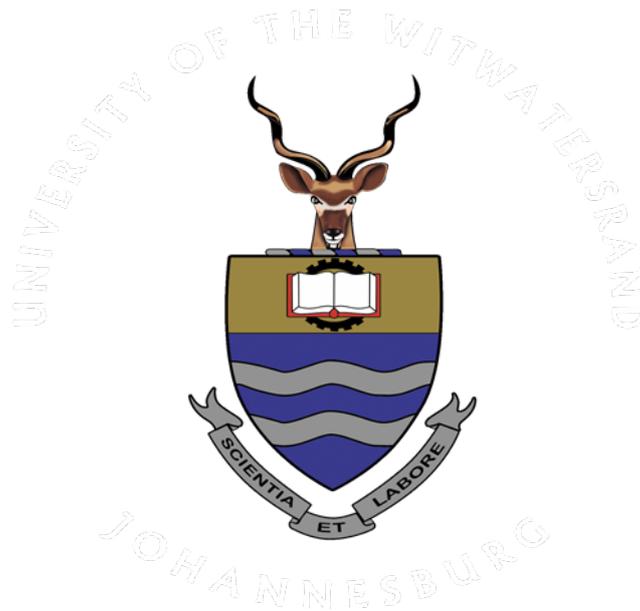


Household wasting practices in Orange Farm (Ext. 2) - A window into improving Pikitup separation at source and waste management programmes.

Research Report



This thesis is submitted to the University of Witwatersrand for the award of a Bachelor of Science (Honours) degree in Geography.

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DECLARATIONS

I, Lufuno Ndlovu, hereby declare that this report for BSc Geography (honours) degree at the University of Witwatersrand is my own work. I declare that this research report has not previously been submitted at this or any other institution. All the sources I have quoted have been acknowledged by means of referencing.

ABSTRACT

The high rate of population growth and industrial activities in cities such as Johannesburg has influenced people to adapt a high consumption lifestyle. This results in high generation of household waste which demands landfilling space. This qualitative study was conducted at Orange Farm (Ext. 2) to determine the effectiveness of Pikitup's Separation at Source (S@S) as a wasting practice to minimise the volume of waste going into landfills. The study also covers the role of reclaimers in S@S to minimise landfilling. Data collection methods include semi-structured interviews, focus group and personal field observation. The research instruments were designed in such a way to capture the knowledge and attitudes of residents towards S@S. The data was collected between July and August 2016. Various literature reviewed considers recycling and waste reduction as practices to minimise landfilling. This study found that there is weak participation of households in the formal S@S system within the community. Taken from the body of literature from various scholars and based on the key findings of the study, this paper helps us to understand that S@S is an integrated approach with various forms of social implications to be considered. This paper argues that Pikitup must expand its understanding of S@S to recognise the labour of reclaimers and residents (informal S@S system), and also conduct relevant Environmental Education (EE) for residents. Therefore, Pikitup's conceptualisation of S@S should be expanded for more participation in S@S of household waste.

Key Terms: Household, Household solid waste, Waste separation, Participation, Awareness, Wasting practices.

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List of abbreviations

CoJ	City of Johannesburg
DEA	Department of Environmental Affairs
EE	Environmental Education
IEM	Integrated Environmental Management
ISWM	Integrated Solid Waste Management
IWM	Integrated Waste Management
NWMS	National Waste Management Strategy
S@S	Separation at Source
WMH	Waste Management Hierarchy

CHAPTER 1: INTRODUCTION

1.1 Overall introduction of the report

In developing countries such as South Africa, urban areas share common challenges of rapid population growth and high levels of waste generation, resulting in the shortage of landfilling space. Separation of waste at source has become a common feature in the modern waste management system. In Johannesburg, the municipality's Pikitup waste management company introduced a separation at source (S@S) program to reduce waste to landfill that depends on the participation of residents in order to be effective. Therefore, understanding the factors that motivate people to participate and the factors that hinders people from participation is a central activity for the success of waste separation system.

Based on the findings of the study, this paper argues that in order to improve participation Pikitup needs to expand its understanding of S@S to recognise the labour of reclaimers and residents in waste separation (informal S@S system). Residents should also be provided with relevant education to understand that waste separation is not work to be paid for but shifting their wasting practices to assist Pikitup deal with an issue of lack of landfilling space.

This argument is initiated on the study conducted at Orange Farm (Ext. 2), the research found that the level of participation in the formal S@S system is inadequate and not every type of recyclable material is separated for recycling mainly due to the value of the material. Therefore, there are four main reasons for the low level of participation by residents in the formal S@S system, firstly; some residents think that Pikitup took jobs for local reclaimers, so they choose not to separate waste so that reclaimers can get something to reclaim, secondly; residents think that waste separation is not their responsibility but the responsibility of Pikitup, so they should be paid for separating waste, thirdly; some residents seem not to understand why they have to separate waste, so they are not motivated to separate waste, lastly; some residents indicated that they do not separate waste because they don't receive waste separation plastics. The main research question that the research aimed to answer is; what do Orange Farm residents' household waste management practices reveal about how S@S services in Orange Farm can be improved?

In our society industrial and economic developments have played a huge role in influencing rural-urban migration. Technological advancement and improved lifestyles result in generation of different products and high consumption of materials which become waste after use (Momoh and Oladebeye, 2010). In South Africa, Apartheid played a huge role in shaping

the system of service delivery and residential arrangements. The apartheid government was racist, it segregated the black population from the white population, and most black people were forced to occupy the rural areas and townships of which service delivery was inadequate compared to the white dominated areas (Parliament of the Republic of South Africa, 2013).

Therefore, the newly elected government that came into power in 1994 has made some attempts to introduce new policies as a way to correct the legacy of the apartheid regime. Although people were migrating to urban areas prior to 1994, urban migration increased drastically after democracy, this influenced a high number of people to move into urban areas in search of better jobs in order to improve their living standards. In this regard the majority of the black people occupied low class locations. This resulted in the formation of low socio-economic areas such as townships and informal settlements that are very common in urban areas for example; Orange Farm.

According to World Bank (1999) solid waste management is a challenge to the cities' authorities mostly in developing countries due to increasing residential locations and extreme waste generation, the burden is posed on municipal budget as a result of high costs associated with waste management and lack of public awareness on waste minimisation.

As a result of urban population growing, the land available to dispose of waste is shrinking making it important to find alternative methods to limit waste disposal into landfill sites (World Bank, 1999). There is also a growing global trend of trying to reduce untreated waste disposed of in landfills, each country is trying to introduce initiatives to minimise waste. In Hong Kong the government introduced plastic bag levy, it is now estimated that the number of plastic bags distributed by retailers have reduced by approximately 90% (Environmental Protection Department, 2013). Therefore, waste minimisation can be achieved if the government is prepared to encourage the society to change their behaviour and lifestyle.

In cities such as Johannesburg waste management is a huge challenge because most of the waste generated by residential household, some of which is recyclable is being disposed in landfills. According to Ligneris (2013) there is limited space in landfills where waste can be disposed and most of the current landfills in Johannesburg are left with approximately seven (7) years of operation before they can be closed. Therefore, if much waste is being disposed of the landfills may shut before the estimated 7 years.

As a response to this, in 2009 the City of Johannesburg and Pikitup introduced S@S by residents in various areas including Orange Farm. This program is aimed to encourage

residents to separate and recycle their household refuse to avoid disposing valuable waste with recycling potential into landfills and also to promote job creation through the exchange of recyclable waste with money (Pikitup, 2012). Therefore, the focus is shifting towards Integrated Solid Waste Management (ISWM) which involves multiple stakeholders such as communities, waste reclaimers, recycling companies to name a few in waste management.

This study focuses on the experiences of Orange Farm residents on S@S project in order to explore whether the project is working effectively to influence residents to adopt waste S@S as a wasting practice. The study adopted a qualitative approach to collect data, which includes interacting with residents to understand their knowledge and attitude towards waste separation. The findings are then analysed and interpreted to answer the sub-questions of the research.

1.2. Rationale

According to the constitution of South Africa, everyone has the right to an environment that is not harmful to his or her health or wellbeing (National Environmental Management Act 107 of 1998). Therefore, this research project is important because it aims to find effective ways to manage and reduce waste in our society. Waste is a huge challenge in our communities because it affects our health and the environment we live in. Municipal solid waste in South African cities is made up of organic waste, if we include paper and card boxes it is argued that approximately 45% of waste in landfills is organic waste (Full cycle, 2009). According to Full Cycle (2009) this waste rots giving off methane which is one of the greenhouse gases contributing to climate change. Furthermore, poor management of household waste results to open dumping and burning of waste which contributes to further environmental problems such as air pollution and water contamination.

Various waste management programmes have been put in place as a way to manage waste in our society, these includes S@S program in various areas around Johannesburg. This is aimed to influence the culture of waste separation to reduce the volume of household waste going to landfills. However, the program has not been effective since there is weak participation of residents and lots of waste is still going into landfills. The common factors that deters participation is peoples' attitude and perception towards the program. Therefore, it is important to conduct this research to find out how such programmes can be improved to make it more effective.

