinent for the waste entrepreneurs to be thankful and to establish a good working relationship with the municipality. They should acknowledge and respect the rules and processes stipulated. If they are in disagreement with certain practices or procedures prescribed by the municipal management, this need to be communicated to the relevant parties in an amicable manner. Generally, the waste entrepreneurs were thankful for the assistance offered by the municipality and the opportunity to improve and sustain their income. One supervisor declared that without the municipality they would not have a place to work and would be exposed to all sorts of danger. The municipality gave them hope and they wanted to take full advantage of the opportunity. The Drakenstein municipality is planning in the near future to create a fully functional MRF where the waste pickers would be allowed to work in a way that would further prevent waste from ending up at the landfill. The data in this study reveals that the support offered by the municipality is insufficient for the waste pickers to continue improving their living conditions. They require constant guidance to direct them on how to deal with everyday challenges.

Developmental mentorship as a means to an end implies the empowerment of waste pickers' entrepreneurial capabilities to improve functioning. Clark *et al.* (2019) suggest that empowerment as an agency is not about enforcing authority but more about understanding human action. As a developmental mentor, my focus was on assisting waste pickers to realise their full potential by guiding them to improved capabilities in a way that will allow them to convert these capabilities into potential functioning. In line with Sen's perspective on the development of individuals, it is not only about addressing the needs of human beings, but also acknowledging them as agents of change, who when the opportunity arises, are able to think, evaluate, disagree, inspire and negotiate, and through these means be able to reshape their world (Grasso & Di Giulio, 2003). Now I demonstrate how I employed developmental mentorship as a capability input to guide waste pickers to activate their current and newly founded capabilities.

6.1.2. Employing developmental mentorship as a capability input (means to achieve)

Waste pickers who accumulate recyclable items to sell in order to earn an income can be considered as survivalist entrepreneurs. Survivalist entrepreneurs are micro-scale and volatile enterprises that primarily serve to secure the survival of an individual or a household (Preisendoerfer, Bitz & Bezuidenhout, 2014). Entrepreneurial capabilities can be described as "the skills, experience and knowledge to identify, expand and exploit business opportunities" (Torres & Jasso, 2017:104). Previously, emphasis was placed on the waste pickers as individuals and as a group revolving around the Sustainable Livelihood Framework but now, based on the information gathered, the focus will be on the waste pickers as a group in emphasising what entrepreneurial capabilities they currently have and what needs to be nurtured through developmental mentoring.

Mentorship provides much relief to the mentee in terms of psychological support and acquiring knowledge (job-related and other knowledge). Mentees receive emotional support and protection from political harm in organisations and can acquire more developmental skills. Mentors on the other hand can benefit from a mental and

emotional perspective as they share their acquired knowledge with less experienced individuals (Liu *et al.*, 2020), that is to say if the mentees are willing to apply the characteristics of the conversion factors and how they are able to convert the capability into functioning. Robeyns (2005) postulates that the conversion factors play a part in converting the characteristics of goods into individual functioning. She provides an example of a bicycle that is used as a mode of transport. The bicycle serves as an object but because it can be used to take a person from point A to point B, it is seen as an enabler. Similarly, mentorship is a process that enables individuals to improve their knowledge and skills, and which supports them in identifying new capabilities, resulting in improved functioning.

Discussions with the Paarl group revealed that their co-operative was in the dying stage and therefore required mentoring to help sustain their business. The Paarl supervisors were members of the South African Waste Pickers' Association (SAWPA), an organisation that helps improve the lives of waste pickers, and the chief supervisor was actually the SAWPA co-ordinator for the Western Cape. During my first focus group discussion with the Paarl supervisors, the chief supervisor informed me that they were members of a PTY LTD business – a private company. She stated: "*We have a registered business, the four of us are members. But we share the income equally with all the waste pickers that work here.*" When I asked about the business being a private company, the supervisor responded: "*It was supposed to be a co-operative. I'm not sure what went wrong during that process but we function as a co-operative.*"

Despite the business being registered as a private company, they adhered to the requirements of a co-operative. A co-operative is an independent association of individuals who collaboratively volunteer to meet their common economic, social and cultural desires as well as ambitions through a jointly owned and democratically controlled business (Novkovic, 2008).

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Figure 66: The Paarl group

Source: Researcher

The above picture shows the Paarl group before one of our weekly discussions. Most of them had come from the Eastern Cape Province to seek better opportunities in the Western Cape. When I asked the chief supervisor what had prompted her to start a business, she replied: "*Two of the supervisors were with me when we were working with World Vision, an organisation that was working with children, the vulnerable children in a community, the child households and families, people who've got HIV and AIDS, the orphans. We attended workshops on the dangers of plastic to teach to children so that they could also to care for the environment. While we were collecting plastic with the children, we would sell it, pay the children and keep some money so that we could have an end-of-year party with the children. We loved what we were doing. Thereafter we decided to start a recycling business.*"

The response of the chief supervisor offers some evidence that they do display entrepreneurial capabilities but as entrepreneurs, certain determinants must be prevalent. These determinants are firstly the ability to determine business opportunities secondly the inclination to exploit such opportunities, and lastly the capability in terms of knowledge, skills, etc. to capitalise on the perceived opportunities through business formation (Ikebuaku & Dinbabo, 2018).

I emphasised that the supervisors needed to be more active in the operational procedures and not depend on the workers to fulfil operational tasks. The chief supervisor needed to be more visible and communicate with workers. Sustainable issues have been discussed in this chapter by addressing the problems with workable solutions. If the supervisors follow the course of action as suggested they will be able to increase the longevity of their co-operative. The supervisors need to be reflexive in undertaking operational tasks by developing certain attitudes (Burkitt, 2002). The supervisors need to discipline themselves to continue working towards the targets set for each item that was discussed during the mentoring sessions. As a mentor, I can only offer advice and suggest strategies and guidance that could improve their capabilities in terms of running a business. Ultimately, their ability to exploit their potential functioning lies in the choices they make in wanting to achieve a desired outcome (achieved functioning).

The Wellington waste entrepreneurs as individuals differed from the Paarl waste pickers in many ways, including culturally and socially. The previous chapters discussed these individuals with their general lack of formal qualifications. They had been exposed to many challenges as a marginalised group and had been victims of discrimination, segregation and exploitation. When I first engaged with this group, I knew I could not communicate with them in a similar manner as I did with the Paarl group. Their preferred language was Afrikaans, unlike the Paarl group who understood English. Fortunately, I am able to converse in both English and Afrikaans, as well as informal Afrikaans (an Afrikaans dialect used in the Western Cape). Although I mentored both groups, the approach was diverse as the individuals acquired knowledge differently and hence their conversion factors differed from person to person.

Figure 67:Preparing to have a discussion with some of the Wellington waste entrepreneurs

Source: Researcher

The waste pickers had other means of support, including infrastructure, equipment, protective clothing supplied by the municipality and other stakeholders serving as enablers to increase their capabilities. However, my research shows that without developmental mentorship, the waste pickers will not realise the true value of the support they receive, which could navigate them to achieved functioning (outputs). Developmental mentorship offers this precarious group assistance, support and knowledge to capitalise on their current capabilities, as well as develop new capabilities which form part of their vectors of potential functioning. The assumption that the capability approach focuses on the conversion of resources into individual functioning and resources has been argued by many scholars as being too individualistic (Ibrahim, 2006). In fact, many capabilities can be accomplished by collective action (Robeyns & Byskov, 2020) such as waste pickers working together to achieve the common goal of increased income. Additionally, Binder (2009) reports that functioning is influenced by cultural contexts. The waste pickers helped one another by sharing their knowledge of recycling. The conversion factors differ among individuals, but through developmental mentorship, most individuals would be able to take advantage of the capability inputs and transfer these to vectors of potential functioning.

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Figure 64: Conceptual model of capability approach to developing capabilities
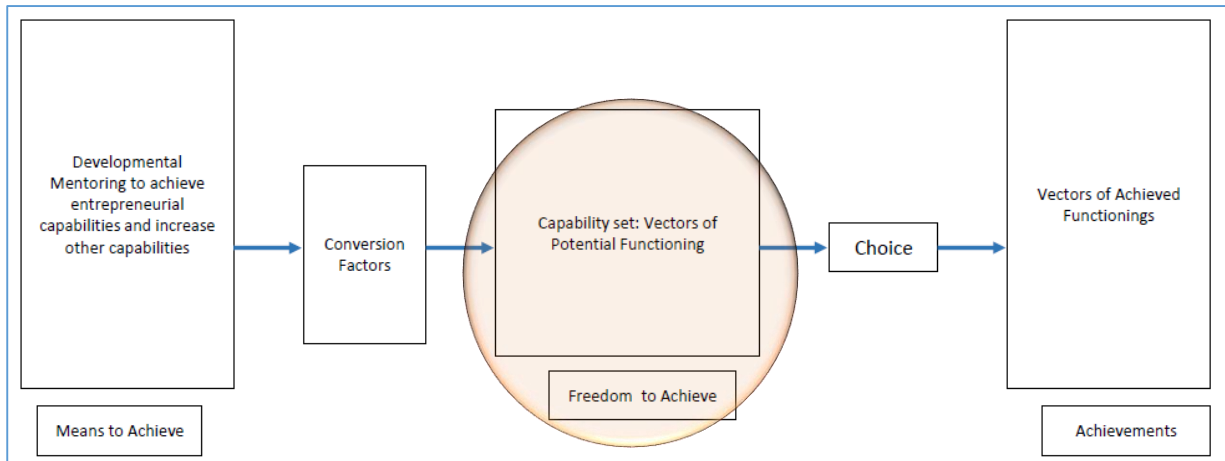
Source: Adapted from Robeyns (2005)

6.2. Freedom to Achieve

Freedom to achieve wellbeing can be explained in terms of individuals' capabilities, that is, the opportunities which are available for them to do and be what they perceive will add value and/or provide a reason for them to value (Robeyns, 2016).

In this section I make the case of how, as a developmental mentor, I was able to assist waste pickers to convert their potential functioning into achieved functioning. This coincides with the effectuation approach which uses the means provided to the waste pickers to create varies possible effects. The effectuation approach seeks to exploit environmental contingencies by staying pliable (Lennips, 2016). To achieve this, I will discuss how the waste pickers had until then been unable to exploit their capabilities to potential functioning by illustrating some of the problems experienced by the waste pickers and how developmental mentorship acted as a conversion process. This was done by conducting focus groups and personal focused discussions. I would in most cases bring some niceties and create an informal atmosphere. We first discussed general issues like the weather or the health of an individual before I started asking questions relative to my research. Additionally, I would talk about my personal life by providing information on my children or the things happening in my life. It must be understood that my social world is vastly different to theirs, so I had to illustrate similarities, although on a different level, as evidence that I was able to provide an interlink connecting our social worlds. The waste pickers had a simple lifestyle: They

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would work, go home, and only interact with people in their community. As one waste picker stated: "*Naweeks sal ons by die huis wees en 'n drinkie drink*" (Weekends we are at home and will drink a drink – referring to an alcoholic beverage). I would talk to them about how my disabled son was progressing at school, and one or two waste pickers would interject and tell me of someone with a similar illness. This was a means of building personal trust. This type of involvement enabled a trust relationship and encouraged them to talk about their true feelings. This interaction allowed me to identify their potential capabilities and how the waste pickers would be able to achieve the desired outcomes.

There was much discussion about waste pickers forming co-operatives as an achieved function or a desired output. However, the data indicates that the waste pickers need to develop capabilities, despite the support offered by the municipality. It should be understood that our lives can include positive functioning and negative functioning (Robeyns, 2017). Negative functioning would include a waste picker's decision to argue with other waste pickers and not collect recyclable items, which is a positive functioning. It should be acknowledged that it would be in everyone's best interest to reduce negative functioning (Robeyns, 2017).

6.2.1. Inability to convert potential positive functioning into achieved functioning

During a group discussion, I suggested that the Wellington group should function as a unit, as they risked losing the opportunity to sustain their income individually. If an individual were off sick for a day, he/she would not receive any income, but by working together they would be able to assist one another. Medina (2005) reported that waste pickers working in co-operatives have a better standard of living and improved self-reliance and self-esteem than those waste pickers who work alone. Mentoring also provided the waste entrepreneurs with the opportunity to improve their social networking by introducing them to other BBCs. When one BBC could not accept any recyclable items due to certain regulations such as fire hazards, they now had the option of contacting other BBCs outside the area. This improved social network will aid in them sustaining a steady income.

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When the waste entrepreneurs exercise self-control and save some of their income, they will be able to sustain themselves in times of adversity. For example, I questioned how many of them had fallen ill and been unable to work for a few days. At least three or four waste pickers had at times either been too sick to work or had just stayed at home without a valid reason, despite being aware that without working, they would not receive an income. This had an adverse effect on their sustainability.

Rules are a help and a hindrance. I explained to the waste pickers that the rules set by the municipality were there to protect them from danger and that they were able to assemble and sell their recyclable items. If they failed to comply with the rules they would be expelled from the work area, which would affect their sustainability and entrepreneurial intent to succeed to the next level. However, some of the rules set by the municipality posed a challenge to the waste pickers, which I intend to discuss later in this chapter. Despite the help from the municipality as a capability input (means to achieve) waste pickers had difficulty in converting their capabilities into functioning. The flow of the following section highlights some problems that the waste pickers experienced and thereafter I demonstrate how, as a developmental mentor, I was able to help them with their problems.

6.2.1.1. Problems that inhibit functioning

There are potentially many reasons why some waste pickers would remain at the work site to earn an income, as well as many reasons why others would leave this activity in search of something else. Based on the study I will highlight a few problems that resulted in waste pickers leaving or feeling unhappy and seeking change.

Problem 1. Require inspiration to maintain their work as a group and function as a unit

After being relocated to the Paarl MRF, some of the Wellington waste entrepreneurs left, which impacted on the group. They communicated that when people leave, they need to replace them with others to continue with the operations. The group requires constant motivation and mentoring to function as a unit. Individuals would often argue,

causing disunity in the group and posing a problem if they were to establish a business. During discussions with the supervisor of the group, who was also buying the valorised items from the waste entrepreneurs, she admitted that the waste entrepreneurs required constant monitoring and motivation.

When the MRF was made available to the Paarl waste pickers with the four supervisors responsible for overseeing operations, there were more than 20 waste pickers. The waste pickers comprised both coloured and black waste pickers. Months later, several waste pickers – all the coloured waste pickers and a few black waste pickers – left the MRF to seek an income elsewhere. One supervisor declared, "*The coloureds left because they didn't want to listen to me and wanted to see the money accumulated.*" Trust incorporated into social capital is the basis for personal relationships and a key contributor to social and economic outcomes (Musson & Rousselier, 2020). The supervisor further mentioned that, "*The people who left did not trust us, they came with a low mentality, not a business mentality.*" Barrios and Blocker (2015) report that studies have indicated that subsistence entrepreneurs are bonded by a culture of support and unity to cement their sustainability. One of the supervisors stated, "*When working with people, you look who is willing to do this, who is eager to work but they are not really eager…when we do not produce many of them left to go to the farms. Paarl is full of farms.*" At this point I wondered about how South Africans waste pickers who came from different racial and cultural groups could be integrated in spite of the legacy of apartheid. I aver that the norms of the cooperative can bring about the integration of various cultural groups. Individuals left the MRF because they did not share the same vision or similar principles as other members of the co-operative (Novkovic, 2008).