Currently, most countries are aiming to move towards effective options dictated by the waste management hierarchy in order to make their waste management system more sustainable. According to [Igbinomwanhia et al. \(2014\)](#) the waste management hierarchy should give priority first to prevention, second to material recovery, third to incineration and last to land filling. However, there is ignorance in structuring waste management services to address specific household wasting practices. This research project determines the role that Pikitup's S@S programme plays in shaping household wasting practices in Orange Farm and explores the challenges that hinder the level of participation in waste separation to reduce waste disposal in landfill sites. This will help in future planning to structure effective waste management programmes.

The importance of conducting this study is that the researcher was able to determine the relationship that exists between Pikitup S@S programme and household wasting practices. Too much waste in landfill sites has become a big challenge in our country, most commonly in Gauteng, there is a great need to introduce and implement waste management strategies and effective ways to minimise household waste disposal in landfills. This study is relevant because it contributes to finding effective and collective ways of influencing Orange Farm residents to participate in household waste separation. This was achieved by consulting Orange Farm residents and the service providers (Cooperation and Pikitup waste management officials) to get their views on what should be done differently to improve the level of participants in waste separation at source.

As stated above that everyone has the right to an environment that is not harmful to his or her health or wellbeing, this study is relevant because the researcher was able to read widely about the topic and found the gaps that exist between theory and the practical way of influencing residents to manage household waste, these gaps hinders proper ways of managing waste and keeping the environment clean in tandem with improving human health. Furthermore, the study provides suggestions on what can be improved or adopted to better S@S and minimise waste with recycling potential from being disposed of in landfills that pollute our environment.

In the process of the study the researcher identified that there is not enough literature on how gender roles shape household wasting practices, this research is relevant because it considers gender roles in household wasting practices. This research suggests involving women in waste minimisation projects and to close the gaps in knowledge and attitude towards waste

minimisation by providing relevant Environmental Education (EE) to the residents. Lastly, this paper recognises that S@S is an integrated environmental management approach, and the conceptualisation of S@S should be expanded to improve this programme. Therefore, the research provides insights into future solutions to improve Pikitup's S@S projects that consider residents at grassroots level and their perceptions.

1.3. Theoretical framework

A wide range of literature in household waste management practices emphasises recycling and reducing waste disposal; however there is not enough debates on the role that the service providers (municipalities) play in shaping household wasting practices and how residents respond to the services provided in their communities. This research was informed by research by Oelefse and Strydom (2010) that emphasises the relationship between waste management system and household wasting practices. Therefore, the engagement of residents and reclaimers in waste separation counters neoliberal governance. This paper discusses neoliberal drive in waste management, this is because S@S includes distribution of responsibilities to manage waste from the government to residents, social capital since residents gain economically by selling their recyclables, and empowering residents to make decision in providing their own services. This theoretical framework is initiated on the body of integrated environmental management.

Oelefse and Strydom (2010) argue that the existing waste management system shapes peoples' behaviour and attitude towards households' solid waste management practices. Arguably, residents tend to respond to the services provided in their communities differently; for instance, some residents may think that waste management is not their responsibility, and choose not to participate in separating waste although collection services for separated waste are provided, on the other hand others may separate waste because collection services are provided. This statement can be supported by the evident of the research's findings, meaning that there are social implications that affects the level of participation in waste management for example, peoples' attitudes.

Oelefse and Strydom (2010) support their argument by stating that clear policies and effective programs for meeting the basic needs of the residents are required. Therefore, there is a need to look at what residents are capable of doing in their households and try to educate them about how they can adopt waste minimisation practices within their normal waste management practices. For the purpose of this study it is important to note that S@S

programmes play a role in shaping households' wasting practices, therefore residents need support to improve household wasting practices, and this can be achieved through expanding the conceptualisation of S@S and recognise the role of informal S@S system, and noting that S@S is an integrated approach with various stakeholders playing different roles.

1.4. Overview of the report

The above information provides a brief introduction about this research project and the purpose of the study. The next sections will cover the literature review which discusses some of the broad concepts consulted for the purpose of the research, theoretical framework which indicates the academic debate that the research is based on. The methodology section provides an overview of the methods employed in collecting data. Chapter four provides data analysis of the findings. Chapter 5 provides concluding remarks of the research report, this will also include suggestions to improve S@S participation in Orange Farm.

CHAPTER 2: LITERATURE REVIEW

Solid waste has become a great challenge faced by many city's authorities, as cities grow in population size and industrial activities such as manufacturing increase, the amount of waste generated also increases stretching a demand in space to dispose of waste. It is vital that the government find alternative measures to prevent/reduce the amount of waste going into the landfill sites. Therefore, Integrated Solid Waste Management (ISWM) is regarded as a potential approach to minimise waste in landfills. According to [Skinner \(1993\)](#) ISWM is a strategy to promote the adoption of acceptable systems of solid waste management within the community, through technological development and improvement of practices in households, for the protection of the environment and conservation of materials. In this study ISWM is regarded as the involvement of different stakeholders (including households) working together to manage waste within the community.

This chapter focuses on reviewing the literature of household participation in waste management and presents global solid waste management experiences. The purpose of reviewing various literature in household wasting practices is to explore how various scholars' debate about solid waste management practices over the world. This will be discussed in relation to South African context. The literature reviewed for the purpose of this study covers the following concepts: definition of waste, household, participation of households, gender roles, recycling, separation at source and Integrated waste management. This will help in planning how local waste management strategies can be improved.

2.1 Solid waste management across the world

The current situation of waste management in many of the world's largest cities is being threatened by increased domestic solid waste generation and reduced space for disposal. According to [UNEP \(2005\)](#) recovery and recycling are considered potential mechanisms for improving solid waste management. The major barriers that hinder appropriate or effective solid waste management is lack of awareness and legislation that enforce waste management in societies ([UNEP, 2005](#)).

The current waste management practices seen around the world have evolved from changing environmental conditions such as pollution and climate change. However, the current strategies in waste management are largely influenced by the Rio earth summit that was held in Brazil in 1992. [Agenda 21 of the Rio Earth summit](#) stated that, *Governments should urge waste minimisation and increase recycling as a strategy towards sound waste management*

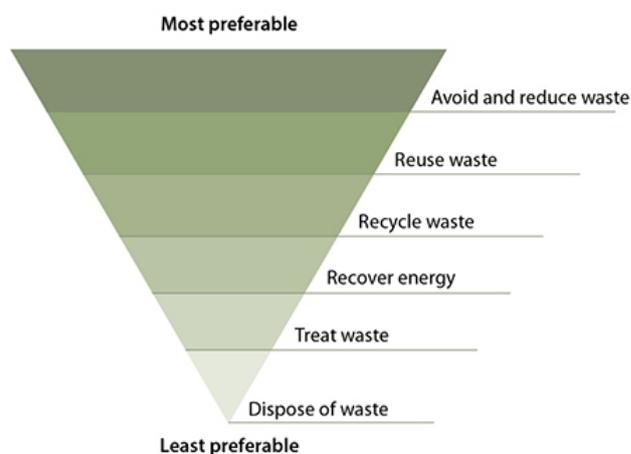
and disposal; establish guidelines for the safe reuse and encourage markets for recycling and reuse products; provide incentives to recycling; fund pilot programs such as small scale and cottage-based industries.

2.1.1. Waste management hierarchy

According to **UNEP (2005)**, global waste management strategies are starting to incorporate the concept of waste hierarchy. The Waste Management Hierarchy (WMH) is an internationally recognised strategy for solid waste management (**UNEP, 2005**). This hierarchy has been adopted by most of the industrialised countries.

Furthermore, in Korea the government adopted waste prevention policy to reduce the pressure in landfills. According to the **Korean Ministry of Environment (2014)** volume-based waste fee system was introduced in the 1990s, according to this system people pay in proportion to the amount of waste they have generated. The fee is based on the type and amount of waste produced, this influences people to recycle most of the waste so they cannot be charged a lot of money.

The waste management hierarchy discusses options for waste management during the lifecycle of waste, it emphasizes waste reduction and the least supported option is waste disposal, *refer to [Graph 1](#) below*. Therefore, waste management systems across the globe are now being influenced by waste hierarchy promoting waste recovery and reducing valuable waste in landfills.



Graph 1: *Waste hierarchy* (**NSW EPA, 2015**).

2.2. Waste management in South Africa

The increasing problem of waste management in South Africa led to the adoption of a new waste management strategy to address waste management challenges facing the country. In South Africa an average individual generates approximately 1.5kg of waste per day which is equivalent to approximately 25 million tonnes per year (Interwaste, 2013).

As a response to this, in 2011 South Africa established the [National Waste Management Strategy \(NWMS\)](#). The overall purpose of the strategy is to give effect to the objectives of Waste Act which are to protect health, well-being and the environment through sound waste management and application of the waste management hierarchy (DEA, 2011). According to DEA (2011) the strategic goals around NWMS include; promoting waste minimisation, re-use, recycling and recovery of waste, ensuring the effective and efficient delivery of waste services and achieving integrated waste management planning. This is the policy that Pikitup has adopted to influence waste minimisation in landfills.

2.2.1. Solid waste management in Johannesburg (Joburg)

In the Johannesburg Metropolitan Municipality the suitable space for landfill remains a huge challenge to the city's authority. However, the easiest way to increase the lifespan of the available landfill sites is to remove valuable waste from the landfills. In response to waste minimisation guided by the waste hierarchy, the new waste management strategy launched during the Joburg waste summit involved introducing S@S programmes in various areas around Johannesburg (i.e. Waterfall and Orange Farm) as a way to influence the culture of recycling and minimising waste in landfills (Pikitup, 2014).

The program is coordinated through projects run by cooperatives for example; Siyaphumelela community development project, in these projects residents are provided with waste separation plastics in order to separate waste for collection. The strategy targets to reduce 70% of waste at household level and 20% of waste in landfills by 2014 (Infrastructure news, 2013). The city of Johannesburg also established buy-back centres to support recycling initiatives and allowing reclaimers to bring recyclable materials in exchange of money (CoJ, 2011). Reclaimers are informal workers who salvage reusable and recyclable materials from solid waste (Samson, 2016). Thus, reclaimers play a vital role in community service delivery (waste management), and it is a way of integrating communities in waste minimisation and creating jobs in the waste sector for poor households.

2.3. Concepts reviewed in relation to household waste management

For the purpose of this study various literature about household wasting practices was reviewed focusing on how various scholars debate about household solid waste management practices over the world, this is discussed in relation to South African context. The literature reviewed for the purpose of this study covers the following concepts: definition of waste, households, participation of household, gender roles, recycling, separation at source (S@S) and integrated waste management.

2.3.1. What is Waste?

Waste is a broad concept and it is challenging to come to an agreement of what waste is, as different individuals from different locations define waste in relation to what they think waste is. Oelofse and Godfrey (2008) argue that defining waste has its origins on the unwanted and discarded materials into the surrounding environment. According to Oelofse and Godfrey (2008) in South Africa there are at least two legal definitions of waste provided; Environmental Conservation Act (ECA of 1989) simply indicates that waste is the unwanted material, whereas the National Water Act defines waste as a polluting factor.

Materials become waste when they lose their primary function to the user (Aja *et al.* 2014). In this regard someone's waste might be another person's raw material, for example; a person might decide to throw away old clothes; on the other hand another person might use the same clothes to wear. The definition of waste changes with location and amongst individuals, this is because what another person may regard as unwanted material someone may desperately want the material to make a living out of it. Therefore, this research project considers that waste do exist.

In defining waste, factors such as economic status, educational level and residential locations also play a role (Aja *et al.* 2014). This study focused on household solid waste materials which are part of everyday household activities, for example plastics, tins and papers. Palatnik *et al.* (2014) provide examples of the most common household solid waste around the world which are; plastics bottles, plastic bags, light bulbs, children toys and old clothing materials.

The literature from various scholars all consider that waste exists and that the definition of waste is shaped by peoples' perceptions and attitude. However, the majority of the literature can be criticised for failing to determine how social factors such as gender roles and community background shapes the definition of waste. From various literatures reviewed,

this study concludes that waste is the material that individuals decide they no longer want in their living space, and that a person's opinion shapes what they regard as waste in their household. This is the reason we see one person throwing away certain materials whereas another individual uses the same material to make a living such as reclaiming.

2.3.2. Household

According to [Bateman and Munro \(2009\)](#), a household is a domestic unit that consists of one or more people who live in the same dwelling and share a living space; it may consist of a single family or other groupings of people. Household size plays a role in influencing household waste management practices, and it can be argued that a larger household size produces more waste compared to a smaller household. In this study respondents are asked if household members influence or remind each other to separate waste at source. [Ezebilo \(2013\)](#) indicates that people living in smaller household size often have more space and a greater potential to manage their waste.

In contrast, [Bateman and Munro \(2009\)](#) indicate that the bread winner plays a major role in influencing waste management practices. However, women also play an important role in influencing their children to participate in wasting practices within the household. Although a woman may not be a bread winner in the household when an income earning man is present, she is responsible for the majority of household activities such as buying grocery, cooking and cleaning which makes it even easier for a woman to influence waste management practice in a household as a way to organise her home.

2.3.3. Participation of Households

A rich literature on household solid waste management focuses on reducing waste disposal and increasing recycling of household waste ([Palatnik et al. 2014](#), [Skinner, 1993](#)). However, these literatures can be critiqued for failing to explain peoples' awareness of these practices (reducing and recycling), peoples' level of participation can be shaped by their awareness towards a situation and knowing how their participation will help to solve the problem in the society.

Therefore, in South African context it is relevant to inform residents about wasting practices and influence individuals to engage in effective waste management practices such as separating waste for recycling (e.g. plastics bottles) because it can help them get money by selling their recyclables. However, [Buenrostro et al. \(2014\)](#) state that societies' perception on waste is best understood as a relationship that humans have with the environment. This

relationship determines peoples' attitude to favour of or against waste, thus waste management can be more of a personal issue.

Furthermore, [Chung and Lo \(2004\)](#) indicate that the first step to influence environmentally sound waste management practices is to understand public preference on household waste. It is important to understand that the relationship that people have with waste shapes how they conceptualise and perceive waste. [Buenrostro et al. \(2014\)](#) support their argument by indicating that peoples' perception of the environment is therefore related to social benefits, such as job creation. As a result, this study argues that peoples' level of participation in waste separation is shaped by their awareness on how it benefits them, most residents may not want to engage in waste separation because they think that it is not their responsibility to do so but the responsibility of the municipality, and they may not know that their participation helps to solve the problem of waste management.

Peoples' attitudes inform their decisions (for example; how people decide what to throw away or store), and peoples' perceptions are favourable and unfavourable feelings inspired by objects or a situation (for example: poverty) ([Buenrostro et al. \(2014\)](#)). Therefore, different people perceive waste differently depending on how they interact with waste, and this influences how they decide to participate in waste management programmes. In this study, the researcher asked the residents what is regarded as waste in their households and why they do/don't separate waste at source as a way to explore how resident perceive or think about waste and waste separation in their own living spaces.

2.3.4. Gender

Gender is simply a social concept whereby the society differentiates men and women, it is associated with power, and it influences inequality. [Samson \(2003\)](#) indicates that a key aspect of gender differences is forged through the different roles that we play in our households, communities and workplace. [Buckingham et al. \(2005\)](#) indicate that many geographies of environmental injustice are gendered. In this regard, women generally experience worse environmental conditions than men, this is because women are likely to be poorer than men and are exposed to environmental problems evident to poverty. The social roles of women such as food provision and cleaning brings women into daily contact with waste, this influences women to manage waste in order to make their living spaces clean ([Ezebilo, 2013](#)). Therefore, woman are more likely to engage in household solid waste management practices than men.

Culturally imposed gender roles play a role in shaping peoples' perceptions towards waste management. In our societies, women are responsible of making their living areas clean for the benefit of their children and the whole family.

Therefore, this research determines how different gender roles shape household wasting practices, and how women influence participation amongst their family members such as children. Therefore, the academic debate on how gender roles influences wasting practices relates to this study because this study aims to explore how gender roles shape wasting practices. However, this study considers changes in social roles such that women now don't spend much time at home, they do work. The research considers that such social changes have an impact in wasting practices. The researcher concludes that waste separation cannot be discussed outside the context of gender roles in households.

2.3.5. Recycling

Scholars such as [Palatnik *et al.* \(2014\)](#) indicate that in households waste management practices such as recycling, re-use and minimisation of waste are common practices to manage household waste. However, [Ukpong and Udofia \(2011\)](#) state that in order to influence household solid waste management practices, we need to start by investigating the current household solid waste management practices, this may include the type of waste generated, storage and disposal of household waste.

According to ([Anderson, 1991.](#), [Palatnik *et al.* 2014](#) and [Skinner, 1993](#)) waste recycling and separation at source is an appropriate practice to manage household waste. However, such scholars can be critiqued for failing to indicate whether people in households are aware of such practices, and whether they understand the benefits of adopting any form of wasting practice. For the purpose of this study, Orange Farm residents were asked about the wasting practices that they have adopted in their households and whether they know the benefits of waste separation.

[Barr \(2004\)](#) argues about waste hierarchy, which he referred to as the series of available options for preventing and dealing with waste. In waste hierarchy emphasis is placed on waste prevention, this includes developing attitudes and behaviours to consume less and to produce materials that have less potential of becoming waste after use. According to [OECD \(2015\)](#) recycling is one of the simple methods of reclaiming valuable waste, it is a straight forward approach in involving the public to be responsible for waste management behaviour. [Skinner \(1993\)](#) state that recycling is an element of ISWM, thus residents are involved

through municipalities who are responsible of providing necessary services e.g. waste plastic bags. This approach influences households to take part as stakeholders in the waste management system by sorting waste for recycling.