The waste pickers who left the MRF created a void and new individuals needed to be recruited and trained. Similarly, some of the Wellington waste entrepreneurs left to seek income elsewhere after deciding to no longer collect recyclable items. One waste picker reported, "*Hy het gaan werk met om skoon broer. Hy lyk nou lekker agtermekaar*" (He is working with his brother-in-law. He looks to be in fine form). People leaving the group would have an impact on the group, be it financially or in any

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other manner. Social capital is crucial to a functioning sustainable economy as it contributes to physical and human capital. Social capital comprises networks, trust and norms that facilitate mutual collaboration amongst individuals, which ultimately helps an organisation to improve its overall capital (Ruzek, 2015). Staff turnover creates a disruption in the organisation's operations, performance and team dynamics, which all impact on the costs of an organisation (Iqbal, 2010).

Problem 2: Inability to increase income to improve livelihood

One supervisor reported that many waste pickers had left because the business was not able to sustain their livelihoods and they had decided to seek income in other sectors. Most of the waste pickers who left went to work on the local farms to earn an income almost three times more than what they were earning as waste pickers. When I spoke to one of the waste pickers working at the Paarl MRF and asked her why she chose to stay and work as a waste picker, she responded by saying, "*You can earn more money picking fruit on a farm, but after six months you will not have work.*" She further added, "*I have difficulty saving money and therefore I rather work for much less but I work every day.*" This provides some evidence that waste pickers were not leaving because of lack of income, but that they also preferred to be waste pickers due to the consistency in income flow and due to their inability to save amongst other reasons. The capability to earn an income as provided by the municipality was available, but the waste pickers' inability to exercise self-control resulted in them leaving the MRF in search of other means of income.

Furthermore, a supervisor explained that the business (their cooperative) accumulated certain recyclable items and this would at times require them to accumulate the recyclable items over two weeks. The buy-back centre (BBC) or a third party would collect the items at no charge as the accumulated goods were sufficient for a free collection. Therefore, she could not pay the workers every week. She expressed their concerns as they had to pay other individuals who were not members of the co-operative but were working with them. She preferred to pay them first but admitted that individuals would make loans during the month, which would be deducted from

the individual's pay. This created a problem as the waste pickers did not want to have the loan amount deducted all at once, especially if they were paid less than anticipated.

At the time of my arrival, the monthly income generated by the Paarl business was between R11000 and R15000. On average, each worker would receive an average of between R1375 and R1875 per month, or a daily income of between R68,75 and R93,75. In essence, this amount is less than the South African minimum wage per hour as prescribed by government. In 2021, Employment and Labour Minister TW Nxesi increased the minimum wage per hour to R21,76, up from R20,76 in 2020. A blue-collar worker may not be paid less than R174,08 per day. The co-operative was generating less income despite having access to waste and the resources to sort through the waste to find recyclable items. They also had access to an office, electricity, shelter, sanitation facilities and baling machines to compress and bundle their recyclable items. The CSIR (2015) reports that co-operatives need to be integrated into the municipal solid waste management programme in order for their businesses to improve. The Drakenstein municipality assisted the Paarl group with access to materials and access to equipment and yet the business was incapable of providing a liveable income to its members. Apart from the business's lack of assets, record-keeping was being done manually, as depicted in the figure below.

Figure 68: Manual record-keeping done by supervisors

Source: Researcher

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The supervisors would use a hardcover book to record the items sold and would constantly refer to it when I asked about the total amounts of goods sold.

Problem 3: Need to build confidence

For years, waste pickers have been frowned upon, regarded as the lowest caste in society and faced with discrimination due to the type of work they do (DEFF/DSI, 2020). Some respondents would joke and say, "*If they see us coming they would move to the opposite of the road, they think we will rob them."* Schenck and Blaauw (2011) state that waste pickers are despised by society due to the way they look despite trying to make a living. This has an impact on their ability to converse with people they perceive to be of a higher social standing. When the group wanted some assistance from the municipality, they would ask me to speak on their behalf. The need to build confidence is derived from the social world of the waste pickers – a world that they perceive as different to the world of those not associated with them.

However, the waste pickers started to gradually improve their communication skills towards municipal officials, but they require more training to improve their confidence. The Wellington supervisor informed me that the group lacked the confidence to challenge decisions that were unfavourable to them. Not only did the group lack the confidence to openly communicate, but they needed the confidence to establish a business. In a discussion with the group, they expressed their willingness to start a business but asked if I could guide them in establishing and sustaining the business. This would enable them to improve their current vulnerable situation.

Samson (2020) explains that integrating waste pickers into the formal solid waste management system could assist in them altering their understanding of the world and their role within it.

Problem 4: Limited entrepreneurial capabilities and other related skills

A focus group discussion revealed that none of the group members had ever embarked on any business ventures. Although some members had worked for small enterprises, their role had been that of a driver or labourer. Many were unable to find

work in the formal sector due to their low educational qualifications. The lack of financial literacy skills and other skills inhibited them from starting a formal business. Contributing to this was the fact that they engaged in waste picking as a means of survival (Viljoen, 2014). One waste entrepreneur suggested that if they were offered training then they would attend to improve their capabilities. Others also signalled their interest in acquiring skills that could facilitate in making sound business decisions.

Skills development for individuals with formal qualifications differs from skills development for those without formal qualifications. My research shows that the skills required by the Paarl group differed from the skills required by the Wellington group, although both groups were considered to be waste pickers. Once again, this dissimilarity is factored upon the social world that each group constructed.

The Paarl group required more business-related strategies as they had already improved their capabilities by engaging with other stakeholders. Most of the supervisors lacked the skills to plan and co-ordinate a process. One supervisor stated that the chief supervisor (the member of WIEGO and co-ordinator of SAWPA Western Cape) would discuss operational tasks to be undertaken and would contact BBCs and third-party buyers to secure better pricing. However, when she was away on a seminar or travelling, the other supervisors would do daily tasks such as sorting, bagging different recyclable items and baling the bagged items. Despite three supervisors having attended training offered by World Vision in the past, they were unable to transfer business development knowledge to other waste pickers. The supervisors trained the other waste pickers to bale their items, as illustrated in the figure below.

Figure 69: Paarl waste picker baling recyclable items

Source: Researcher

None of the supervisors had attended management or any other formal training relating to business. Novkovic (2008) mentions that co-operatives face challenges if members lack strategic thinking and relevant skills. The co-operative had a bank account into which money from the BBC and other buyers would be deposited. When I enquired about the vision, a supervisor stated, "*We are hoping to receive funding for our business. If we can get money from organisations, then we will make money.*" Additionally, when I asked them if they had constructed a business plan for their co-operative, they affirmed that they had never thought it necessary and had no strategy to advance the business. One of the supervisors asked me to draw up a business plan for their organisation and became angry when I explained that I could not participate in their business decisions but could assist them through mentoring. They were angry that I did not want to help, but after explaining my role in more detail, some understood while others were less forthcoming. Tension pervaded the atmosphere and I decided to end the group discussion. One of the supervisors explained that they were feeling stressed as the business was not making money and they needed some help so I offered to provide some guidance, which is discussed in the next section.

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Evidence from the data shows that the supervisors lacked the competency to run a business efficiently and to sustain the business in the long term. This is a huge problem, as Godfrey *et al.,* 2015) reports that more than 91% of co-operatives in the recycling and waste sector fail despite the low barrier to entry. Waste pickers are unable to capitalise on the opportunities presented because they need constant mentoring to help them convert current and new capabilities into vectors of potential functioning. Their limited skills sets and their preoccupation with daily survival dilutes their energy. This can be overcome, I argue, through mentorship.

The Wellington group presented a different skills requirement. Most of the members were unable to grasp business theories due to their low level of education. Some required more hygiene- and health-related skills while a few indicated the need for skills to run a business. However, they admitted that they would need to acquire identity documents. Some waste pickers were reliant on the advanced skills of their colleagues. During a discussion, one participant voiced her opinion by stating, (translated) "*We will depend on those who can lead us and we will do the work.*" Skills development is not enough to help waste pickers. They require developmental mentorship to help identify capabilities that could be developed based on their abilities.

The training of waste pickers should be based on their social world. Most households that live in the suburbs inhabit a different social world. Initially the municipality provided training on how to sort recyclable items but the waste pickers require more training that will not only help them in business, but will also help to improve their overall wellbeing. For example, the waste pickers tended to sort through waste without the proper protective clothing, and would eat without washing their hands. Training related to health and hygiene is important as part of a continuum of training on how to run a business, as this will improve their human capabilities. I am not saying that all of the participants require hygiene training but the vast majority of the Wellington group requires such training more than the Paarl group. Viljoen (2014) mentions that human capabilities include health, education, clean water, nutrients and shelter. I suggest that training the waste entrepreneurs/pickers to improve their entrepreneurial capabilities

will help improve their human capabilities, which could improve their livelihoods and wellbeing.

As a researcher I discovered that the Paarl waste pickers, who generally had a higher level of formal education, were unaware of the importance of a business plan. This was proved when one of the supervisors asked, "*Why do we need a business plan, we know how to run a business?*" Additionally, they believed that funding from other organisations or institutions would serve as a means to rescue their business, which was engrained in their minds. As stated by a supervisor, "*When we receive funding, we will have money to pay the people and help our business grow.*" This type of welfare thinking stifles the supervisors' entrepreneurial growth and this indicates that they lack the entrepreneurial capability to manage the money generated by their business. Thus, they know how to spend money as consumers but are unable to handle money when it comes to their business. As mentors and trainers, we must recognise that the waste entrepreneurs and waste pickers operate in a different world that would require deep understanding through emersion before providing training to satisfy a governmental or business partner checkbox. Training must be designed in a way that will improve the capabilities of the waste entrepreneurs and waste pickers to help them function cohesively in society.

6.3. Mentoring to implement potential functioning by addressing the problems

In terms of the waste pickers, the municipality provided them with the capability to operate legally yet informally on the allocated space. Additionally, training was given to increase their potential functioning. All this contributed to potential functioning, as the waste pickers were able to improve their wellbeing. However, and particularly in the case of the Wellington group, they were not able to fully exploit the capabilities afforded to them by the municipality. In other words, they were unable to convert capabilities into functioning as depicted in the diagram below.

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Figure 64: Conceptual model of capability approach to developing capabilities
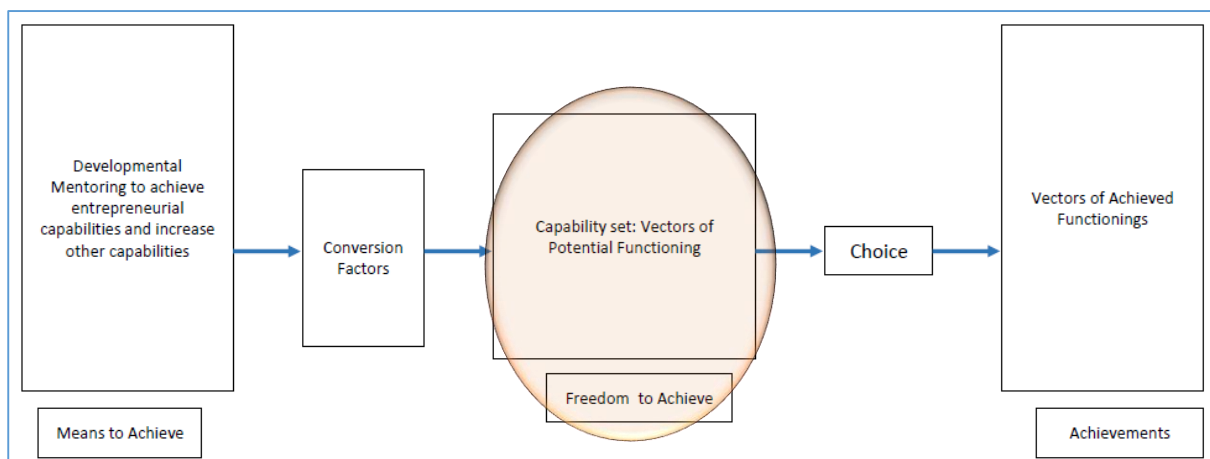
Source: Adapted from Robeyns (2005)

An important assumption that I argue in this research is that the conversion factors can be amplified through developmental mentorship. As a developmental mentor I assisted the waste pickers to convert their capabilities into potential functioning as discussed in this section. The previous section showed that the capabilities provided by the municipality had not changed, yet the waste pickers were unable to overcome certain challenges affecting their ability to achieve total functioning (outcomes). Mentorship offered an alternative for waste pickers to progress.

It should be noted that the problems identified in the preceding section were documented over a period of time, and by forming a trusting relationship with the participants I was able to identify these problems. The problems occurred concomitantly and as such the mentoring sessions were based on what the waste pickers wanted to discuss. At times, probing was required to obtain information on issues of concern to the group. For example: I would enter the office and, after greeting and bantering with the waste pickers in their home language, I would ask why everyone seemed in such despair. The one supervisor would say that they were busy trying to complete their tasks, but then I would wonder why three or sometimes all four supervisors would be sitting in the office while the other waste pickers were working. I knew that I had to get the supervisors to be more productive, but I had to be subtle so as not to offend them or seem to be questioning their roles in the co-operative. In the third level of my mentoring stage, boundaries were established and ethical

considerations were implemented. In the immediate section that follows, I demonstrate my role as a developmental mentor in addressing the problems discussed earlier.

6.3.1. The role of a developmental mentor in addressing problem 1
Require inspiration to maintain working as a group and functioning as a unit

In order to find a solution, many factors need to be considered. These include the innate abilities of each individual. However, through probing questions like "Why is it difficult to work as a group?" and responses such as "*The coloureds don't want to work with us*" it was revealed that trust was a key component of individuals working as a group. The ability to create a natural sense trust amongst individuals is limited due to cultural differences and minimal experience with one another. There is a need for the ability to build a social system (Blomqvist & Ståhle, 2011). I pointed out that leaders need to first show that they are trustworthy, have a trusting relationship with followers and this will allow others to form a trust relationship. Trust is a key component in bringing about an effective working relationship. Ellonen, Blomqviat and Puumalainen (2008) assert that trust formulates effective and efficient communication, which will lead to improved co-operation and collaboration among all parties. I used this information to convince the waste pickers that they must trust one another and by doing this, I asked each of them to highlight some of the strengths of the person seated alongside. Another important component was the cultural issues that were creating a degree of disunity. I pointed out to them that even though I came from a different cultural background, I had established a good and trusting working relationship with them (as confirmed on numerous occasions by the waste pickers) and therefore they also had commonalities that they could work with to create a unified working environment.

If the supervisors were to work alongside the waste pickers and explain the vision of the organisation, this could possibly result in a shared vision and shared objectives among all parties. Staff retention after the supervisors have trained the newly recruited waste pickers is crucial to the success of the co-operative. Staff training impacts on the productivity of a business and high staff turnover has a detrimental effect on the

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profits of any co-operative. However, subsequent to implementing the allocation of tasks and items to the supervisors, the income of the waste pickers increased, which served as a reason to stay more committed as they were able to improve their livelihood circumstances. When a business strives to succeed and income is increased, this represent a strong form of motivation to continue working to improve livelihoods (Barrios & Blocker, 2015). The CSIR (2015) reports that based on their research, waste pickers stated that in order to balance income and expenses, it is necessary for the co-operative to have a clear understanding of operations and make sound decisions on what will be beneficial to the business. During the mentoring process that was undertaken through focus groups and personal discussions, I informed the managers/supervisors that they should consider all factors, especially if wages/salaries were low. They should cognitively understand that individuals require money to travel, purchase food products and electricity and pay for other daily expenses. To create an environment of participation among all parties, they should listen to the demands of the other waste pickers and consider options that would be viable and satisfying to all. In relation to the waste pickers demanding a weekly pay, I recommended that the supervisors pay the individuals every two weeks, which could help them to pay for certain necessary items. This would demonstrate to the waste pickers that the supervisors were willing to negotiate and change their current strategy to create a team-based environment.

By listening to the supervisors and building a trust relationship, I used developmental mentorship to provide the supervisors with some relief and help them retain their workforce.

These reminders were reiterated numerous times in different ways, whenever this type of challenge arose. Developmental mentorship is a continuous process that requires the mentor to always be aware of the mentees' social construct.

6.3.2. The role of a developmental mentor in addressing problem 2
Inability to increase income to improve livelihoods

To help the waste pickers address this problem, I introduced to them the basic operational transformational process tool used in operations management. This process consists of three stages:

1. Inputs – Resources available
2. Transformation stage – converting input to output
3. Output – income received for goods sold

I asked the waste pickers to list the resources at their disposal. They identified the various recyclable items such as plastic, paper, cardboard, glass, etc. Once all the items were listed, we discussed the pricing of each per kilogram, which enabled us to determine which items would earn the most money per kilogram. Aluminium is one commodity that will provide a high income per kilogram. However, aluminium is not as readily available as paper, which earns the least income per kilogram. After identifying all the resources, including the number of waste pickers and the equipment, I focused on the transformational process. I explained to the supervisors that in order to optimise production, more people were required to sort the recyclable items and fewer people were required to bale the items. I explained that glass can be discarded instantly in the collection bin and the buyer should be contacted once the bin is full. It is not possible to estimate when the bin will be full and therefore they should not focus on the money for the bin until it is full. The more recyclable items they collect, the more income they will receive, which serves as an output objective. They need to work smart, and therefore I suggested that they allocate one or more items to each supervisor and assign a worker with that supervisor to collect items and to bale them. A benchmark in kilograms for each item should be set per week to encourage continuous productivity. If one supervisor and her team had met their target, then she could assist the other team. It is easier to collect cardboard boxes than paper, and tins are more difficult to assemble than plastic. The glass collection bin can be filled as they all sort through the waste, as glass is a commodity that is not always available (similar to aluminium). All teams would be responsible for these items. The group agreed to the strategy and weeks later, they reported that their income had increased. In line with the mentoring process, the interactive stage was established where I distinguished and clearly defined each of the supervisor's roles. Knowledge was

shared based on my interaction with the supervisors. Waste co-operatives can achieve success by increasing the volume of items and correctly separating the items (Godfrey *et al.*, 2015). The BBCs were satisfied with the goods and the waste pickers managed to increase their income. The third stage of the transformational process was thus achieved. Allocating each supervisor items to sort and bale helped in the management of the organisation by streamlining operations. In terms of increase assets, the supervisors thought it would be beneficial if they could have their own van to transport the items that the local BBC no longer wanted to another BBC about 30 kilometres away. They were hoping that some organisation would sponsor them with a van (small delivery vehicle). My advice to them was that they should not be reliant on sponsorships or funding, as co-operatives are likely to fail when these handouts are taken away (Godfrey *et al.*, 2017). Due to the lack of funds, I proposed that they seek out an individual with a van to transport the recyclable items to the new BBC. This would provide a short–term solution until the business was able to purchase a van or qualify for a loan to purchase one. Most co-operatives report that transport is one of the biggest challenges when it comes to moving goods to the BBCs (Godfrey *et al.*, 2015). With their own vehicle, they would save money by note having to pay BBCs to collect their goods.

A year ago, the Wellington waste entrepreneurs were earning an income of between R300 and R600 per week. At the time of writing this chapter, I was informed that during the month of September 2021, the lowest amount earned by an individual was R700 per week, with some individuals earning as much as R1200 per week. The variation in the weekly income is dependent on the number of recyclable items sold and the amount of time spent at work. The supervisor further stated that it is possible for them to earn R6000 per month if they remain committed. This increase in income was achieved through my constant mentoring and monitoring of their operational procedures.

6.3.3. The role of a developmental mentor in addressing problem 3
Need to build confidence

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Confidence building is reliant on an individual's self-esteem. Self-esteem can be understood as how individuals positively evaluate themselves (Cast & Burke, 2002). To create positive reinforcement, I would remind the participants of their accomplishments in comparison to other waste pickers who were collecting recyclable items illegally.

Cast and Burke (2002) further state that self-esteem comprises two distinct dimensions, namely competency and worthiness. The competency factor includes how individuals rate themselves as capable and useful. The worthiness factor relates to how they rate themselves as individuals of value. To help build their confidence, I had to assist them in realising their usefulness and worthiness. Firstly, I asked them to provide reasons as to why the municipality had provided them with a workspace and other related equipment. I explained that it was not only to help them generate an income, but that they were also assisting the municipality in preventing waste from ending up at the landfill. The more recyclable waste they were able to sell to BBCs; the less waste would be dumped at the landfill. Holistically, their contribution was helping to sustain a better and healthier environment for the future. I reminded them that the people who they thought were looking down on them were ignorant of their value to the environment and that if households could be made more aware of the honest living they were earning, they would definitely earn more respect in the community. For example, many of my friends asked me what my research entailed and, after discussing it with them, most of them changed their perception about the waste pickers, indicating that they would help by keeping separate bags containing recyclable items for the street waste pickers.

I suggested to the municipality that they needed to discuss changes in policies and plans with the waste pickers. Involving the waste pickers would enable them to build their self-esteem as now they would no longer play a one-sided role in the process. They would be instrumental in the planning process of the new MRF that the Drakenstein municipality plans to develop. This would narrow the chasm between our worlds, and their participation could create a bridge for them to realise that the way in which we construct our world is dependent on the individual's subjectivity.

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The more waste pickers are complimented and involved in the various processes, the more their confidence will grow to interact with others outside their social world. I would ask them if they were workers with no future or if they aspired to do better. These aspirations must be the driving force to help them achieve their goals. As a mentor, understanding their capabilities and limitations is important to their development.

One waste picker was not able to stand for long periods of time so he would sit and sort through the waste. He had the confidence that despite his disability, he would become part of a co-operative of waste pickers due to his effective sorting abilities.

6.3.4. The role of a developmental mentor in addressing problem 4

Limited entrepreneurial capabilities and other related skills

The Paarl supervisors who were members of the co-operative were novices when it came to running a business and therefore needed to be flexible and accepting of new business strategies and ideas that could improve their ability to manage a business. Mentoring has the ability to empower people through knowledge disseminated by the mentor and can provide much benefit to developing leaders (Swanepoel, 2012). During a skills development exercise, the waste pickers acknowledged that they were eager to learn business skills, which included financial literacy training and management training. None of the waste pickers had ever been employed in the formal sector and they lacked co-operative knowledge. Co-operatives possess all the fundamentals favourable to social innovation. They have a linear management structure; inspire participation, social learning and networking, and promote self-coordination (Novkovic, 2008). Every technique relating to production demands that individuals modify their conduct to acquire particular skills (Burkitt, 2002).

While I was visiting the Paarl group, the supervisors requested information on how they could enhance funding opportunities, as well as the criteria for acquiring a loan from a bank. I informed them that a business plan is important when attempting to secure a loan and that a business plan outlines each of the activities that are relevant

to the business. Banks, investors and stakeholders are likely to take an organisation more seriously if it presents a business plan (Evers, Cunningham & Hoholm, 2014). A business plan is an effective method of implementing a manager's or entrepreneur's new ideas and concepts (Ciumara, 2010). I explained to them that a business plan includes aspects of marketing, finance and operations, which should be aligned to the vision and mission statements of the organisation. The mentoring sessions with the supervisors granted me the opportunity to explain the importance of their vision as a co-operative and that their vision should be communicated with the rest of the waste pickers. The supervisors liaised with the waste pickers about work allocations but failed to share the objectives of the co-operative and alienated them from the management of the business. During an in-depth discussion with a supervisor, she informed me that the waste pickers wanted to know everything, but that the supervisors were unwilling to share all this information with the waste pickers. After I explained the importance of a business plan, but also refused to draw up a business plan on their behalf, the supervisors agreed that they would approach someone to help them draw up a business plan.

My follow-up visit was not well received by some of the supervisors as they perceived my presence to be non-beneficial to them. It is important for mentors to exercise patience with their mentees. As such, I explained the purpose of my research and reiterated that as a participatory action researcher, I could not do their tasks for them, but could facilitate processes with them. I provided a great deal of evidence of how I had helped them as a group and individually to identify skills that were lacking. Mentors should be aware that each entrepreneur requires different competencies and skills. Mentors should be supportive to the needs of the entrepreneur (Memon *et al.*, 2015).

I informed them that even if they had a business plan in place, they needed to consider how to implement the objectives of the business plan. A business model detects how strategies can be implemented to deliver value to customers, how to handle the finances for the sustainability of the organisation, as well as the management procedures that the organisation can incorporate (Trimi & Berbegal-Mirabent, 2012). Business models take a holistic view of the organisation's business and become part

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of an organisation's intellectual property and thus need to be protected (Bonakdar & Frankenberger, 2017). On the other hand, a business plan is a suggestive tool used to thoroughly document every aspect of the business, whereas a business model is more valuable in the introductory stage of a business (Evers *et al.*, 2014). I applied a simple business model concept to help the group focus on the objectives of their business. Bonakdar and Frankenberger (2017) report that the three most common components mentioned in a business model are as follows:

1) Value proposition - recognise the value that can be ordered to the customer or customer market

I informed the Paarl group that if they focused on ensuring that they baled one plastic category, they would be able to negotiate a better price as the items would be clean and correctly sorted.

2) Internal processes - involvement of internal resources and external partners, as well as underlying systems and functions

If the Paarl group were to be more transparent in respect of activities and visitors to the premises, this would foster a stronger relationship with the municipality. The municipality indicated that the Paarl group did not acknowledge the municipality for its contributions in terms of space, equipment and other resources. The Paarl group should also try to improve their current operational processes and be more flexible when it came to the needs of the rest of the waste pickers working in the group.

3) Revenue model - determine revenue and profit through the strategic implementation of the previous two components

Planning ahead is important and therefore the Paarl group should devise strategies to increase their income. For example, the Wellington group decided to accumulate recyclable items that they would only sell to the BBC near the end of December, which

would allow them to have money during the December holiday period when the MRF was closed.

These were some of the suggestions I offered as a developmental mentor in addressing the problems of the waste pickers.

Concluding Remarks on Problems

When mentoring the Wellington group, I opted to first have a discussion with the supervisor, since the supervisor plays a pivotal role in the lives of the waste pickers. The supervisor was receptive to the developmental mentoring process despite her experience as a community worker. She was willing to learn new methods that could improve her leadership and management skills. Hattingh *et al.* (2005) posit that mentoring individuals who are eager to manage their own learning creates an advantage in strengthening the effectiveness of mentoring. When the supervisor felt depressed by the slow progress of the waste entrepreneurs, I would encourage her to concentrate on the valuable contribution she was making to their development. I encouraged her to use that energy to continue aiding and guiding them while I too continued to mentor her and them. In mentoring the Wellington waste entrepreneurs, I had to understand the power dynamics involved. Välikangas and Seeck (2011) state that it is not possible to study human beings as subjects without studying power and power relations. The supervisor had the power given to her by the municipality to manage the group, to ensure they did not violate the terms and conditions of working at the allocated space. Over the years, she had developed herself as their saviour from whom they would seek guidance. My presence as a mentor needed to complement her methods to be able to gain the trust of the supervisor and the waste entrepreneurs. I had no intention of transcending the power relationship that she had established with the waste entrepreneurs. From mentoring the waste entrepreneurs individually, it emerged that many of their capabilities needed to be nurtured in order for them to function as a unit. For example, one person had the ability to lift heavy bags whereas others were not strong enough. In most instances, I noticed that knowledge was being disseminated through the experience of the supervisor to the waste entrepreneurs. Nonaka and Toyama (2003) describe knowledge shared

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through experience as tacit knowledge. In this context, knowledge was shared in a similar social environment such as how the waste entrepreneurs shared their knowledge with new waste entrepreneurs. Most waste pickers would share knowledge tacitly. Therefore, it was befitting for me as a mentor to disseminate knowledge in a tacit manner to encourage learning. I would convert explicit knowledge into tacit knowledge; that is, where knowledge is applied practically and becomes the basis for new routines (Nonaka & Toyama, 2003). This I did by providing examples of how organisations incorporate different skills sets of employees to improve productivity. I told the participants that in most instances a truck driver has the skill to drive and control a truck with a huge cargo load but lacks the skill to conduct the financial forensics of the organisation. I then asked them if they were able to do the municipal manager's work. They laughed and answered in the negative. However, I then asked them what was stopping them from assembling recyclable items, bagging them and arranging for the BBCs to collect them, and then after payment, using some of the income to buy necessary household items and placing the rest of the money into a bank account. Most of them said that they were capable of achieving this. I concluded by emphasising that if they worked collectively, deducted their wages/salaries and placed the remainder of the money received into a business bank account, then in essence they would have a business with a debit bank balance. As waste entrepreneurs they had to recognise their abilities and the capabilities of each individual to form collective capabilities that could be applied to the operational processes of the organisation (Torres & Jasso, 2017).

In the next section I explore the achieved functioning of the waste pickers. Gasper 2002) mentions that functioning may imply i) an achieved state (not having the ability to save), ii) a conscious action to achieve the state (attending a financial literacy programme), iii) applying cognitive processes or activities (converting the financial skills to start saving), and iv) activities as a result of the achieved state (improved income). The achieved state denotes a state of functioning.