Therefore, in the South African context, recycling is a sustainable option since less material will be disposed in landfill sites, and it is a way to create jobs for the poor people by collecting recyclable material and take it to recycling stations in exchange of money. Women in communities can also participate in such activities and can create jobs for themselves to support their families. However, in townships such as Orange Farm, it is important to bear in mind that there is lack of space to store and separate waste for recycling due to small and congested houses and yards. This may affect resident' ability to separate and store waste for recycling.

2.3.6. Separation at source

According to [Ababio \(2011\)](#) in cities there is little attention on reducing waste flows, this is because the authorities struggle to understand that proper waste management entails proper waste collection, transportation, treatment and safe disposal of the residuals. [Ababio \(2011\)](#) supports his argument by indicating that waste reduction, reuse and recycling demands waste separation and sorting at source which demands a lot of effort and commitment from people. This statement can be supported by [OECD \(2015\)](#) stating that waste separation at source is a less expensive and more effective practice to minimise landfilling, however it demands public participation at large in order to be successful.

S@S is a better option to manage waste and it entails an integrated approach ([Ababio, 2011](#)). ISWM guarantees equitable provision of services to both the rich and the poor and it also provides dignified and secure employment in communities ([Cilinskis and Zaloksnis, 1996](#)). Therefore, the researcher concludes that there cannot be S@S without participation of residents, and to improve the level of participation there is a need to close the gap by accommodating informal S@S system.

2.3.7. Integrated Waste Management

Waste management is not an end product but a process ([Skinner, 1993](#)). In our society we have noted that waste management issues does not have a single nor a simple solution, but require an integrated approach. [Anderson et al. \(1992\)](#) argue that every sector has a role to play in waste management issues, the government can play a role of setting standards for the society. This initiative will enable the local government to shift from a traditional waste

management system to a more integrated approach in waste management. According to [Nordone et al. \(1999\)](#) Integrated Waste Management (IWM) system combines waste streams, waste collection, treatment and disposal methods into a practical waste management system that aims to provide environmental sustainability. In a rich literature, various authors argue that IWM supersedes WMH and it is a comprehensive strategy which involves four key elements; reducing, recycling, recovery and utilising landfills ([Anderson et al. \(1991\)](#), [Nordone et al. \(1999\)](#), [Skinner \(1993\)](#)).

The traditional responsibility of waste management have shifted from the municipality to all sectors in the society, thus it is now an integrated approach. This idea is drawn from an argument in an article by [Skinner \(1993\)](#), he argues that recycling is an element of ISWM, this is because it involves separating recyclable material by the waste generator (households).

[Skinner \(1993\)](#) recognises that the key factors in the success of IWM is the cooperation and willingness of the generator to participate in the program over a long period of time. Furthermore, in their report [CoJ \(2011\)](#) argue that IWM policy emphasises that integration must be both horizontal and vertical with government departments as well as other sectors throughout the waste life cycle.

2.4. Gaps addressed in the Study

For the purpose of this research a number of literature was reviewed, however, there is not enough research on gender roles in wasting practices, this research considers the importance of gender in shaping household waste separation. From the literature reviewed, there is not enough debates in discussing how EE is important in helping residents to shift their wasting practices and adopt sustainable practices such as waste separation. Thus, scholars fail to discuss how peoples' attitude and perception towards waste management may affect their level of participation in waste management programmes within their communities. Lastly, there is a need to discuss how the informal sector plays a huge role in community waste management services such as recycling.

2.5. Conclusions

Waste is a broad concept and its definition is debatable amongst individuals and societies. In developing countries such as South Africa, industrial and economic development have played a huge role in increased waste generation that causes stress to the availability of landfill space. However, this literature review explored some of the broad concepts on household solid waste management practice that most scholars have debated over the world as a way to

influence household waste management. From various literatures, recycling and waste separation have been discussed by the majority of the scholars.

Scholars such as **Snyman (2009)** argue that almost all household solid waste can be recycled, this can be possible if all people are willing to devote their time in recycling efforts. Most of the arguments by the scholars do not relate to South African context. Therefore, this study focused on a township within South Africa in order to be relevant and close the gap that exists between residents' awareness and attitude on waste management practices and the level of participation in waste management. It is important to start by understanding how people perceive waste and their attitude towards household wasting practices, and try to determine effective practices that are adoptable and beneficial.

Many studies across the world have so far indicated that extreme waste generation is a global challenge, and effective solid waste management strategies such as “waste management hierarchy” is what needs to be stressed more. Therefore, this research explored the current household waste management practices in Orange Farm (Ext 2) as a way to determine possible and effective ways to better Pikitup S@S programmes in the future.

CHAPTER 3: METHODS

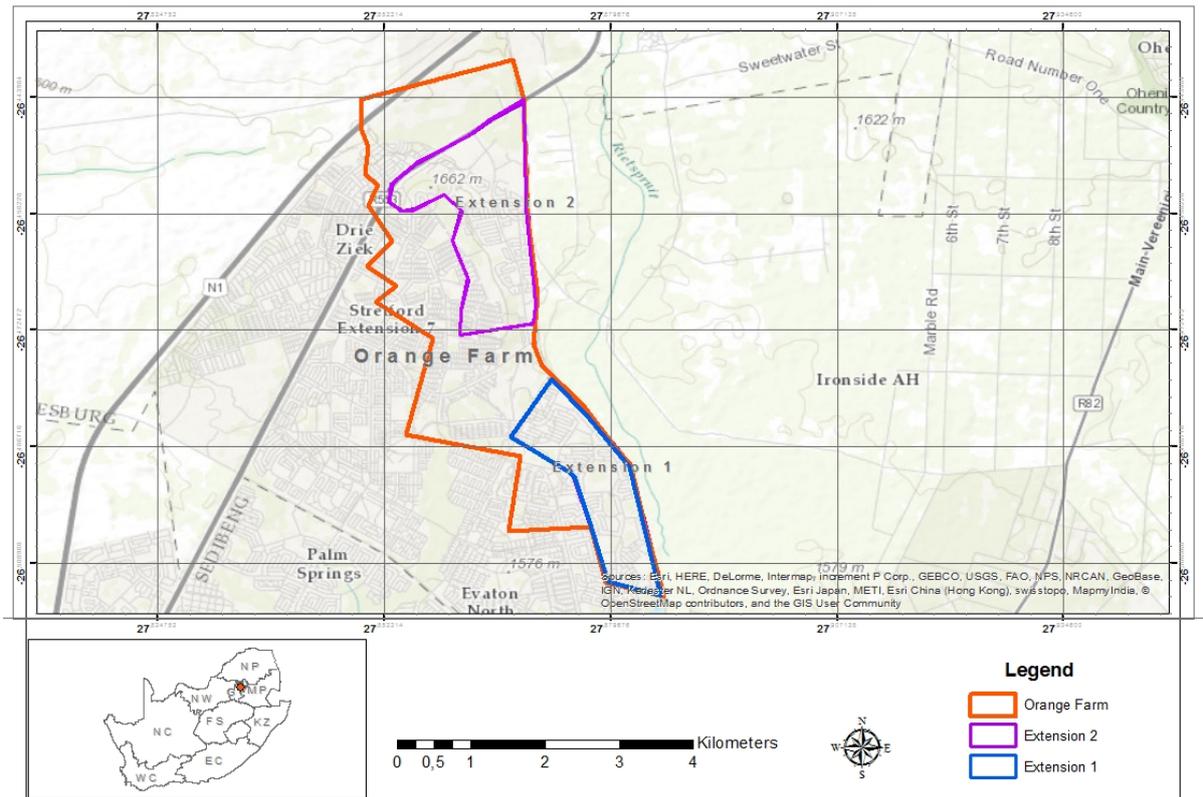
3.1. Introduction

This chapter gives a detailed description of the methods as applied in the study. The methods were selected considering that they will assist in collecting data within the study area. The data for this research was collected amongst Orange Farm (Ext. 2) residents, Project management personnel and workers (separated waste collectors and waste separators), Pikitup waste management officials and reclaimers. The duration of the study was one month, the study took place from the second week of July to the last week of August 2016. This section of the report includes; study area, research design, ethical consideration, data collection methods (semi-structured interviews, focus group and observations) and limitations of the study.

3.2. Study Area

This research focuses on household solid waste management practices in Orange Farm (Ext. 2). Orange Farm is a township located Southwest of Johannesburg (Gauteng province), it falls under the city of Johannesburg Metropolitan Municipality. It is said that the name Orange Farm originated from the township's history, the dominant activity that attracted people to populate this area was employment in local farms, and the township existed since the 1980s (ALHDC, 2012). This area is dominated by people of different cultural backgrounds such as Zulus, Sothos and Vendas (Statssa, 2011). This area has a low socio-economic status characterised by diverse cultures, congested household structures, overpopulation and inadequate service delivery, for example houses.

According to Stats SA (census report of 2011) the Area of Orange Farm is 12.16 km², the population is approximately 76767 and over 21000 households. The majority of the occupants are females (50.7%) and males (49.3%) (Statssa, 2011). In assumption, these numbers might have changed over the years. *Refer to a map below indicating Orange Farm Township.* This is a very large area and it is made up of sub-places, which are Orange Farm Ext 1 to Ext 9. However, Siyaphumelela community development project's services only covers four (4) sub places which are, Ext 1, 2, 4 and 6. For the purpose of the study the researcher selected Orange Farm Ext 2 to conduct a research, this was mainly due to safety reasons and time constrains. The area of Orange Farm Ext 2 is 2.48 km², the population is approximately 14515 and 3942 households, and the majority of the residents are females (51.13%) and males (48.87%) (Statssa, 2011).



Graph 2: Study area map Orange Farm (Esri,).

3.3. Research Design

This study adopted a qualitative method because the researcher aimed to explore how residents interact with waste in their households, their knowledge and attitude towards waste separation and how S@S project influences and shapes their wasting practices. **Creswell and Tashakkori (2007)** indicate that a qualitative research method describes an event in its natural setting and it is a subjective way to look at life as it is lived and an attempt to explain the study's behaviour and attitude. In this study the researcher aimed to explore S@S as a wasting practice adopted in households, and to try and understand residents attitude towards S@S and how it affect their level of participation in waste separation. Therefore, a qualitative approach is relevant for this study because it consists of methods such as interviews, observation and focus group which enable the researcher to interact with the participants. With these methods participants were able to share their experiences and opinions, the researcher was also able to determine the gap in literature to be addressed in this study.

3.4. Ethical Consideration

Ethics are associated with morality and they deal with matters of right and wrong in the society (**Babbie and Mouton, 2007**). Before conducting this research, the researcher received

ethical clearance through the internal Geography, Archaeology and Environmental Studies (GAES) department's process for honours students. In this study the researcher followed the general agreement to participate, the research ensured voluntary participation by respondents, and no one was forced to participate. Furthermore, participants were ensured anonymity and confidentiality in their response, under age individuals (under 18) did not participate in the research and recording of conversations and taking of pictures took place after permission was granted by the participants.

3.5. Data Collection Methods

Data collection is a systematic gathering of information relevant to research purpose (Burns and Grove, 2005). According to Burns and Grove (2005) in qualitative research there is a need to use methods that enable the researcher to interact with participants and collect data about how participants behave on a studied situation. In this project, participants were selected based on willingness, this was aimed to avoid biases and to give all individuals equal chance to be selected to participate in a research. For the purpose of this research, the methods employed to collect data are semi-structured interviews, focus group and personal field observations. The opinions and insight views of different groups of participants assisted in determining how S@S project shapes household wasting practices in this community and how it can be improved for future purposes.

3.5.1. Semi-structured Interviews

Semi-structured interviews were conducted with household members, reclaimers, truck assistants, project management personnel and Pikitup S@S management officials. Interviews conducted include 30 households (15 of those who participate in S@S and 15 of those who do not participate), 3 truck assistants responsible for waste collection, 2 project management personnel, Pikitup's operations manager and Pikitup's S@S manager. Chapungu *et al.* (2015) state that a flexible design of data collecting method such as interviews allows more freedom of expression during data collection process. The interviews were conducted to understand how people perceive S@S as a wasting practice and what can be improved to increase the level of participation in S@S.

3.5.2. Focus Group

According to Hennink (2007) a focus group is a group interview of approximately 6 or more individuals who share similar characteristics or common interests. Stewart *et al.* (2009) indicate that focus group method is a flexible research tool, it allows a researcher to access

different communication forms which people use daily, in a focus group people may help each other to recapture past events. In an attempt to validate some comments by residents, a focus group discussion was used. This was conducted with waste separators (it consisted of 7 women). The primary purpose of a focus group was to determine the type of waste received mostly for separation and whether residents are aware of the type of waste to be separated.

3.5.3. Personal Field Observation

Observation is a way of viewing participants' behaviour without interference, this helps to have a clear picture on how individuals actually behave in a studied situation (Hancock *et al.* 2009). In order to observe households' wasting practices in relation to S@S the researcher used an observation checklist. The researcher observed the types of waste generated, whether waste is separated, how waste is stored and whether waste is collected in every household. The researcher travelled in a waste collection truck with the workers for three days over a period of three weeks (one day in a week), this was aimed to observe how waste is collected in households, facilities provided to residents for waste separation and the relationship that waste collectors have with residents. To support this method pictures were taken to support what was being observed by the researcher.

3.6. Limitations of the study

One of the main challenges in collecting data for the research was language barriers, as the dominant language in the study area is Zulu and Sotho and it is not the researcher's mother tongue. The researcher had to ask for favour from one of the project workers to translate during interviews, some information was missed during translations. The researcher had to rely on one of the project workers who is a local person to walk around the area, this was due to safety reasons because the researcher is not familiar with the area. Thus, field work was conducted only on Fridays and sometimes on Mondays due to the availability of a person accompanying the researcher.

Accessibility into households was also a challenge, data was collected during winter time and most of the people were always in their houses and have locked their gates. Sometimes attitudes of some residents thinking that the researcher is a political member canvassing for votes was a problem, this is because the research was conducted during local elections time (3 August 2016), some residents refused to be interviewed. Furthermore, the researcher planned to provide residents with wasting dairies, however most of the respondents were

pensioners and illiterate, making it difficult for them to write. Thus wasting diaries as a methods was not used.

However, the researcher gained access to other households because she was being accompanied by a local person wearing work uniform from the project, then respondents felt free to respond because they know the project worker. Repelling attitude from some of the participants caused some problems, they did not want to be recorded thinking that the researcher might use the information against them, thus much information was missed when transcribing. Time limit was also a barrier, the researcher wanted to determine how seasons determine the type of waste produced and whether seasons affect the level of waste separation, the research was conducted in winter period (July-August), thus the findings are a bit bias favouring winter season.

CHAPTER 4: RESULTS

4.1. Results

This chapter discusses the key results of the research. The results are reported in five main sections. The chapter firstly reports on the type of waste generated in households. The second section reports on the dominant household wasting practices in Orange Farm community. The third section analyses households' awareness on S@S project. The fourth section presents the results of the analysis from the attitudes and perceptions of residents on S@S. The fifth section discusses gender roles in waste separation. The last section concludes the chapter.

4.1.1. Household solid waste

In an effort to identify the most common type of waste generated in households within Orange Farm, respondents were asked the question “*what do you normally throw away on daily basis?*” this may be after cooking, eating or cleaning. From the respondents, 25 of 30 respondents indicated that the most common type of waste they throw away on a daily basis are food leftovers, sand from cleaning, plastic bottles, papers, tins and food packaging. In an interview session with one of the residents who separates waste she stated that “*I throw away everything that I no longer need in my house*” (22-08-2016, resident 4). This question was asked to both households that separate at source and those who do not separate.

Palatnik *et al.* (2014) argue that household waste is a result of everyday household activities such as buying groceries. Their study was conducted in different regions around the world, for example; South Asia, Latin America, Middle East, Central and South Africa, the authors indicate that in most urbanised communities common household solid waste include; paper, glass, plastic bottles, plastic bags, metals, light bulbs and aluminium cans. Therefore, from my findings I argue that the type of waste generated in each household is influenced by the type of food consumed in a particular household. This is because in other households they throw away certain type of waste, for example tins (meaning they consume a lot of canned food), when asked why they throw away this type of waste, one of the respondents was quoted saying “*this is what we normally eat in the house*” (22-08-2016, resident 6).

The researcher asked this question to the residents as a way to determine whether the generated waste from households is recyclable waste. According to IFEZ (2014) recyclable waste is waste that can be separated from rubbish and placed in a separate space, this waste can be separated into several types such as paper, glass, metals, aluminium cans, plastic bags

and batteries. This leads to the conclusion that the generated waste from these households is recyclable waste.

4.1.2. Dominant household wasting practices

In this section, the dominant household waste management practices by residents of Orange Farm (Ext. 2) are discussed. Although the researcher was initially interested in S@S as a wasting practice adopted by households in Orange Farm, during the course of the research it became evident that it is not possible to understand separation at source activities in isolation from other wasting practices within the same households. Out of 30 households interviewed, approximately 10 interviewees stated that they engage in either open dumping or burning of household waste. Reasons why this is the case and explanations of how these are linked to Pikitup's service delivery in Orange Farm are discussed further below.

4.1.2.1. Open dumping and burning

Haque and Hamberg (1996) argue that municipalities, that is the local governments, are responsible for collecting waste from households, insufficient coverage of waste collection services result in residents finding means to manage household waste. According to **Oelefse and Strydom (2010)**, the adopted household wasting practices are shaped by the structure of waste management services provided in the area. Orange farm community depends on the municipality for waste collection; Pikitup is responsible for waste collection in this area. Therefore, if waste is not collected regularly residents dump waste illegally in open spaces as a way to get rid of their household waste.