6.4. Vectors of Achieved Functioning

Achieved functioning is when an individual decides through choice to pursue a particular recourse. Sen uses the example of fasting. An individual who decides to fast despite having something to eat has made the choice to abstain from food or drink. This is regarded as an achieved functioning (Robeyns & Byskov, 2020).

Figure 64: Conceptual model of capability approach to developing capabilities
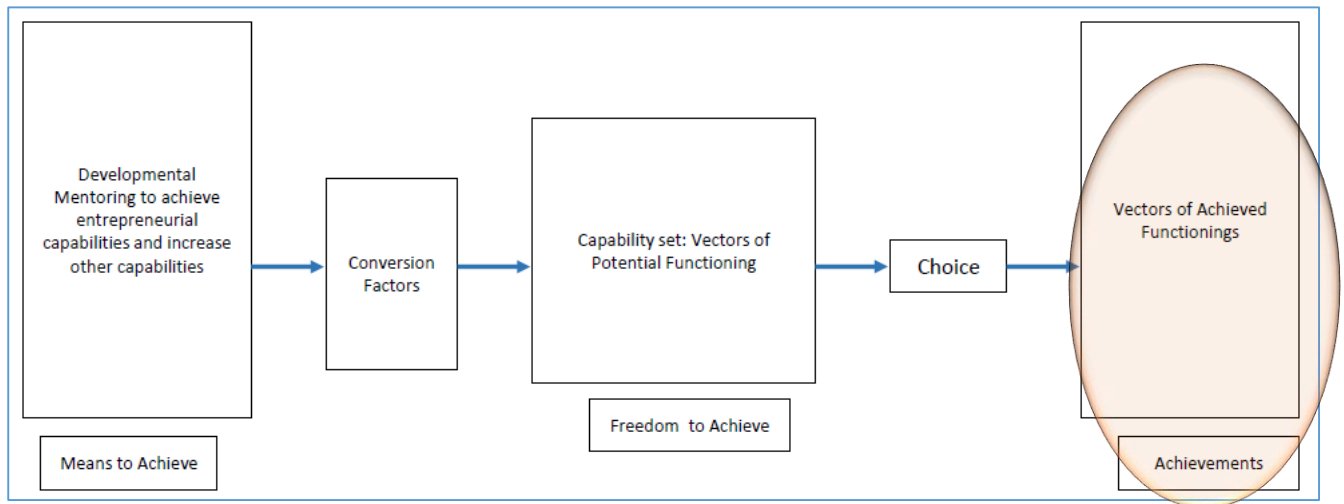
Source: Adapted from Robeyns (2005)

Achieved functioning can be undertaken by the freedom to decide which achievement is more relevant irrespective of how it impacts on an individual's wellbeing (help in improving the environment). Sen disputes that such freedom has both intrinsic and instrumental value (Alkire, 2005).

This section of the chapter focuses on the entrepreneurial vectors of achieved functioning by demonstrating the achieved functioning derived from the discussion of this chapter based on vectors of potential functioning. Based on the mentoring to help the waste pickers increase their capability set (freedom to achieve), the following entrepreneurial capabilities of both groups of waste pickers were discussed and demonstrated as a means to guide them. By identifying their capabilities, individuals have the freedom to choose the options available to improve functioning (Robeyns, 2005). Based on the solutions provided in this chapter, the following potential

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entrepreneurial functioning set can be achieved with the municipality as one of the key players to ensure its success.

The new set of achieved functioning is as follows:

1. Improve relationships through communication between supervisors and waste pickers to encourage working as a unit.

   This would prevent a significant decrease in productivity, which would negatively affect the profitability of the business. As mentioned, the supervisors should treat everyone equally by sharing the vision, mission and objectives of the business, as this is key to successful team dynamics. Particularly in the Paarl case, they should encourage other racial groups to work with them and not seek a particular racial group to work with. They should focus on the strengths of individuals to help improve operations, as well as other factors that will support the business and help it to be sustainable. The relationship with the municipality improved when delegates from the Wellington group were elected to liaise with representatives of the municipality. The Paarl supervisors need to forge better relationships with the municipality by communicating their challenges and activities.

2. Strategies to improve profitability by implementing an operational plan that improves business productivity

   Waste pickers require constant mentoring and basic training in running a business. This can be achieved by allowing relevant parties who understand the waste pickers to provide basic business training as well as training that will improve their overall wellbeing.

3. Identify skills shortages that are required to enhance the wellbeing of the waste pickers and the business of the organisation.

   During my research with the waste pickers, a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis exercise was carried out. This helped in identifying the skills that each waste picker lacked and would like to develop. Undertaking a skills audit will help identify the different skills required by the waste pickers. Not all of them

are in immediate need of business skills. Some would need skills in how to open a bank account, or how to obtain an identity document. The aim should be to make the waste pickers less reliant on others but to aid them in pursuing their achieved functioning.

4. Assist in building confidence

To help the waste pickers build confidence, the important factor is for them to take care of their health and grooming before meeting with important stakeholders who will help improve their social standing and develop stronger social networks. With improved self-esteem, the waste pickers will be able to communicate better with one another, as well as with the municipality and other relevant parties. As a developmental mentor I would help them improve their self-actualisation by illustrating the progress made and the milestones achieved. With the aid of the municipality in including waste pickers in the planning process, this will help them build confidence to venture into a business of their own. The essence of the Capability Approach is to take a holistic approach where capabilities are of value to the individual. The choices that are made can affect both the basic needs and the basic moral duties (Robeyns, 2016).

5. Improved entrepreneurial capabilities

During my discussions, particularly with the Paarl group, much awareness was created of the importance of a business plan. These discussions helped the supervisors to acknowledge the skills and other capabilities required to help them develop an improved business acumen. Adherence to a business plan and business model will keep the members focused on achieving the objectives of the business.

I am not suggesting that such recommended functioning will help all waste pickers, but with the group that I mentored for more than two years, I developed some insights to help these waste pickers have an improved wellbeing and quality of life. A healthier lifestyle enabled them to earn more money and establish a strong social network that assisted their livelihoods. The waste entrepreneurs and the members of the co-operative should implement the knowledge acquired during the mentoring process to ensure sustainability from an individual perspective as well as from a business

perspective. Continuous evaluation through the mentoring of each person will enable them to improve on their own and eventually lead to less vigorous mentoring.

It should be noted that the functioning I address is not directly related to human capabilities. For example, being healthy is a capability, but staying healthy requires certain skills (Crocker, 2003). In this section, the focus was on skills and not really on capabilities. The Capability Approach is lacking in terms of addressing how capabilities are created, be they internal or external. It is a fundamentally static approach that does not question the current skills and resources of individuals or the environmental and contextual features when undertaking any evaluative or analytical exercises (Heckman & Corbin, 2016). To emphasise their argument, Heckman and Corbin (2016) posit that conscientious individuals may be less happy than other individuals, but they may make better surgeons or watchmakers. Therefore, the focus of this chapter is more concentrated on skills and other developments as opposed to the capabilities of the waste pickers. Effectual entrepreneurs seek to find new opportunities through levaraging their constraints and seek new information. As such, effectual entrepreneurs concentrate on what they have to improve their opportunities through negotiating with other stakeholders (Lennips, 2016).

I argue that developmental mentorship as a capability input (see figure below) assisted the waste pickers to convert their capabilities into achieved functioning. The data provides evidence that developmental mentorship aids the conversion factors, and as soon as the waste pickers realised that the opportunity of functioning had been achieved (as depicted in the figure below), they immediately responded to the opportunity presented. For example, after much discussion the waste pickers were able to move away from working individually to working as a group, following the operational processes as discussed with them. The result was that they were able to double their weekly income and were able to save money. In most instances the waste pickers chose to respond positively to the mentoring to achieve their desired outcome (achieved functioning).

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Figure 70: Newly proposed presentation from capabilities to achieved functioning
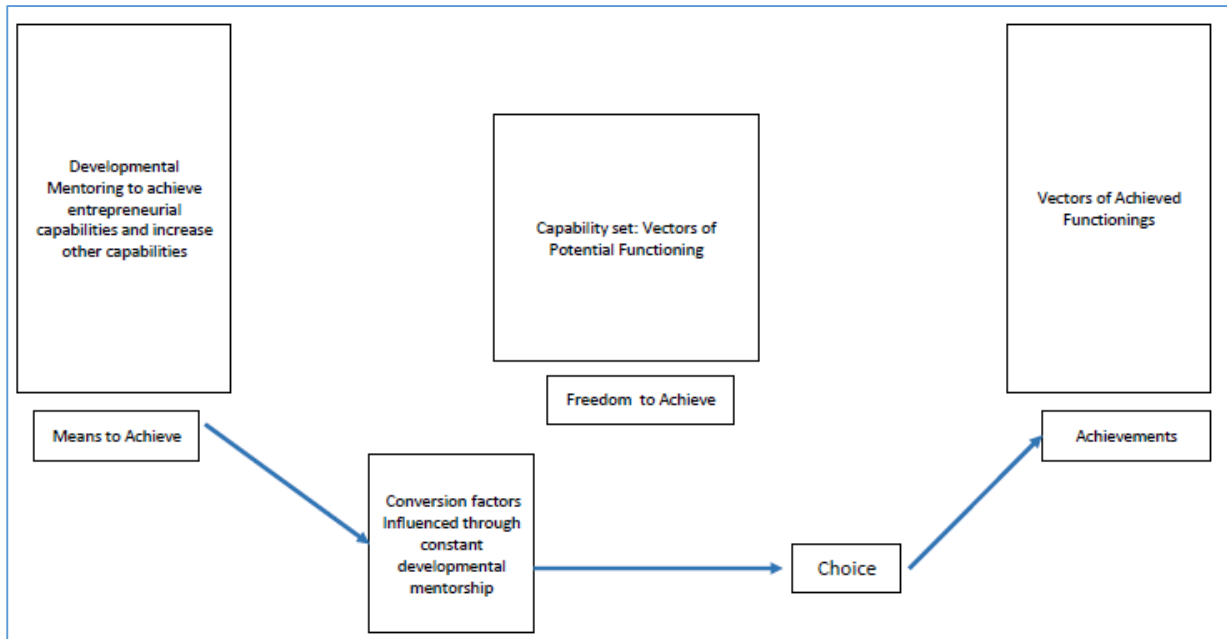
Source: Adapted from Robeyns (2005)

Although the capability set refers to the bundle of all the functioning sets from which an individual has the freedom to choose (Hu, 2014), I argue that constant developmental mentoring can conflate all other functioning sets that enable individuals to choose the most desirable functioning for their wellbeing.

Many participants indicated that my mentoring allowed them to achieve many of their objectives. Those supervisors who were initially reluctant to implement the guidance that surfaced during the mentorship ultimately admitted that they would rather continue to be guided under my mentorship. Fullick-Jagiela *et al.* (2015) mention that mentorship is where an individual with the relevant experience and knowledge provides developmental support, as well as social and emotional support, to other individuals without such experience and knowledge.

6.5. Concluding Remarks

The Drakenstein municipality played a pivotal role in ensuring improved functioning by offering the waste pickers a place to collect recyclable items. The municipality would dump the waste at the MRF and re-collect the non-recyclable items and discard them on the landfill. Apart from access to water, sanitation and electricity, the municipality

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also made equipment and manpower available to offer the waste pickers a better standard of living. This enabled the waste pickers to earn an income without being fraught by danger as in the past when they had worked as waste pickers on the landfills. Although the supervisors were responsible for assisting the waste pickers, the supervisors themselves were focused on generating an income. The Wellington supervisor ensured that the rules of the municipality were implemented. The data revealed that despite the municipality's efforts in assisting waste pickers, more assistance in terms of development is required.

6.5.1. My reflections on the role of developmental mentorship in stimulating entrepreneurial values

A report by the International Labor Organization (ILO, 2017) mentions that when waste pickers join or form co-operatives they are in fact strengthening their voice as a collective unit in negotiating with public authorities and other power agents in the waste management sector. However, for a co-operative to be operational, the waste pickers need to develop certain skills and address certain operational challenges (Godfrey *et al.,* 2015). The authors further posit that despite the multiple types of training offered by organisations, long-term mentorship with waste pickers needs to be developed. I argue that not just any type of mentoring will suffice – waste pickers require a more developmental form of mentorship for them to be able to cultivate their capabilities into achieved functioning.

Based on my findings, the Paarl group did establish a business, but because of their lack of knowledge of the various forms of business entities, they registered their business as a private company as opposed to a co-operative. Waste pickers must be taught basic business management that deals with business entities, business environments, operations and financial management. Despite having the autonomy to devise business strategies that will enhance their income, they are unable to enforce strategies when the business is faced with vulnerability circumstances. Their persistence in continuing basic operational procedures that produce no growth is an indication that they lack the entrepreneurial capabilities to sustain their business. Continuous mentoring is necessary in developing these capabilities.

The Wellington group requires life skills before any business skills can be introduced. These waste pickers need to be guided in developing basic skills such as taking care of their health, being conscious of the environment in which they work, and working as a team. I support Godfrey *et al.* (2015) and Medina (2005) who encourage waste picker co-operatives, but I believe that the process should be guided by mentors who have an interest in developing waste pickers according to their capabilities. The training and skills offered must be congruent to the current capabilities of the waste pickers. These capabilities need to be developed and allow the waste pickers to grow into the co-operative and not as previously proposed, where co-operatives are developed and waste pickers are placed in certain roles. Skills are a major contributor to wellbeing and prosperity in society. Skills enable action and are ingredients of capabilities, which enhance functioning and, coupled with life experience, help individuals predict their wellbeing, which includes physical health, social engagement and earnings (Heckman & Corbin, 2016).

The municipality put supervisors in place to help waste pickers develop themselves. The supervisors were providing much support to the waste pickers; however, it should be noted that they themselves had other objectives. The Wellington supervisor was helping the waste pickers by making them aware of the benefits of working hard. They were being well compensated but so too was the supervisor. He perceived them as workers and ws organising them to be productive. The more recyclables they collected, the more money they would make, resulting in more money in his pocket. This amounted to a symbiotic relationship. The waste pickers were seeing an increase in their income just as the superviosr's income was increasing. Since being placed under his supervision, very little skills development had taken place among the waste pickers. I think that it might be a good idea to train supervisors to be mentors while still providing them with mentorship.

Mentoring is compulsory to help the waste pickers advance from workers to business owners. The presence of a mentor, who has no other interest but to help improve the entrepreneurial capabilities is of utmost importance. The supervisors should also

ascribe to a mentoring process to help identify growth potential for themselves and their business. However, the waste pickers will not be able to sustain an income without the tutelage of the supervisor, who serves as a "pastor" with the waste pickers as his "congregation". I observed a pastoral power relationship among the Wellington group. Pastoral power permits individuals to examine themselves through the guidance of a person they respect and revere (Seeck & Kantola, 2009). The presence of the supervisor was beneficial to the waste pickers as he was able to ensure their income increased as they worked efficiently. The Paarl supervisors should be encouraged to continue participating in the mentoring process as it would benefit them and their business. This will improve the group dynamics that are lacking. Both groups must continue working together to produce higher incomes.

The capability approach is centered around individualism, as the conversion factors play an important part in an individual's ability to convert capabilities into functioning (Ikebuaku & Dinbabo, 2018). Robeyns (2017) postulates that the Capability Approach is a conceptual framework used to evaluate and access individual wellbeing. However, I argue that although waste pickers must be respected as individuals, they are social beings reliant on other agents such as the municipality, mentors and supervisors to assist in achieving better functioning with their current capabilities. When the waste pickers worked collectively, they were able to improve their social relationships and increase their income, which aided in improved wellbeing. Ibrahim (2006) posits that collective wellbeing can be explained as a network of social conditions that enable individuals and groups to thrive and live a full life.

In the final chapter, I provide recommendations for enhancing the wellbeing of the waste pickers and improving their entrepreneurial capabilities through mobile business incubation. Such mobile incubation should focus on the needs of the waste pickers and should not only provide a once-off training session but also incorporate continuous developmental mentorship.

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Chapter 7: Conclusion: Summary of Results, Reflection on the Research and Recommendations

7.1. Introduction

Waste pickers have drawn much attention from municipalities, environmentalists and other stakeholders due to their contributions in reducing the amount of waste ending up at landfills and/or incinerators. Many authors have discussed integrating waste pickers either as part of a formalised waste management system or through the establishment of a business. However, waste pickers are reluctant to engage in activities as envisaged by government, industry and other stakeholders. This has resulted in failed projects and other adversities that have challenged the project dynamics of integrating waste pickers (Samson, 2020).

To help me understand and improve the current conditions of the waste pickers, I employed a transformative paradigm using Participatory Action Research. The transformative paradigm can be applied with qualitative research in order to identify social injustice and inequality and address these vices through research (Mertens, 2007). Participatory Action Research allowed me to collect qualitative data on the participants and to use that information to benefit the participants (Pain & Whitman, 2011). Thus, Participatory Action Research with a transformative paradigm aided me in addressing the research objectives.

This study employed the Sustainable Livelihood Framework and the Capability Approach as the conceptual framework. The Sustainable Livelihood Framework enabled me to explore and recognise the complexities associated with the livelihoods of the waste pickers. I was able to describe the vulnerabilities affecting waste pickers, as well as the impact of government policies on the livelihoods of waste pickers. The use of the Capability Approach permitted me to understand the livelihood assets which formed part of the capabilities of the waste pickers. Through developmental mentorship I was able to improve their current capabilities and expose the waste pickers to new capabilities that enhanced their current living conditions and entrepreneurial capabilities.

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This final chapter presents the summary of the thesis. This section briefly highlights the research objectives by providing a synopsis of each objective. Thereafter I unveil my reflections on this study, particularly focusing on the mentoring process. Recommendations from the research provide relevant information based on the data that should be considered and a benchmark in terms of pertinent training and skills development for the waste pickers. Finally, I explore the research limitations and provide final comments.

7.2. Summary of the Thesis

The summary of the thesis is guided by establishing if the research objectives were addressed.

7.2.1. Research objectives

The primary objective of the research is to enhance the livelihoods and entrepreneurial capabilities of the waste pickers through developmental mentoring that could assist in establishing an informal training programme.

To achieve this objective, the following secondary objectives were constructed:

- Develop a knowledge base of waste pickers and identify their current skills and capabilities to understand their current living conditions.
- Understand the current working conditions of the waste pickers through identifying the internal and external elements that affect waste pickers' livelihoods.
- Explore the social relationships of the waste pickers by observing their interaction with other waste pickers, family and different stakeholders.
- Assess how structures and processes that the waste pickers need to adhere to, as prescribed by government and other concerned parties, affect their livelihoods.
- Explore, through developmental mentorship, the waste pickers' entrepreneurial capabilities and how to convert them into achieved functioning.

The primary research objective will be presented under the recommendation section as it comprises a two-fold portion. Hence, I decided to first discuss the secondary research objectives as a foundation to address the primary objective. Based on the data, the primary research objective serves as a recommendation to the research.

7.2.1.1. Research Objective 1:

Develop a knowledge base of the waste pickers and identify their current skills and capabilities to understand their current living conditions.

Chapter two provided insight from a global perspective into the lives of the waste pickers. It is estimated that more than 2% of the population globally is involved in either formal or informal waste collection (Dias & Samson, 2016) and in South Africa it is estimated that about 0.6% of the urban population is involved in in informal waste picking (Godfrey *et al.*, 2017). My research participants, the Wellington and Paarl waste pickers, are assisting in sustaining the environment through their recycling efforts. However, these individuals are frowned upon as they are regarded as the bottom of the social class from a capitalistic ideology. Ralfe (2007) asserts that waste pickers are constantly scolded by homeowners when they are found scavenging through the bins. This has led to them being stigmatised by the public. For the street waste picker, scratching through dustbins is a source of income, but there are many who do not clean up after they are done searching for valuable waste to recycle. Much has been mentioned about integrating waste pickers into the formal sector but I emphasise that waste pickers require developmental mentorship to develop the relevant entrepreneurial capabilities. It should be noted that conducting an exact demographic analysis is not possible as waste pickers are not always stationed at certain locations and are difficult to reach (Mvuyane, 2018). Nonetheless, the sample of waste pickers for this study was a group from the Drakenstein municipality. The literature and the results of the study affirm that the waste pickers lacked a high level of formal education (Schenck *et al.*, 2018). The majority of the Wellington waste pickers never completed high school as a result of not wanting to be in a schooling environment or having to work to help support their family. The Paarl group, on the

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other hand, had a higher level of education and as such were able to more easily comprehend certain business terms.

Chapter five provides evidence of the resilience of the waste pickers, as their working environment had been altered yet they persevered in their exposure to vulnerabilities. The Paarl group was less rigid when it came to vulnerability changes as more waste pickers left the MRF due to certain shocks and trends that occurred. These individuals consisted of all black females from the Eastern Cape whereas the Wellington group were predominantly coloureds from the Western Cape. The demographic breakdown had not changed much since the study by Schenck *et al.* (2018) amongst the Wellington cohort. However, many changes had occurred with regard to their environmental conditions. The waste pickers had contributed much to sustaining the environment and to employment by introducing others to waste picking. Another strong capability was that they were able to separate the various types of plastics, about which many urban dwellers are ignorant.

7.2.1.2. Research Objective 2:

Understand the current working conditions of the waste pickers through identifying the internal and external elements that affects waste pickers' livelihoods.

The participating waste pickers were previously collecting recyclable waste illegally on the landfill where they were exposed to all sorts of dangers ranging from theft to health issues. No sanitation or ablution facilities were available, which contributed to ill health. They would also eat food they found on the landfill.

In 2018, the Drakenstein municipal manager offered the waste pickers an allocated space to assemble their valorised waste. Fewer than 40 waste pickers out of more than 100 accepted the offer. In terms of the Paarl group, the municipality offered 20 waste pickers the opportunity to utilise the MRF at the premises of the Paarl office. The new working environment served as a safe space, permitting waste pickers to work in a place without the worry of being robbed. Importantly, they had access to sanitation, ablution facilities and shelter as a means of protection.

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The waste pickers experienced some problems selling all their recyclable items as the buy-back centres were not always willing to accept all items due to the market demand. The Chinese "Green Sword" policy had a global impact on the price of recyclable items. The policy placed a restriction on tainted recyclable items, implying that South Africa needed to find another buyer. The domino effect was that buy-back centres focused only on demanded items, leading to a reduced income for waste pickers, which impacted on their livelihoods. Without proper developmental mentorship, waste pickers were losing hope in the system, thinking that they would be better off at the landfills. My intervention as a mentor aided them to exercise self-control and to tolerate the vulnerable shocks of the environment. The conditions of the Wellington waste pickers deteriorated after they returned to work after the COVID-19 lockdown. They were moved without proper consultation to a place where they had to construct shelter to protect them from the weather conditions. My intervention assisted them to communicate with the municipality, which resulted in the municipality providing a better alternative to the very demotivated waste entrepreneurs. This provided evidence that communication between the municipality and the waste pickers needs to improve so that the transition can be smooth for the integration of the waste pickers into the formal waste sector. However, a great deal of developmental mentorship is required before such integration can take place. One area that requires intervention is the social dynamics between waste pickers, supervisors, buy-back centres and the municipality. Waste pickers are still exploited by those in power and they need to have an equal voice.

The Drakenstein municipality has done something unique by allowing all of its illegal landfill waste pickers an opportunity to earn an income in a more dignified manner. Various institutions and importantly the waste pickers of Wellington and Paarl have complimented the municipality for its efforts. The Drakenstein municipality is testimony to the fact that waste pickers can be successfully integrated into the formal sector, although much communication and engagement is needed, along with some nurturing, for the relationship to blossom further.

7.2.1.3. Research Objective 3:

Explore the social relationships of the waste pickers by observing their interaction with other waste pickers, family and different stakeholders.

The Paarl waste pickers were collecting recyclable items collectively as the supervisors had formed a co-operative. The money was being equally divided among all workers. The supervisors were members of a waste pickers' organisation and as such had access to a network of organisations affiliated to the waste sector. They had established their own relationships with buy-back centres in the area. However, the supervisors were unable to retain the workers as there was a lack of synergy among the group, resulting in a low income. Mentoring the group enabled them to improve their network of buy-back centres and ways to retain staff. As a mentor I was able to help them improve their income and identify the capabilities they required to improve communication with other stakeholders.

The Wellington group was conducting their recycling activities individually. The fact that they had all worked on the landfill was the common association that connected them. The supervisor was the agent to whom they sold their recyclable items. She had been appointed by the municipality as a supervisor to ensure the group's adherence to the municipal rules. Some waste pickers opposed her appointment as they regarded her as an outsider and not one of them. This attitude manifested itself as time passed, but through my intervention as a developmental mentor, I was able to create a more viable relationship where the power of the group was not vested in one person. Two additional members were included as part of the group with whom the municipality would communicate. The acknowledgement by other stakeholders for the work the waste pickers were doing created a new social network, but they lacked the capabilities to exploit the opportunity. The waste pickers improved in terms of working together and established a strong social link that, with the help of mentoring, enabled them to negotiate better prices with their supervisor (the middleman). The duality role of the supervisor was that he provided them with guidance and organised them, yet he exploited them for his personal gain. The waste pickers had grown dependent on him but with my assistance as a developmental mentor they were able to connect with

other agents that could help improve their current livelihoods. Some of them would regularly frequent clinics to improve their health while others adopted better hygiene practices when engaging with municipal managers in hopes of improving their social relationships.

7.2.1.4. Research Objective 4:

Assess how structures and processes that waste pickers need to adhere to, as prescribed by government and other concerned parties, affect their livelihoods.

The municipality stipulated basic rules for the waste pickers to comply with if they wanted to continue working at the allocated space. Some of these rules created problems for both groups as they wanted to be involved in the decision-making processes. Developmental mentoring empowered the waste pickers to voice their willingness to participate in the policymaking process. They developed the capability to partake in decision-making processes with the municipality. Individual capabilities comprise a set of functioning that influences individuals' lives, such as providing their opinions on matters that pertain to their sustainability (Alkire, 2015). The Wellington group expressed their concern about frequently being moved from one spot to the next and were optimistic about being part of the new MRF that the municipality was planning to construct. The Paarl group raised concerns that the structure provided by the municipality had become a means to stifle their growth opportunities. They were not at liberty to employ who they wanted and had been told that they could not take part in any conferences without the municipality being aware thereof. This had an impact on their ability to increase their income, which resulted in some waste pickers leaving and others feeling demoralised. Another issue of concern was that all visitors had to report to the office and state in detail the reason for their visit. The Paarl supervisors were disgruntled with this rule as they felt it imposed on their basic right to equality. I am currently mentoring the Paarl group with this dilemma and advised them to be more transparent with the municipal manager. There needs to be a congruent relationship between the municipality and the waste pickers for further development to occur. If the municipality's plan to construct an improved material recovery facility (MRF) comes to fruition, the waste pickers would require more

capabilities such as the ability to operate equipment and the ability to manage operations. Mentorship plays a key role in developing entrepreneurial capabilities. However, the municipal delegates are more skilled and educated than the waste pickers and should help the waste pickers understand the social world in which the municipality functions.

7.2.1.5. Research Objective 5:

Exploring, through developmental mentorship, the waste pickers' entrepreneurial capabilities and how to convert these into achieved functioning.

Functioning, the ability to do or achieve or to become, is dependent on the available capabilities (Ikebuaku & Dinbabo, 2018). Functioning or acting on those capabilities autonomously is dependent on how the waste pickers pursue to their goal to improve the quality of their lives (Alkire, 2005). Waste pickers have the capability input from the municipality in terms of the space and resources, but the most important capability input that the study revealed is developmental mentorship. This enables the waste pickers to make clear decisions by examining their options and exercising the freedom to choice. Waste pickers are exposed to vulnerable environmental conditions and as effectual entrepreneurs, developmental mentoring helped them to pursuit the most viable option. Matalamäki (2018) asserts that the effectuation logic thrives when the environment is volatile as it allows for swift responses to environmental changes.

The conversion factors play a crucial role in applying the developing capabilities to ultimately achieve improved functioning (Robeyns, 2005). Mentorship serves as a mechanism in the conversion factors that guides the waste pickers in attaining potential functioning. They then have the choice (free will) to exploit this potential functioning to achieve the desired functioning (achieve the desired goals). When waste pickers utilise the capabilities in a functioning manner, this could improve their wellbeing. Any developmental effort can result in the expansion of the capabilities of each individual (Ikebuaku & Dinbabo, 2018). From a capabilities perspective, entrepreneurship can assist human functioning that contributes towards an increase in the set of human capabilities by acting as a resource (Gries & Naudé, 2010). Hence,

the need for constant developmental mentorship is paramount to waste pickers to assist in their entrepreneurial development.

7.3. Recommendations for policy changes

The recommendations of this study investigate the primary objective of the study, which is to enhance the livelihoods and entrepreneurial capabilities of waste pickers through developmental mentoring that could assist in establishing an informal training programme. In pondering the primary objective, I identified two quintessential concepts. The first concept places emphasis on enhancing the livelihoods of the waste pickers. By enhancing their livelihoods, I initiated a trust relationship with the waste pickers with the purpose of establishing a mentorship relationship. Through this trust relationship I was able to assist waste pickers to identify their entrepreneurial capabilities, which ultimately will help enhance and improve their livelihoods. The identification of some of the entrepreneurial capabilities could set a foundation for an informal training programme. Based on the research findings I propose the following recommendations:

7.3.1. Facilitating communication between the municipality and waste pickers

In terms of the Capability Approach, the Drakenstein municipality serves as a capability input to the waste pickers by offering space, equipment and other utilities to waste pickers to enable them to earn an income. However, they can provide more support as vectors of functioning by engaging with the waste pickers.