Residents were asked *“how they normally dispose their waste?”* about 10 of the 30 respondents indicated that they sometimes dispose their waste on open land. The researcher then asked why they dump waste illegally, the main reason for illegal dumping as one respondent stated *“sometimes the Pikitup truck does not come to collect waste mostly when they are on strike or when the truck is not working properly, we don't have enough space to store all the waste for over a week so the best way is to sneak at night and dump waste in an open space ... We can't do that during the day because if people see us we will be fined”* (22-07-2016, resident 1) see pictures below of illegal dumping on open land and burning.

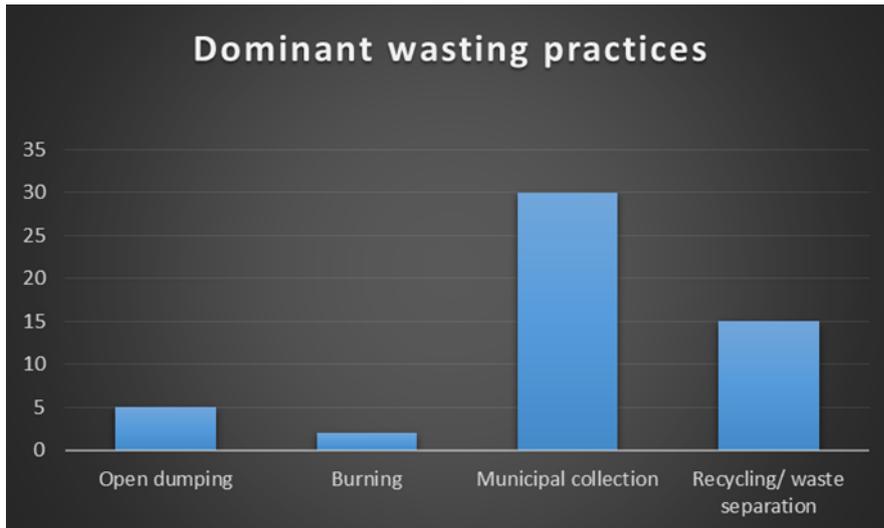


Picture 1 & 2: *Illegal dumping and burning (Researcher's photo).*

Some of the residents interviewed indicated that they burn households' solid waste to minimise the volume of waste in households. *"If waste is not collected by Pikitup I start fire in my back yard and burn waste to make space available to store waste for the next week"* this is quoted from one of the **non-separating residents (25-07-2016, resident 1)**. One of the respondents whose house is located next to an open space said *"I try to burn the waste close to my yard because if such waste is unattended it attracts rats and during windy days plastics and papers can be transported by wind into my yard ... but burning rubbish is a problem because it causes smoke which smells very bad (21-07-2016, resident 7).*

Therefore, the study argues that even if S@S is introduced in the community residents still practice illegal waste management practices such as illegal dumping and burning, thus the project is not dealing with waste management issues effectively within the community. In their article **Haque and Hamberg (1996)** argue that the majority of relevant literature on waste disposal has focused on solid waste management in large urban areas, most of the small cities and rural communities have received nominal attention, this results to small communities engaging in illegal waste management practices such as illegal dumping because there is no authority to monitor such activities. **Clapp and Martins (1974)** argue that open dumping of solid waste is still the most used method of disposal for municipalities.

One can point out that the residents of Orange Farm lack awareness of the environmental impacts of illegal dumping and burning of waste such as air pollution and attracting creatures such as rats and mosquitos that can spread diseases to humans for example; malaria. As shown in **graph 3** below, some residents still engage in illegal waste management practices as a way to get rid of household waste.



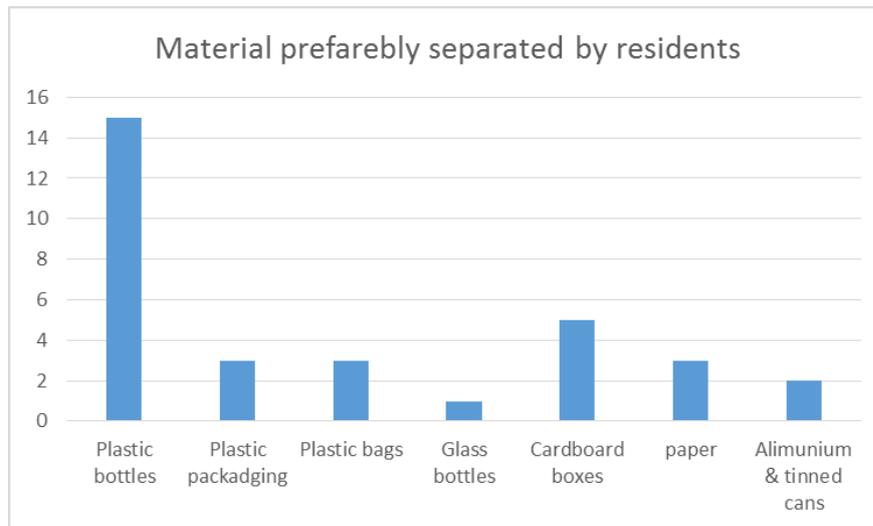
Graph 3: *Waste management practices by residents.*

The researcher concluded that residents are not aware of the negative environmental impacts of illegal dumping because they think that getting rid of household waste either through burning or illegal dumping reduces the volume of waste in households. Even residents who separate waste in their households indicate that they dump waste illegally mostly if the Pikitup general waste truck didn't come to collect waste or if they have a party at home and they generate a lot of waste. Therefore, lack of awareness results to poor waste management decisions by residents which results to negative environmental impact. Lastly, it can be argued that Pikitup fails to acknowledge that in other yards there are tenants, meaning the numbers of households in a yard are increased. Therefore, one municipal bin is not enough for such a number of people, this influences residents to dump waste illegally in order to make space available for waste storage.

4.1.2.2. Waste separation

In order to determine waste separation practices by residents in Orange Farm, the respondents were posed with the question “*do you separate waste?*” This question was asked by the researcher to verify that there are residents who participate in waste separation and those who do not participate. According to [Portal Belgium \(2014\)](#), waste separation is the action of sorting rubbish or household refuse at source and placing it in waste separation bins before recycling it, waste can be separated into different categories of papers, plastics, bottles and metals. From the households that separate waste, they were asked “*what type of waste they normally sort for collection?*” the majority of the respondents indicated that they normally

separate plastic bottles and cardboard boxes. As can be seen in [graph 4](#) below, the majority of respondents' do not separate all types of recyclable materials equally.



Graph 4: *Material preferably separated by residents*

The researcher concluded that residents specifically select the type of waste to separate; they do not separate all types of recyclable waste. Furthermore, residents were asked why they separate plastic bottles and cardboard boxes more than other materials, one of the respondent said “*they didn’t tell us to include bottles and tins in separation plastics, some of these materials we throw them in a municipality bin*”. (22-07-2016, resident 3). The researcher also noted that residents regard the recycling truck as “*truck ye zigubhu*” meaning a truck of plastic bottles, this is one of the reasons residents only separate plastic bottles because they think all is needed is plastic bottles. In contrast, 7 out of 15 residents who participate in waste separation indicated that they do not include materials such as bottles and tins in separation plastic bags because they tear up the plastics, so it’s better to separate light materials such as plastic bottles and boxes. Refer to [picture 3 and 4](#) below showing that not all recyclable materials are included in waste separation plastics for collection, residents select light materials to put in separation plastics.



Picture 3 & 4: *Materials not included in separation plastics (Researcher's picture).*

In order to verify this assumption the researcher also interviewed truck assistants who are responsible for collecting separated waste in households, they were asked “*what type of waste they normally receive from households?*” The truck assistant said “*residents prefer to give us PET white (plastic bottles) because people normally drink a lot of cold drinks, juices and milk, so they have a lot of this type of waste*” (05-08-2016, *Truck assistant 3*). This statement was confirmed by the fact that in a focus group discussion conducted with waste separators, they indicated that the type of waste that they normally separate is PET white (plastic bottles). Thus the researcher concluded that not all types of waste are being separated as expected, much is thrown in a municipal bin unnecessarily. Refer to the pictures below showing the type of waste collected from households.



Picture 5 & 6: *Waste residents normally separate (Researcher's picture).*

4.1.2.3. Recycling and re-use

It can be noted that there is a relationship between waste separation and recycling. Recycling refers to the action of converting recovered material that would be disposed of as waste into usable materials, this action helps to reduce landfilling (Friends of the Earth, 2008). For the purpose of this study, recycling is regarded as a process which provides an opportunity to

capture some of the valuable materials from waste or household refuse. On the other hand, reusing practice is simply a process of utilising materials on its end-use. Recycling and reusing waste material creates opportunities of regaining residual value or transforming such material into usable raw material (Clark, 2002).

Therefore, taken together with the points mentioned above, this section is not limited to the role of reclaimers in waste separation. As a matter of interest, the researcher engaged with reclaimers to ask about recycling practices. The question “*why are you a reclaimer?*” was asked to determine whether they reclaim for environmental or economic interest, more questions were asked to establish knowledge and understanding of recycling behaviour.