A more workable communication process needs to be established where there is constant interaction between the waste pickers' representatives and municipal delegates. The communication from municipal delegates requires a more thoughtful approach considering the type of individuals they are dealing with. The initiative of the municipality to assist the waste pickers indicates that they have some knowledge of the social world of the waste pickers. Waste pickers, on the other hand, need to learn about the social world of the municipality and other stakeholders. This can be accomplished through intense dialogue between municipal delegates and the waste pickers. The municipality should take a more empowering approach as it is more

powerful in terms of knowledge and understanding the world in which the waste pickers must operate. This will enable the waste pickers to understand the efforts of the municipality and the large amounts of money spent on maintaining the sites occupied by the waste pickers. Many waste pickers are unaware of how much manpower is invested to help them, so open communication will allow both parties to identify challenges and how best to address them.

The structures and facilities should be conducive to encouraging and enhancing a better and safer working environment, as these are capability inputs for the waste pickers. Planning of formal structures should include representation of waste pickers as this will improve their vectors of potential functioning. Waste pickers indicated that injuries, such as cuts and bruises, often occur whilst sorting through the waste. If the municipality could provide some health and safety training to the supervisors or managers and also equip the facility with a first aid kit, this would most definitely aid in their achieved functioning.

In essence, although the municipality provides capability inputs for the waste pickers, the municipality can be instrumental in the waste pickers deriving potential functioning as well as achieved functioning. To accomplish this, the municipality must engage with the waste pickers and not be a restrictive force when it comes to them achieving their desired outcomes. For example: The municipality should permit the supervisors to recruit more waste pickers in the event of individuals leaving the group. In other words, avoid negative implications that could derail the plans for integration, and rather encourage ways to help waste pickers realise the social world of the municipality. This should include basic human rights training, as well as training that will improve the waste pickers' health, which could help them improve their livelihoods.

7.3.2. Mobile business incubators as a mentoring tool for waste pickers

Business incubators are centres that help novice enterprises to grow during the first few years when businesses are most vulnerable (Aernoudt, 2004). Incubators offer a variety of resources such as skills, social networking, access to finance and management advice that will help a business to generate employment opportunities,

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create innovative ideas to diversify in other markets, and improve business sustainability (Scaramuzzi, 2002).

I strongly recommend mobile incubators as a means to assist waste pickers in converting their capability inputs into achieved functioning. The results have indicated that although the waste pickers have the capabilities to earn an income, many struggle to convert these capabilities into achieved functioning. For instance, one group was given a site with baling equipment and other resources, yet they failed to produce a liveable income. The mobile incubator should be equipped with mentors and trainers that are able to listen to the needs of the waste pickers, and with an audit of skills should be able to correctly mentor the waste pickers. Incubators need to meet the needs of the waste pickers and understand the social and cultural perspectives of this marginalised group prior to initiating any form of training. They need to understand the level of entry when disseminating knowledge. Scardamalia and Bereiter (2002) postulate that groups are able to acquire new skills and understanding. In other words, groups can learn at the group level. Incubators need to implement more tacit knowledge as opposed to explicit knowledge. Tacit knowledge is unarticulated and intertwined in processes, procedures, morals, principles, actions, emotions and physical experiences. It serves as the foundation to organisational knowledge creation and encourages a source of competitive advantages for organisations. Explicit knowledge is embedded in drawings and writings as a means to articulate in the form of memos, analyses, interview statements, etc. (Nonaka & Von Krogh, 2009). When the waste pickers were offered training by the municipality, it included elements relating to waste pickers. Mentors should focus on delivering training that will capture and retain the attention of the waste pickers. Another factor to consider is that the duration of the training should not exceed one hour per session, as observed when the group participated in group discussions. After an hour, the group became restless and started concocting excuses to leave the discussion. Those mentors who will be part of the mobile incubators need to follow the mentoring tier as discussed in this research if they have any desire to improve their entrepreneurial capabilities from the training offered.

More specifically, the training should first focus on improving the human capabilities, which will help improve the livelihood assets of the waste pickers. The livelihood assets includes health, social, physical, natural and financial issues (Manlosa *et al.*, 2019). The human capabilities are defined as part of social status, as well as other factors (Alkire, 2005). In other words, the mobile incubator should not only focus on improving entrepreneurial capabilities but should concentrate on helping individuals improve their wellbeing. From the data collected, I recommend that the mobile incubators should provide the following services required by the waste pickers:

- Information relevant to obtaining an identification document by having the necessary paperwork and requirements for them to complete with the assistance of the mentors.

- How to improve their health condition, helped by someone who is able to evaluate their current health status and correctly advise them.

- Provide them with psychological and emotional resources. There must be someone in place who can help them when they find themselves in hopeless circumstances. On many occasions I listened to the waste pickers and guided them, and they acknowledged my efforts, which then improved their wellbeing.

- Help waste pickers to obtain a South African Social Security Agency (SASSA) card that enables the poor and disabled amongst other vulnerable groups to receive a grant from the South African government – in general, to grant access to relevant and basic resources.

These opportunities would be advantageous to any business, including co-operatives. However, most incubators do not offer tailor-made training to accommodate the low skills levels of the waste pickers. The vast majority of the waste pickers had never engaged in any formal training and based on the results they would not likely succeed. The CSIR (2015) reports that the co-operatives of waste pickers need development by enrolling with business incubators to ameliorate their skills to be able to operate, manage and control their business and business activities. I support this, but stakeholders who want to assist waste pickers' co-operatives need to be cognisant of the type of individuals that require training. Importantly, training must be offered based on the skills that the waste pickers want to cultivate. Based on the results, the training

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must be at a rudimentary level and should mostly be practical in nature. The table below shows the skills training programmes that are most relevant and which need to be offered before any other training can be executed. This training should be offered on-site to accommodate the work schedule of the waste pickers. The training should not just be that which is easiest for the system, such as one training course for all waste pickers, since it is this very action that causes co-operatives to fail. Those who are really interested in helping the waste pickers achieve a better livelihood should focus primarily on the needs and requirements of the waste pickers.

Essentially, livelihood for the waste pickers is about accessing resources made available by the municipality and how they can optimise such opportunities. The mobile incubator will provide a path for them to utilise the opportunities and will guide them to overcome vulnerable conditions. In addition, with the help of mentors, relationship building will increase and social networks can be established between municipalities, communities and institutions. If a concerted effort is made, this will improve the human capabilities of the waste pickers and lead them to aspire to better achieved functioning.

Once the afore-mentioned recommendations have been put in place, I would then suggest, based on the data, the following skills training that the mobile incubator can offer (see table below). The list has some overlap of previously mentioned skills but it is structured to enhance entrepreneurial capabilities that are more applicable to the Paarl group. The different skills training is indicative of the fact that all waste pickers are not on the same level and that their social worlds differ.

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Table 32: Training skills development to be offered to waste pickers

	Skills to be offered	Description
1.	Financial literacy	How to save How to budget Opening a bank account Constructing an expense list Introduction to life and disability policies
2.	Procedure for starting a business	Discussion of business entities Completion of relevant documents needed to register a business Assistance with opening a business account
3.	Operational skills	Planning the operations of the business to run efficiently Utilising the available resources effectively Identifying what new resources are required to sustain the business Understanding output requirements
4.	Management skills	How to manage oneself Managing resources during vulnerable times Managing those in your employ
5.	Social networking	Introduction to other stakeholders. These stakeholders will provide insight as to how they will assist the business to grow and be sustainable
6.	Leadership skills	Helping to improve self-confidence Developing self-control
7.	Relationship building	Dealing with conflict from peers, dealing with external conflicts and importantly, improving relationships with all stakeholders

The above table lists suggestions derived from the data but primarily the training and mentoring should focus on a means to alter the social world of the waste pickers in a way that would enable them to fully utilise their capabilities. Once the training starts, it cannot be stopped and the rekindling phase of the mentoring process should continue. Supervisors can become developmental mentors to other waste pickers, thus reducing the costs for government and other institutions.

Funding for these mobile incubators and those employed as developmental mentors could be made available from government as part of the levies that businesses pay towards the recycling of their plastic items.

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7.4. Contribution to Research

The next section highlights some of the contributions of my research.

7.4.1. The impact of the Drakenstein municipality

The Drakenstein municipality has shown that integration of waste pickers into the formal sector is possible, and through this initiative it will be able to address various issues. The first issue is that the municipality has contributed to alleviating the unemployment problem. The total population of South Africa was estimated in mid-2019 to be 58.78 million (Stats SA, 2020b) and the unemployment rate increased to 34.4% during the second quarter of 2021 (Stats SA, 2021). Waste pickers are not formally employed, but the Drakenstein municipality has provided them with an alternative means to earn a legal income without facing the dangers of working illegally on landfills.

Other municipalities can learn from this and inculcate similar systems. This would also be beneficial to the environment as less waste will end up at landfills. Additionally, it will address the social problems experienced by the waste pickers. As municipalities will be key players in uplifting the waste pickers, more households, institutions and individuals will hold the waste pickers in higher esteem as they will be identified as groups helping to improve the sustainability of the environment.

7.4.2. Highlighting the important role of waste pickers

Waste pickers are perceived as the very poor, those who rummage through garbage bins in search of food, with a low level of education and no skills to function in the formal world (Ramos *et al.*, 2013).

This study illustrates the important role of the waste pickers and more importantly shows that they are human beings like us who are trying to survive in a capitalist society. Participatory Action Research enabled me to enter the social world of the waste pickers and to identify key elements that are required for successful integration.

The world we have constructed might differ from theirs but ultimately, they too seek to make an honest living to feed their families.

7.4.3. Waste pickers and the circular economy

In developing countries like South Africa, waste pickers form an integral role in the circular economy (Velis, 2018). The circular economy abrogates the notion of products have an end of life. It advocates the concept of reducing, reusing and recycling of manufactured products (Gall *et al.*, 2020). This research provides evidence that waste pickers are contributors to the circular economy through their ability to collect recyclable items and to sell these items that will be re-used. The circular economy has the potential drive economic growth (Buch *et al.*, 2021) and it is evident among the waste pickers' activities and their improved livelihood. As such, the circular economy could lead to increased economic development based on the waste pickers' role. The waste pickers contribution to recycling, particular plastic, plays an integral part in the search for sustainable development (Gall *et al.*, 2020). Through the collection of recyclable items, waste pickers not only improve their lives but also serve as environmental stewards by extenuating the effects of waste and assisting municipalities in curtailing waste ending up at landfills. Their contributions to the circular economy should not be unnoticed and their function is an epitome to informal entrepreneurs' willingness to sustain themselves.

7.4.4. Developmental mentorship as a means to help waste pickers

This study, although conducted among a particular group of waste pickers, proved that with the use of developmental mentorship and through Participatory Action Research, new information on the waste pickers' required capabilities could be found. With the proper intervention, it is possible to develop waste pickers to enhance their entrepreneurial capabilities. These capabilities can help them improve their current income and improve their quality of life.

7.4.5. Achieving sustainable development goals through waste picking

The sustainable development goals (SDGs) are linked to people, planet, prosperity, peace and partnership which are commonly referred to as the Five Ps (Morton,

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Pencheon and Squires, 2017). The SDGs consist of 17 goals that are incorporated in the Five Ps (United Nations, 2018) as illustrated in the table below:

Table 33: Summary of the UN's 17 Sustainable Development Goals

Five Ps	Attributes	Goals
People	No Poverty	Goal 1
	Zero Hunger	Goal 2
	Good Health and Well-being	Goal 3
	Quality Education	Goal 4
	Gender Equality	Goal 5
	Clean Water and Sanitation	Goal 6
Planet	Climate Action	Goal 13
	Life below Water	Goal 14
	Life on Earth	Goal 15
Prosperity	Affordable Clean Energy	Goal 7
	Decent Work and Economic Development	Goal 8
	Industry, Innovation and Infrastructure	Goal 9
	Reduce Inequalities	Goal 10
	Sustainable Cities and Communities	Goal 11
	Responsible consumption and production	Goal 12
Peace and Partnership	Peace, Justice and Strong Institutions	Goal 16
	Partnerships for the Goals	Goal 17

Source: (Morton, Pencheon and Squires, 2017)

The research demonstrates that through developmental mentoring and assisting waste pickers to identify their capabilities, they are contributors to attaining some of the goals as highlighted in the above table. Although the goals are reliant on targets and indicators (Morton, Pencheon and Squires, 2017) this research did not use any measuring tool to determine if a goal was achieved. However, based on empirical evidence and focusing on the Five Ps, the research shows that through waste picking, some of the goals can be acquired. Filho (2019) emphasises that the first goal of the SDGs is the eradication of all forms of extreme poverty. This could be achieved by

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improving the economic well-being of vulnerable societies which could lead to improved economic development. This research indicates that when waste pickers income increased, they were able to reduce their level of poverty despite still living in poverty. Additionally, their awareness of the dangers of their working environment contributed to improved health and well-being. The Drakenstein municipality provided a safe haven for female waste pickers by offering them the opportunity to utilise the material recovery facility (MRF) which averted females from being victimised. As reported, female waste pickers felt safe and were acting in supervisory roles as well as served as spokespersons when liasing with the municipal officials. This contributed to a positive reinforcement of gender equality which is part of the goals of the SDGs. Mentorship, assistance from municipalities and forging partnerships with key role players can help in achieving SDGs. Filho (2019) reports that the SDGs is important and shoud not be left only for the United Nations to tackle. This participatory research study addressed the SDGs as advocated by the United Nations.

This research has indicated that waste pickers are contributors in preventing waste from ending up at landfills. These individuals have illustrated their robustness in striving to free the environment of plastic and as such they may well be recognised as sustainable entrepreneurs. Sustainable entrepreneurial activities are compatible with the United Nations SDGs (Volkmann *et al.*, 2019).

7.4.6. Transformative paradigm through PAR

Mertens *et al.* (2013) postulate that the transformative paradigm is a framework that engages with individuals from diverse backgrounds who are exposed to social injustice amongst other human ethical issues. Mertens (2007) makes the assumption that the transformative paradigm is best applied through mixed method research and that PAR research is not adequate to bring about a transformative plan.

This research provides evidence that PAR as a qualitative method can be applied as a method in addressing the social injustice issues among waste pickers. The use of the Capability Approach as a conceptual framework conceptualises the inequalities, poverty and wellbeing (Robeyns, 2005) of the waste pickers and provides further direction in addressing these vices. The research therefore demonstrates that when I

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used the Capability Approach to guide my developmental mentorship activities, I was able to improve the social caste of the waste pickers through a transformative paradigm.

7.5. Reflection on the Research

PAR as a research method emphasises the importance of reflection. To me, reflection is a learning process based on experiences (Wain, 2017) gathered during my research among the waste pickers. I also facilitated reflection with the participants.

7.5.1. My learning experience and thoughts

Through my interaction with the waste pickers, I have learnt that waste pickers are resilient as they have faced many challenges, including discrimination and antagonism from the general public.

I was able to understand their needs and that as a social group they are able to challenge the agents of power through correct mentoring. Trust plays an integral part in establishing an honest relationship with waste pickers. Rich and insightful information is only attainable if the waste pickers believe that they will not be exploited. This set the scene for me to serve as a developmental mentor and through PAR I was able to understand the cultural, social and environmental dynamics that exist within the group.

I can affirm that the training of waste pickers requires patience and understanding. It cannot be enforced, as there must be a willingness to learn. Waste pickers need to be nurtured to understand the significance of a particular type of training. If they are apathetic to a certain training regime, it would be best not to pursue that particular training or strategy. This is one of the reasons why co-operatives fail. With the appropriate training, waste pickers will be able to improve their livelihoods and could eventually become business owners. The objectives or roadmap of their development must include them in the decision-making process, and constant reminders are required. I strongly suggest that a two-way communication method will yield successful results.

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In the early developmental stages or the initial interaction phase, there must be frequent "hand holding" as waste pickers cannot be left alone after any training session. Constant communication and engagement will help waste pickers realise the essence of the objective. Once a strong group has been established and representatives democratically elected, the waste pickers will be able to communicate issues of concern directly with the municipal delegates or other stakeholders. I strongly advocate that different groups have different needs and that these needs should be explored. There is no one-fix solution for all waste pickers.

The most important lesson I learnt is that it is easy to establish emotional relationships and that as a researcher one should not allow emotions to affect the data collection process. I curtailed this by constantly reminding myself that as a PAR researcher, my role is that of a facilitator facilitating the group, and as a mentor I would offer guidance based on the group's decisions.

A key factor to consider when stakeholders implement policies is that they should consider the needs of the waste pickers. A bottom up approach would allow municipalities and stakeholders to have better success if they take into account the needs of those working on ground level (Ndum, 2013). Emphasis should be placed on collaborating with waste pickers to determine the skills and needs that they require. This would help develop training programs that would address these needs.

Rethinking my steps as a PAR researcher

Reflecting on the process, I should have set a barometer of some sort and illustrated to the waste pickers how they had progressed and what they needed to aspire to. This would have provided more stability in the group and probably served as a reminder to those who had left the allocated space to become illegal waste pickers. Providing a shared vision that is designed and conceptualised by the waste pickers, supervisors, municipality delegates and all stakeholders would enable waste pickers to be more committed to the vision. A note of caution: the vision must be constructed together with the waste pickers in question and not passed on from one group to another.

During the COVID-19 lockdown, the waste pickers without a contact or mobile phone number were unable to secure the food parcels that were offered by various waste

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recycling organisations. The supervisors were only able to provide food parcels to those waste pickers who were contactable. As a PAR researcher, mentor and friend, I would have liked to ensure that the waste pickers were assisted with some food. If a similar situation should occur in future, the municipality should permit the waste pickers to collect food parcels at its premises, as this would ensure that the waste pickers and their families receive some assistance during a crisis.

There were waste pickers who left the group to pursue other means of collecting waste, such as returning illegally to the landfill. I regret not spending more time with them as I could have mentored them to persevere and not be misled by instant gratification as it is only a short term goal. I would have guided them to focus on long term goals that could be sustainable for their livelihood.

As I reflect on my research, I realise that even though this was a participatory action research study, I was the main driver of transformation. This leads to think that participatory action research needs many cycles and I hope to engage with these participants in the future to increase the participatory nature of my research.

The next section demonstrates the thoughts of the waste pickers and supervisors in respect of the mentoring process.

7.5.2. Reflection from the waste pickers

This section is important as it determines the effectiveness of the mentoring process from the mentees' perspective. When I asked the waste pickers to provide feedback, I emphasised that they needed to be honest and not be concerned about offending me in any way. I stated that for me to improve my method, they needed to provide constructive feedback.

Most of the waste pickers expressed their gratitude for my work. "*Ons is dankbaar dat jy hier is om vir ons te hulp*" (we are grateful that you are here to help us). In terms of achievements, the waste pickers collectively agreed that the mentorship process had facilitated in improving the following:

- Self-improvement – most of the waste pickers reduced their bad habits and focused on improving their lives. One waste picker disclosed, "*Eers het ek baie gedrink dat ek somtyds nie kan kom werk nie, maar nou drink ek net naweeks*"

(At first I used to drink so much that I was unable to come to work, but now I only drink on weekends). Others confirmed that the talks I had with them about self-improvement helped them to consider changing their lifestyle to a better and more health conscious one.

- Health consciousness – This was a very sensitive issue that needed to be explained without offending anyone. Waste pickers acknowledged that they would not always wash their hands after sorting through the waste and before eating something. They realised that washing their hands will reduce illnesses and that it is important to pay special attention to cleanliness. They would later tell me that they now first wash their hands and faces before eating and even before engaging in a group discussion.

- Self-control – Some of the waste pickers realised that by controlling their desire to spend all their money at once, they could save some money for when they needed it most. This saving enabled them to contribute to the funeral expenses when one of their colleagues passed away. This act of contributing to their colleague's funeral expenses helped to strengthen the bond between the group members.

- Trust relationship – The waste pickers acknowledged that they felt comfortable sharing their feelings and details of their past lives with me without worrying that I would tell anyone else. The realised that if someone speaks to them in confidence, they should try to help the person and not betray their trust.

Figure 71: The Wellington waste pickers

Source: Researcher

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The feedback from the waste pickers indicates that they can develop skills and improve themselves if mentoring is conducted in a manner that maintains the interest of the waste pickers. It should be noted that the female waste pickers felt safer working at the space provided by the Drakenstein municipality, as they were no longer being attacked as they had been while illegally collecting recyclable items on the landfill. The Wellington group elected one female waste picker and one male waste picker to be their representatives. The females reported that they were much happier with their current arrangements as they had access to sanitation facilities. This helped to eliminate the frequent infections to which the female waste pickers had been prone. Currently there are more female waste pickers working at the MRF as some indicated that they enjoy working there and would not want to work elsewhere. By the end of December 2021, the Wellington group were able to save enough items and sell it in order to have suffient income to last for them during the period from 24 December 2021 to 6 January 2022. This allowed them to purchase groceries for the first time at a supermarket and not at a spaza shop.

7.6. Research Limitations

It was extremely difficult to monitor each individual's progress as they did not always keep record of the amount of money they had received or what items they had collected in the highest quantities. This type of information was provided on a group level, but the group was not always aware of the precise weights of the items sold. Trying to help an individual waste picker with a particular problem was not easy as he/she would often not be available at the next meeting. The advent of the COVID-19 pandemic had a significant effect on the lives of the waste pickers and there were some who did not return to the MRF after lockdown. The language and cultural differences would at times create a barrier between the waste pickers and me. It would have been ideal if an isiXhosa-speaking person could have assisted in translating some of the discussions. Nonetheless, one of the supervisors of the Paarl group was instrumental in helping me to explain things to those waste pickers who were not fluent in English.

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7.7. Research Delimitations

Delimitations are features that restrict the scope and set boundaries for a research study (Simon, 2011). On the other hand, the research objectives guides the researcher to clearly communicate the scope of the study (Sekaran and Bougie, 2016).

The primary objective of this study is to enhance the livelihoods and entrepreneurial capabilities of waste pickers through developmental mentoring that could assist in establishing an informal training programme. Based on the primary objective of this study, the research limited the attention on reusing of recyclable items. In the past, glass bottles went back to the grocery stores and the consumer received a refund for returning the glass bottles. Additionally, milk bottles were refilled when the milkman collected the empty milk bottles (Benton, 2015). This type of recycle strategies would have a negative impact on the waste pickers' income. It is for this reason, that the researcher avoided thorough investigation into the concept of reduce, reuse (components of the circular economy). This research did not place emphasis on the circular econonmy despite the fact that waste pickers are an important contributor to the circular economy (Velis, 2018). Another delimitation was that the research focused on landfill waste pickers and did not engage with street waste pickers. Based on the research objectives, the research centred around on landfill waste pickers who were willing to improve their lives and not illegally collect recyclable items from the landfills. Due to the nature of the research methodology, the research results cannot be applicable to all waste pickers. Miles (2019) mentions that delimitations restrict the researcher from generalising his/her findings to the population.

7.8. Recommendation for further research

Based on the research findings, this study has implications for further research in the following fields of interest such as the circular economy, entrepreneurship, business incubation, mentorship and the capabilities approach.

Although the circular economy was not the focus of the study, the waste pickers are an essential element to the circular economy but due to their social status very little recognition is given to them (Buch *et al.*, 2021). They are transformative to contemporary recyclable technology (Velis, 2018). The circular economy concept has

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received enormous attention particularly in academia. The circular economy serves as a catalyst to economic growth as it is able to create about 12 million new jobs worldwide (Buch *et al.*, 2021). In essence, recycling is not the main element of the circular economy and therefore further research is encouraged on circular business models (Gall *et al.*, 2020) and the roles that waste pickers can play.

Entrepreneurship using a transformative paradigm among waste pickers (landfill and street) requires further research. As Sridharan, Maltz & Gupta (2014) have showed, waste pickers are subsistence entrepreneurs who interact with micro enterprises in order to survive and maintain their measly livelihoods. Matalamäki (2018) mentions that the effectuation theory should no longer be related only with new ventures and start-ups. This research further recommends exploring the effectuation theory among street waste pickers who are interested in becoming entrepreneurs through utilising their current resources and working with those resources to achieve a desired outcome.

Researching business incubation with a mentoring support system would provide much needed information to municipalities and other stakeholders who are committed to provide the waste pickers to establish small businesses. The researcher asserts that despite waste pickers being individuals who strive to fulfil their needs, they should not be regarded as having similar capabilities as they differ in character, physicality and psychological requirements.. It is therefore important that more research be undertaken to understand the different needs of waste pickers and how best to guide them to successfully sustain viable enterprises.

The capability approach concentrates around individualism, as the conversion factors play an important part in an individual's ability to convert capabilities into functioning (Ikebuaku & Dinbabo, 2018). The research furnished evidence that the capability approach can be used on a particular group with similar demographic, psychographic and behavioural patterns. It is recommended that additonal research on this theoretical aspect be undertaken.

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7.9. Final Comments

During the course of my research, seven waste pickers tragically lost their lives. These individuals were largely unknown to many as they were not affiliated to any organisation or people of status. However, to me and others who knew them, they were extraordinary human beings who helped make this research possible. They were eager to participate as participants, mentees and were willing to change their lives to improve their well-being. It is therefore befitting to end this thesis by remembering those who tried to change their lives whilst contributing to a better environment. These fallen waste pickers (Waste entrepreneurs) were:

Vuyo, Marko, Wellington, Kallie, Sue-Anne, Derick and Terezia

As competent human beings, we cannot shirk the task of judging how things are and what needs to be done. As reflective creatures, we have the ability to contemplate the lives of others.   (Amartya Sen)

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Appendices

Ethics Clearance from the University of Western Cape

08 August 2019

Mr MA Sambo
School of Business and Finance
Faculty of Economic and Management Science

Ethics Reference Number:	HS19/6/22
Project Title:	The development of a training programme for waste pickers towards improving their livelihoods: A participatory action research.
Approval Period:	08 August 2019 – 08 August 2020

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

HSSREC REGISTRATION NUMBER - 130416-049

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Consent Form for Focus Group

UNIVERSITY *of the* **WESTERN CAPE**

SCHOOL OF BUSINESS & FINANCE

EMS — *Where your Future is our Priority*

Title: The development of a training programme for waste pickers towards improving their livelihoods: A participatory action research

Ethics Reference Number: HS19/6/22

Consent form for Focus Groups

Thank you for your participation. By completing this form, you are indicating that you have read the description of the study, are over the age of 18, and that you agree to the terms as stipulated below:

Please tick {√} in the box

I confirm that the project has been explained to me. I also confirm that I have read and understand the information sheet explaining the above research project and I have had the opportunity to ask questions about the project. ☐

I consent to be part of a focus group. ☐

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. ☐

Should I not wish to answer any particular question or questions, I am free to decline.

(If I wish to withdraw I may contact the lead researcher at any time) ☐

I understand my responses and personal data will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. ☐

I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result for the research. ☐

I consent to participate in a focus group and will not divulge information from the other participants in the focus group to any third party or continue the discussion after the focus group has ended. ☐

I have had all my questions answered to my satisfaction and all the risks associated with my participation has been explained to me. ☐

I consent and agree to have the interview to be recorded by the lead researcher for the purpose of this study. ☐

I grant permission for the research to be recorded using an audio recording device to be used in presentations, documentation and publications of this study where **my identity** will be kept confidential and anonymous. ☐

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Name of person taking consent   Date   Signature
(If different from lead researcher)

Lead Researcher   Date   Signature
(To be signed and dated in presence of the participant)

If you have any queries or problems relating to the research, you may contact the supervisor or HOD to address your concerns.

Permission was granted by the Ethics committee to conduct this research.

Copies: All participants will receive a copy of the signed and dated version of the consent form and information sheet for themselves. A copy of this will be filed and kept in a secure location for research purposes only.

Researcher:	Supervisor:	HOD:	Research and Ethics Committee:
Adeel Sambo School of Business and Finance Tel: 021 959 3525 Email: asambo@uwc.ac.za	Dr. Abdullah Bayat Senior Lecturer: School of Business and Finance Tel: 021 959 3332 Email: abbayat@uwc.ac.za	Prof Richard Shambare Director: School of Business and Finance Tel: 021 959 2253 Email: rshambare@uwc.ac.za	HSSREC, Research Development, UWC Tell: 021 959 2988 Email: research-ethics@uwc.ac.za

Thank you for taking the time to read this consent form.

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Consent Form for Personal Interviews

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SCHOOL OF
BUSINESS &
FINANCE

Title: The development of a training programme for waste pickers towards improving their livelihoods:
A participatory action research

Ethics Reference Number: HS19/6/22

Consent form for opened ended interview questions

Thank you for your participation. By completing this form, you are indicating that you have read the description of the study, are over the age of 18, and that you agree to the terms as stipulated below:

Please tick {√} in the box

I confirm that I have read and understand the information sheet explaining the above research project and I have had the opportunity to ask questions about the project.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences.

Should I not wish to answer any particular question or questions, I am free to decline.
(If I wish to withdraw I may contact the lead researcher at any time)

I understand my responses and personal data will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses.

I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result for the research.