Respondents indicated that they are reclaimers because they do not have jobs. One of the respondent said “*I have been a reclaimer for the past 5 years and I use the money I get from doing this job to support my family, I can now buy maize meal for my children ... when this project started I was already a reclaimer and used to take waste to Orange Farm scrap yard which is on the other side of the township ... since this project opened I started to bring waste this side because it is now the closest one to me ... being a reclaimer is the easiest way to make money because people don't want to employ us*” (12-08-2016, reclaimer 3).

In an effort to understand more about recycling behaviour, five (5) reclaimers were interviewed. These reclaimers work in an area that is covered by S@S project, and they stay in the S@S area. The researcher asked them what type of waste they collect most for recycling; 4 out of 5 reclaimers interviewed indicated that they mostly collect PET white (plastic bottles), PP (plastic material such as baskets) and aluminium cans. As a matter of interest, the researcher asked why they select such materials when collecting waste, one respondent said “*there is a price list of materials, so I look at what will help me get more money ... you see bottles don't have a lot of money so why should I walk a long distance with a trolley full of heavy bottles only to come and get R2 ... it's better I carry plastic bottles knowing I will get something reasonable...*” (12-08-2016, reclaimer 4). To validate this statement the researcher went to ask workers responsible for weighing and giving money about the price list of waste received, as seen in a picture below waste materials have different prices. This idea can be supported by Folz and Hazlett (1991) article, they argue that higher prices for aluminium, one of the most valuable recyclable materials has an effect of motivating citizens to sustain the practice of recycling, the market price for recyclables has a huge effect in encouraging more households to recycle.

MATERIAL	PRICE
PET WHITE	R 2.50
PET GREEN AND BROWN	R 1.50
HD	R 1.50
PP/SCRAP	R 3.00
ALLUMINIUM	R 5.00
HLI/WHITE PAPER	R 1.20
COMMON	R0.20CENTS
KA/BOX	R0.60CENTS
TIN/CAN	R0.50CENTS
CAPS	R1.20
BOTTLE	R0.20CENTS
PLSC/CLEAR	R1.20
PLSM/MIX	R0.50CENTS

RETURNABLES	PRICE
660ML/750ML/1L/1.5L/2L	R 1.00
200ML/375ML	R0.50CENTS

Picture 7: Price list of waste material (Researcher's picture).

More questions were asked amongst workers within the project about the type of waste reclaimers bring for recycling and what could be the reason, the workers indicated that reclaimers bring a lot of PET white, PP (plastic materials such as chairs and baskets) and aluminium cans, this is because they receive a lot of money from such materials. The researcher concluded that recycling behaviour amongst reclaimers is shaped by the price tag behind the material they collect, not environmental reasons. Lastly, the researcher noted that the reclaimers are not part of the project but they provide their recyclables to the buy-back centre being run by the project (they work for themselves), some of the reclaimers indicated that the price list of recyclables in this buy-back centre is low compared to other buy-back centres. The researcher concludes that the price list of recyclables may also influence where the reclaimers decide to take their recyclables, but most of them bring their recyclables to this buy-back centre because it is close to their residential area.

Furthermore, during interviews, residents were asked about the materials they reuse in households, they indicated that they mostly reuse plastic bottles to store water in fridges and plastic bags for kitchen dustbin and storing meat in deep freezers. 6 out of 15 respondents who separate waste indicated that they do not reuse anything, after use they throw away. Therefore, this is an indicator to show that people don't know about the importance of

recycling and reusing materials, if more people could be informed about recycling they will not choose what to select for recycling and they will be able to reuse most of the material to avoid throwing in dust bins.

4.1.3 Awareness in waste separation

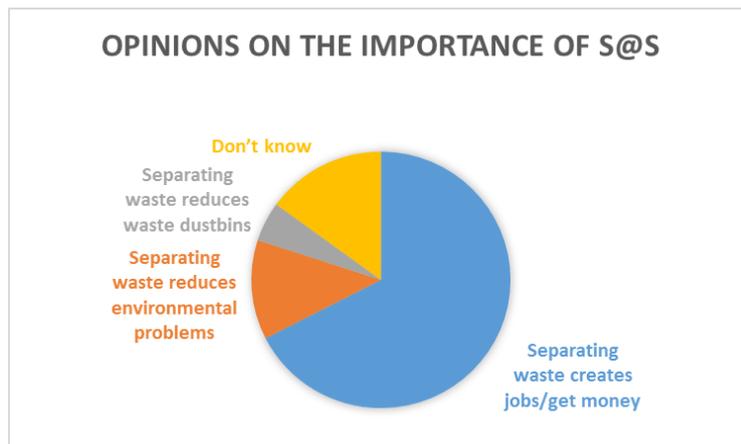
As a way to explore the level of awareness amongst respondents about the significance of S@S, general questions were asked such as ‘*what is the importance of separating waste?*’ and ‘*why do you separate waste?*’ From the responses it was quiet clear that people have different opinions about waste separation, as can be seen in a graph below the level of awareness about the significance of waste separation on the environment is relatively low.

In an interview session, one of the residents was recorded saying, “*in this community there are lots of people who are unemployed, so separating waste is a way that they are trying to create jobs to help people in the community make money*” (22-07-2016, resident 7). Approximately 7 of the 15 respondents who separate waste indicated that they separate waste because they receive free plastics to use for other things in the house. In support of this view that waste separation is important to create jobs, one of the truck assistants was recorded saying “*waste separation helped us to get jobs and those who sell waste are able to get money*” (05-08-2016, truck assistant 1). This led to the researcher’s argument that most people see S@S as a way to make money; they do not know that it is aimed to reduce waste in landfill sites or to protect the environment; sadly even people working in the project seem not to understand the main reason of waste separation in households.

In a focus group discussion, waste separators were asked if residents separate waste as expected, it came up that some residents are still struggling to understand what needs to be separated and how to separate such waste. This is so because the respondents indicated that in waste separation plastics received from the households there is still a mixture of recyclable and non-recyclable waste. During interviews with residents, they were asked *what type of waste is recyclable*, the majority of the respondents indicated that recyclable waste is PET white, which is what they normally separate. Thus, the researcher concluded that residents still lack awareness on how to separate waste properly, and they seem not to understand the type of waste that can be recycled.

Interestingly one respondent indicated that waste separation helps to reduce the amount of waste they throw in dust bins and it helps to keep the environment clean. In support of this view, the chairperson of the cooperative was recorded saying “*S@S helps to conserve and*

preserve the environment ... as a founder of the cooperative I am interested in the environment ...” (12-08-2016, chairperson) The researcher went further to ask why you chose S@S as a way to manage waste, the respondent said “we chose S@S because it is the simplest way to convince the community to reduce waste that goes to landfill sites” (12-08-2016, chairperson). In this regard it can be argued that some of the people do understand the significance of waste separation.



Graph 5: *Opinions on the importance of S@S.*

From the 15 households that separate waste at source, About 9 of the respondents are of the opinion that waste separation is for job creation, 2 respondents indicated that sorting of waste reduces environmental problems such as pollution and it helps to keep the yards clean, hence only 1 respondent indicated that S@S reduces waste thrown in dustbins. On the other hand about 3 of the respondents stated that they do not know the importance of waste separation.

The researcher concluded that most people do not understand the direct relationship between waste sorting and the environment. As a result, the relatively low level of residents’ awareness on the significance of waste separation may have an influence on the publics’ level of participation in waste separation. Folz and Huzlett (1991) argue that well designed educational and publicity programs are important in motivating citizens and giving residents a reason to recycle, residents need to be aware of the reason of waste separation this will influence their participation in recycling. Therefore, there is a strong need to increase awareness amongst residents on the importance of waste separation to the environment.

4.1.4. Household participation in S@S: Attitudes and willingness

In this section, households’ participation in waste management is discussed. The researcher focused on how attitudes and willingness to separate waste affect the level of participation in waste separation.

4.1.4.1. Attitudes

From the study carried out, it is not possible to state definitively that residents are willing to participate in S@S or they are not willing to do so, as residents have different attitudes towards waste separation. As a means of assessing residents' attitude towards S@S, respondents were questioned whether they separate waste and why, one respondent said *"I do separate waste in my yard but I do it to give to the reclaimers because we have reclaimers in this community and I know that they are working to support their families ... I will never separate for Pikitup because they already have money if they want to separate they can do it without asking us, so I prefer to help poor people in my community ..."* (01-08-2016, non-separating resident 9)

In order to support this statement, the researcher questioned reclaimers how and where they collect waste, one respondent stated: *"I collect waste from households, most people know me in this community so they put aside plastic bottles and tins so I can come and collect from their households ... people support me a lot"* (05-08-2016, reclaimer 4). Interestingly some of the residents indicated that they allow reclaimers to search for recyclables in their bins. This can be conceptualised as households' relations to reclaimers. Therefore, the researcher concluded that residents participate in S@S in various ways; for a resident to be able to put aside separated waste for a reclaimer and also to allow reclaimers to search their bins is another way of participating in S@S, people have different attitudes towards S@S and they respond to it in different ways.