I consent to participate in the activities of the study such as the training and mentoring program. I consent to participate and I can withdraw at anytime

I have had all my questions answered to my satisfaction and all the risks associated with my participation has been explained to me.

I consent and agree to have the interview to be recorded by the lead researcher for the purpose of this study.

I grant permission for the research to be recorded using an audio recording device to be used in presentations, documentation and publications of this study where my identity will be kept confidential and anonymous.

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_____   _____   _____
Participant   Date   Signature

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_____   _____   _____
Name of person taking consent   Date   Signature
(If different from lead researcher)

_____   _____   _____
Lead Researcher   Date   Signature
(To be signed and dated in presence of the participant)

If you have any queries or problems relating to the research, you may contact the supervisor or HOD to address your concerns.

Permission was granted by the Ethics committee to conduct this research.

Copies: All participants will receive a copy of the signed and dated version of the consent form and information sheet for themselves. A copy of this will be filed and kept in a secure location for research purposes only.

Researcher:	Supervisor:	HOD:	Research and Ethics Committee:
Adeel Sambo School of Business and Finance Cell: 021 959 3525 Email:asambo@uwc.ac.za	Dr. Abdullah Bayat Senior Lecturer: School of Business and Finance Tel: 021 959 3332 Email:abbayat@uwc.ac.za	Prof Richard Shambare Director: School of Business and Finance Tel: 021 959 2253 Email: rshambare@uwc.ac.za	HSSREC, Research Development, UWC Tell: 021 959 2988 Email:research-ethics@uwc.ac.za

Thank you for taking the time to read this consent form.

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Consent Form for Observation

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UNIVERSITY *of the* WESTERN CAPE

SCHOOL OF BUSINESS & FINANCE

Title: The development of a training programme for waste pickers towards improving their livelihoods: A participatory action research

Ethics Reference Number: HS19/6/22

Consent form for observation

Thank you for your participation. By completing this form you are indicating that you have read the description of the study, are over the age of 18, and that you agree to the terms as stipulated below:

Please tick {√} in the box

I confirm that the project has been explained to me. I also confirm that I have read and understand the information sheet explaining the above research project and I have had the opportunity to ask questions about the project.

I consent to be observed.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences.

Should I not wish to answer any particular question or questions, I am free to decline.
(If I wish to withdraw I may contact the lead researcher at any time)

I understand my responses and personal data will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses.

I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result for the research.

I consent to participate in the activities of the study such as the training and mentoring program. I am also fully aware that I can withdraw from the study at any given time.

I have had all my questions answered to my satisfaction and all the risks associated with my participation has been explained to me.

I consent and agree to have the interview to be recorded by the lead researcher for the purpose of this study.

I grant permission for the research to be recorded using an audio device to be used in presentations, documentation and publications of this study where my identity will be kept confidential and anon

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to action through knowledge

_____   _____   _____
Participant   Date   Signature

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_____ _____ _____
Name of person taking consent   Date   Signature
(If different from lead researcher)

_____ _____ _____
Lead Researcher   Date   Signature
(To be signed and dated in presence of the participant)

If you have any queries or problems relating to the research, you may contact the supervisor or HOD to address your concerns.

Permission was granted by the Ethics committee to conduct this research.

Copies: All participants will receive a copy of the signed and dated version of the consent form and information sheet for themselves. A copy of this will be filed and kept in a secure location for research purposes only.

Researcher:	Supervisor:	HOD:	Research and Ethics Committee:
Adeel Sambo Address: UWC, Bellville Tel: 021 959 3525 Email:asambo@uwc.ac.za	Dr. Abdullah Bayat Senior Lecturer: School of Business and Finance Tel: 021 959 3332 Email:abbayat@uwc.ac.za	Prof Richard Shambare Director: School of Business and Finance Tel: 021 959 2253 Email: rshambare@uwc.ac.za	HSSREC, Research Development, UWC Tell: 021 959 2988 Email:research-ethics@uwc.ac.za

Thank you for taking the time to read this consent form.

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Consent Form To Allow Participant Names To Be Revealed

Title: The development of a training programme for waste pickers towards improving their livelihoods: A participatory action research

Ethics Reference Number: HS19/6/22

Consent form for names to be published for research purposes

Thank you for your participation and acknowledging that you are over the age of 18 years.

I, ... *Sally Peters* ...., a representative of the waste pickers working at the Paarl, material recovery facility, hereby consent on behalf of myself and the group that the identities of the participants, including myself may be used for research purposes. I consent that after discussion with the relatives of the deceased that their identities may be revealed for research purposes.

In the present

Representative on behalf of the group:	Date:	Signature
Sally Peters	14/7/22	
Lead Researcher	Date:	Signature
Adeel Sambo	14/7/22	

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Consent Form Permitting Participants Photographs To Be Used

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Title: The development of a training programme for waste pickers towards improving their livelihoods: A participatory action research
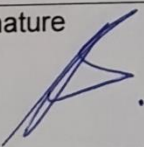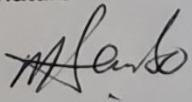
Ethics Reference Number: HS19/6/22

Consent form for photographs to be published for research purposes

Thank you for your participation and acknowledging that you are over the age of 18 years.

I, ... Solly Peters ...., a representative of the waste pickers working at the Paarl, material recovery facility, hereby consent on behalf of myself and the group that photos taken of myself and the group can be used for research purposes. I consent that the use of these photographs are not provocative or explicit in nature.

In the present of the people

Representative on behalf of the group:	Date:	Signature
Solly Peters	14/7/22	
Lead Researcher	Date:	Signature
Adeel Sambo	14/7/22	

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Summary of Data Collection Dates

Date	Duration in Minutes	Date	Duration in Minutes
20-Aug-19	80	12-Nov-19	40
30-Aug-19	36	19-Nov-19	10
30-Aug-19	9	19-Nov-19	16
09-Sep-19	12	19-Nov-19	37
09-Sep-19	30	19-Nov-19	9
09-Sep-19	42	19-Nov-19	14
01-Oct-19	8	19-Nov-19	21
01-Oct-19	8	26-Nov-19	40
01-Oct-19	25	26-Nov-19	13
01-Oct-19	7	26-Nov-19	23
01-Oct-19	11	05-Dec-19	33
01-Oct-19	40	05-Dec-19	25
01-Oct-19	54	05-Dec-19	2
08-Oct-19	18	05-Dec-19	14
08-Oct-19	10	10-Dec-19	6
08-Oct-19	30	10-Dec-19	38
05-Nov-19	36	10-Dec-19	16
05-Nov-19	3	10-Dec-19	2
05-Nov-19	23		
05-Nov-19	28		
12-Nov-19	7		
12-Nov-19	24		
12-Nov-19	25		

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Date	Duration in Minutes	Date	Duration in Minutes
06-Feb-20	8	17-Nov-20	54
06-Feb-20	10	17-Nov-20	23
06-Feb-20	12	17-Nov-20	42
12-Feb-20	19	24-Nov-20	9
12-Feb-20	12	24-Nov-20	13
12-Feb-20	12	24-Nov-20	15
18-Feb-20	5	24-Nov-20	8
18-Feb-20	20	03-Feb-21	16
18-Feb-20	2	03-Feb-21	60
18-Feb-20	36	03-Feb-21	1
18-Feb-20	13	23-Feb-21	40
04-Mar-20	10	23-Feb-21	33
11-Mar-20	13	01-Mar-21	10
11-Mar-20	4	18-Mar-21	82
11-Mar-20	15	01-Jun-21	10
27-Oct-20	17	01-Jun-21	25
27-Oct-20	20		
27-Oct-20	22		
27-Oct-20	22		
03-Nov-20	70		
03-Nov-21	60		
10-Nov-20	9		
10-Nov-20	6		

Questionnaire for Landfill Waste Pickers

LANDFILL WASTE PICKERS SURVEY IN SOUTH AFRICA,

DST/NRF/CSIR Chair in Waste and Society – University of the Western Cape

SURVEY DETAILS

(Can be completed after the interview)

Interviewer: Complete the following questions after the interview.

Date of interview................................. Time of interview...............……………........

Fieldworker name…………........................

Geographical details of the site where interview took place:

Name of the Landfill site...…………………………

Street Address (of site): ……………………………………………………………….

City/Town/Suburb: ......…………………………………………………………………

Questionnaire

Completed	Not Completed

SECTION A

This set of questions relates to the personal background of the respondent you are interviewing.

1. Respondent's gender:

Male	1
Female	2
Other specify……….	3

2. With which cultural group do you associate yourself with?

African/Black	1
Coloured	2
White	3
Indian/Asian	4
Other	5
If other, please specify	

3. Language predominantly spoken by respondent. **Mark ONE only**

English	1
Sesotho	2
Sepedi	3
Isizulu	4
Isindebele	5
Xhitsonga	6
Afrikaans	7
Setswana	8
Isixhosa	9
Tshivenda	10
SiSwati	11
Shona	12
Other	13
If other please specify ………………………………………………………………………………	

4. From which country do you originate from?

South Africa	1
Zimbabwe	2

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Namibia	3
Swaziland	4
Mozambique	5
Botswana	6
Lesotho	7
Malawi	8
Other	9
If other please specify ……………………………………………………………………………………………………	

5. If from South Africa, in which province were you born?

Gauteng	1
Mpumalanga	2
KwaZulu-Natal	3
Eastern Cape	4
Limpopo	5
North West	6
Free State	7
Northern Cape	8
Western Cape	9

6. How old are you?

[ ][ ]

7. Which of the following describes your current marital status?

Never married / Single	1
Separated / Divorced	2
Married (Traditional or Western)	3
Widowed	4
Living with a partner	5

Other	6
Other, specify..................................…………..	

SECTION B

This set of questions relates to the respondent's education

8. What is the **highest** school or tertiary qualification you have **passed**?

Grade

0	1	2	3	4	5	6	7	8	9	10	11	12
Post School Qualification												13
Post School Qualification. Please mention the qualification ……………………………………………………………………………………………...........												

Ask question 9 only if the waste pickers left school before passing Gr. 12.

9. Why did you leave school before completing Gr. 12?

....

10. Do you have any other training or skills that you might be able to use in another job?

Yes	1 Go to question 11
No	2 Go to question 12

11. If your answer in question 10 is **Yes**, please specify **what** training and skills you have, where you obtained the training and skills and whether it was formal or informal training**. (field worker needs to probe)**

1	2	3
Type of training/skill	Where obtained	Formal or informal

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12. How well can you understand English? (field worker ask the question in English)

Not at all	1
Somewhat	2
Well	3

13. How well can you speak English?

Not at all	1
Somewhat	2
Well	3

14. Hoe goed kan jy Afrikaans verstaan? (Ask the question in Afrikaans)

Not at all	1
Somewhat	2
Well	3

15. Hoe goed kan jy Afrikaans praat?

Not at all	1
Somewhat	2
Well	3

SECTION C

This set of questions relates to the respondent's employment history.

16. Have you ever worked where you received a payslip?

Yes	1 Go to Question 17
No	2 Go to Question 20

17. If YES, what was your last **full** time job? (field worker needs to probe)

Job title:...

18. How long did you have the last full time job?

Years $\boxed{}$ Months $\boxed{}$

19. Why did you leave your last job?

Laid off business/mine/factory closed	1
Laid off business moved	2
Laid off business downsizing	3
Disciplinary reasons	4
Quit the job because wage was too low	5
Quit the job because of medical reasons	6
Quit because of bad treatment from employer	7
Other, specify	8
Refused to answer	9

SECTION D

This set of questions relates to the respondent's work as a waste picker.

20. What do you like about your work as waste picker? (fieldworker needs to probe)

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

21. What about your work as waste picker don't you like? (field worker needs to probe)

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

22. Why did you decide to collect waste? (field worker needs to probe)

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

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23. How long have you been doing this job?

Years [   ]   Months. [   ]

24. What recyclable waste do you collect? (Mark all applicable)

Paper	1
Cardboard	2
Plastic	3
Cans	4
Glass	5
Tetrapak	6
Metals	7
Batteries	8
Globes	9
Other	10
If other, specify	

25. Are there goods that you collect for personal use?

No	1
Yes	2

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If yes, please specify
....
....
....

26. Do you collect food from the landfill site for own and/or family consumption?

Yes	1 Go to question 33
No	2 Go to Question 34

33. If your answer is Yes to Question 32, what food do you collect for consumption?

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

SECTION E

This set of questions relates to the income patterns of the respondents.

27. How much income did you earn last week for the waste you have collected?

Rand..

28. How much income do you earn from the waste collected during a **good week** and during a **bad** week? (Round off to the nearest Rand)

1	Good week	R
2	Bad week	R

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29. What are the other sources of income available to you?

	Sources of income	You (Rand)	Other household members (Rand)
1	Another job		
2	Child support grant?		
3	Disability grant?		
4	Old age grant?		
5	Pension from a previous job?		
6	Other		
If other, please specify			

30. How many people (excluding yourself) depend on your income?

Number of people ☐☐

31. How many children do **you** have?

Number of children ☐☐

Number of children under 18 ☐☐

SECTION F

This set of questions relates to the respondent's access to basic needs.

32. In what type of structure do you usually sleep?

Construction Site	1

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Backyard room with sleep in domestic worker	2
Backyard room	3
Veld/bushes	4
On the street	5
Backyard shack	6
Shack	7
Hostel/shelter	8
House (bricks/reeds etc)	9
Buy-back centre/ depot	10
Other	11
If other, please specify	

33. How many times <u>in the last month</u> was there no food to eat of any kind in your household because of lack of resources to get food?

34. Do you receive food from somebody else, e.g. church/ individuals, specify from whom……………………………………………………………........................

35. Do you have access to the following while collecting waste? Please specify?

	Basic Needs	No	Yes, specify
1	Drinking water		
2	Toilet		

SECTION G

This set of questions relates to the respondent's relationship with the municipality, buyers of waste and co-waste pickers.

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36. Do you work together with other waste pickers to help one another?

Yes	1 Go to question 37
No	2 Go to question 38

37. If yes, in what way do you help each other? **Mark all applicable.**

Help to collect/share what they have collected	1
Loans	2
Food	3
Shelter to sleep/housing	4
Care when sick	5
Other	6
If other, please specify	

SECTION H

This question relates to work related injuries and health risks.

38. What are the health and injury risks when collecting recyclable goods?

……………………………………………………………………………………..

……………………………………………………………………………………..

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39.   On a scale of 1-10 (10 being very happy and 1 very unhappy) how happy are you with life at the moment?

1	2	3	4	5	6	7	8	9	10

Ask the respondent for the reason for his rating

……………………………………………………………………………………………

………………………………………………………………………………….

40. Would you like to tell us anything else that concerns you or that you think we should know?

Specify……………………………………………………………………..................

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Interviewer: Thank the respondent for his participation.

For more information, contact:

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Prof Schenck: 082 864 0600

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