Another respondent indicated that he will only allow reclaimers to search his bin if the government make means to introduce reclaimers to the community, *"I will only allow a reclaimer in my bin if I know them or if they are wearing some form of uniform with a tag on to show their name ... in our community we have lots of "nyaope people" (a cheap drug) and if you allow them into your space they end up stealing other household materials"* (22-08-2016, non-separating resident 12). This concludes that residents view waste separation differently, to be able to allow a reclaimer to search your bin is another form of participation.

Furthermore, in households where they don't separate waste the researcher asked why they don't separate waste, one of the respondents was recorded saying *"you know why we ignore these things ... these people expect us to do their job and not give us something in return, if they want us to separate they should give us money because they have it, those workers are being paid, Pikitup is a big company..."* (01-08-2016, resident 8). It was found that

prevailing attitudes exists and residents think that anything that has to do with waste management is the responsibility of the municipality, and if they want to include residents in wasting practices such as S@S residents should be paid because it is not the responsibility of residents to do the job.

This point can be supported by the argument in an article by [Haque and Hamberg \(1999\)](#), who argue that traditionally, municipal governments are regarded as direct providers of public services, this affects our communities in managing waste, thus, we need to realise that the key to environmental success in addressing waste issues lies in changing peoples' attitudes towards integrating publicly supported efforts to reduce waste at source and this can only be achieved through involving waste generators (households). [Skinner \(1993\)](#) also supports this argument by stating that recycling is an element of ISWM and every household should take part. Thus there is a need to shift people's mind set so they do not regard waste management as the responsibility of the government but an integrated approach.

4.1.4.2. Willingness

In order to verify the willingness of residents to participate in waste separation, respondents were asked *what they think should be done to influence them to participate in waste separation*, this question was asked to those who do not separate waste in their households. 9 out of 15 respondents indicated that if they provide them with plastics they will separate, the researcher further asked *don't they receive separation plastics?* One of the respondents said *"they used to give us plastics now we don't know what happened ... they just stopped to provide us with plastics"*. (01-08-2016, non-participating resident 13)

In order to support this statement the researcher asked truck assistants responsible for collecting separated waste *why some residents no longer receive plastics*, they indicated that they used to give plastics to every household but when people are provided with plastics they no longer give separated waste and they use the plastics for other households' activities *"so if people don't give us separated waste we no longer give them plastics we only give to households we know that they separate and they will give us such waste when we visit their houses"* (12-08-2016, truck assistant 1).

Some of the residents indicated that they are willing to participate in waste separation if they get something in return such as money. During the days of observation, the researcher observed that the truck does not go through all the streets, they select streets and only follow the houses that provide them with separated waste. One of the respondent who does not

separate waste indicated that *“the truck no longer come to my street so I don’t separate because they don’t come and collect”* (01-08-2016, non-separating resident 13). Therefore, the researcher concluded that some of the residents are willing to participate in waste separation but they don’t receive separating plastics and the collection truck does not go through all streets, if the project can go back to the households and educate people about S@S and also provide residents with plastics more people may participate in waste separation because the majority of them indicated that they do not separate because they don’t get plastics.

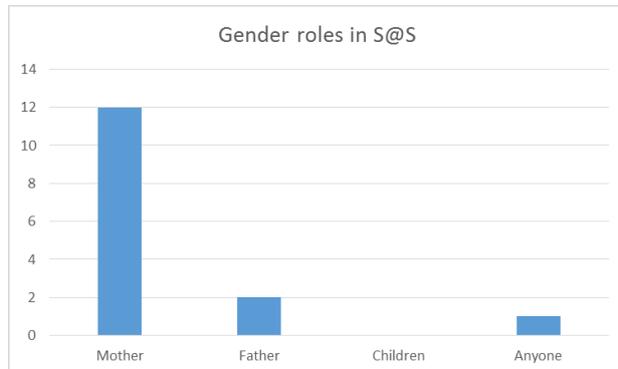
4.1.5. Gender roles and waste separation

As one of the objectives of the study, the researcher explored the role of women in waste separation. As a matter of evidence within our communities, women are close to the issues of waste management mostly in households since they are commonly known for doing house chores. According to Ezebilo (2013) social roles of women such as food providing and cleaning brings women into daily contact with waste, this influences women to manage waste in order to make their living spaces clean.

When asked who is responsible of sorting waste in this household, one lady was quoted saying *“I am the one who is always at home, I cook and clean so am the one responsible of separating waste ... I also don’t want my kids to contact germs so I separate waste myself”* (21-07-2016, resident 4). Another respondent (man) said *“I work far from home I only come back on Fridays ... my mother is the one who is responsible of separating waste because she is always around”* (21-07-2016, resident 1). The researcher also observed that the majority of people who are always at home during the day are women, only 3 out of 15 waste separating respondents were men and the rest 12 respondents were women. When truck assistants were asked, they also indicated that when collecting separated waste from houses they usually see more grandmothers (women) than men.

In this research, I argue that women are the ones responsible for waste separation because they are responsible for cleaning, cooking and providing for their families. The researcher concludes that investigating the role of women in waste separation is vital and relevant, community participation in waste separation cannot be looked outside the context of gender roles. This point can be supported by an argument in an article by Ezebilo (2013), who argues that the social roles of women such as food providing and cleaning brings women into daily contact with waste, this influences women to manage waste in their households in order to

keep their living spaces clean. If more households are to be influenced to separate waste, more women should be considered and informed about the project. Refer to the table below on who residents consider to be responsible of waste separation.



Graph 6: *Gender roles in waste separation.*

4.2. Conclusion

In the process of the study it came to light that only a few houses participate in the formal S@S system. During observation days the researcher counted the number of houses visited for waste collection and the overall number of houses was less than 100 in over 3000 houses. To validate this assumption, the researcher asked an operations manager from the project about the number of house he thinks participate in the formal waste separation system, he estimated that out of every 1000 houses approximately 30 houses separate waste (12-07-2016).

Furthermore, the environmental awareness forums conducted do not cover all residents, this is so because other residents indicated that they last saw environmental educators almost three years ago. On the other hand project's and Pikitup's officials indicated that environmental awareness is an ongoing process. On observation day, the researcher saw a group of people walking and was told that they are running an awareness program, only to find out that they are volunteers from the community. The question may be; are they educated about S@S and its benefits enough to convince residents to separate waste, why can't Pikitup send professional Environmental Educators with concrete knowledge to educate and convince residence to separate waste, does Pikitup know that residents don't understand what recyclable waste is and that they don't know the main reason why they have to separate waste?

CHAPTER 5: CONCLUSIONS

In Johannesburg, the availability of landfilling space is a huge challenge to the city's authority. The city of Johannesburg in partnership with Pikitup initiated the S@S programme as a means to minimise waste going into landfills. However, the level of participation in S@S is inadequate, this is because the practice of S@S takes place in a private space (households), and it requires much effort to convince residents to take part in waste separation within their own private spaces since residents have different perceptions and attitudes towards S@S of household waste. Therefore, this research project is important because it helps in finding ways to improve the functioning of the program.

Based on the key findings of the study the paper argues that in order to improve participation in S@S Pikitup should expand its conceptualisation of S@S to acknowledge the labour of reclaimers and residents (informal S@S system) on the project. This is because S@S is an integrated environmental management project with various stakeholders involved, and there are various social implications that affect the success of the project. It was the aim of this research to explore household wasting practices and the experiences of Orange Farm residents on Pikitup's S@S. It came to light that Pikitup and the cooperative responsible for running the project in this area are providing waste separation services and support to the community as promised.

However, the idea of the entire community participating in waste separation is challenged by various social factors, for example residents favour reclaimers over Pikitup, thus expanding the structure of S@S to accommodate such social implications can be a starting point for the improvement of the program. Therefore, the researcher believes that the success in improving the level of participation in waste separation depends on Pikitup changing its S@S structure and consider the role of the informal S@S system. Lastly, the labour of households in waste separation should also be acknowledged, this might motivate residence to put much effort in waste separation knowing that they will be compensated. Thus, the institutional approach to S@S should not only be focused on the formal S@S system.

From the findings, the researcher made some suggestions to improve the level of participation in waste separation.

- Pikitup should change its approach to S@S programme to improve participation, it should consider the labour of households and the role that reclaimers play in S@S, reclaimers should also be provided with trolleys to make their work easier.

- It is recommended that Pikitup invests more effort in providing residents with relevant EE in order to change their mind set and regard S@S as a way of shifting their wasting practices to assist Pikitup deal with the problem of landfilling space.
- The project should also provide households with hash bags so they cannot only select light materials to separate.
- Pikitup should consider providing free bees to people who separate waste, so they can be motivated to separate waste.
- Finally, Pikitup should introduce buy-back centres to take in less valuable materials, because the market price plays a huge role in the type of waste collected by reclaimers.

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