PURSUING RECYCLING: EXAMINING THE POSSIBLE IMPACT OF THE PROPOSED RECYCLING PLANT AT THE ABOKOBI DUMP SITE ON SCAVENGERS.

BY

KARL YAW OSEI AFODUO

THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF M.A. DEVELOPMENT STUDIES DEGREE.

JULY 2014
DECLARATION

I, Karl Yaw Osei Afoduo, hereby declare that except for reference to other people’s work which have been duly acknowledged, this thesis is the result of my own research carried out at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana under the supervision of Dr Simon Bawakyillenuo (ISSER).

Author: Karl Yaw Osei Afoduo (10228807)
Signature: ........................................
Date: ........................................

Supervisor: Dr Simon Bawakyillenuo
Signature: ........................................
Date: ........................................
ABSTRACT

Production and consumption activities generate waste which subsequently must be managed. Informal resource recovery is seen to have emerged to fill the gap caused by the absence of enough formal waste processing facilities, as well as a livelihood strategy especially among the poor. Materials recovered from waste are either re-used or recycled, and include plastics, metals, paper, bottles and electronic waste. Reported as employing millions across the globe, those who engage in resource recovery now face some threats to their livelihood as better waste management methods are being adopted. Chief among the methods is the establishment of waste processing facilities, gradually seen to be taking over the work of waste pickers, despite the desire to manage waste more efficiently by the use of waste processing facilities.

The main purpose of the study was to explore how the establishment of a waste processing facility, considered as a better option to the crude dumping of waste, at the dump site at Abokobi in the Ga-East Municipal Assembly of the Greater Accra region of Ghana could affect the activities of waste pickers who work at the site. To achieve this, the study sought to determine the actors who engaged in resource recovery at the dump, the kind of materials recovered and how proceeds from its sale supported waste pickers, as well as anticipated coping and support measures for the waste pickers should they lose access to the dump site. This was undertaken through the elicitation of data and information from waste pickers and buyers at the dump site, as well as additional information derived from previous studies and interviews with personnel of the planning and environmental health departments of the Ga-East Municipal Assembly.

The study found out that the main actors engaged in resource recovery at the dump site were waste pickers and buyers, who engaged in the activity due to lack of jobs and
financial assistance. Materials mainly recovered from waste at the site were plastics and soft metals (aluminium), while other materials such as electronic waste and hard metals were hardly recovered at the dump site. The study also indicated that the quantity of materials recovered per person was on the decline which was attributed to an increase in number of waste pickers at the dump site, a further indication of an increase in waste picking as a livelihood strategy. The income from the sale of recovered materials was used to cater for accommodation, education, health and nutrition of the waste pickers and their dependants.

Despite the waste pickers not knowing the intention to put up such a facility, the study showed that there was divided support over the facility, with majority of the respondents expressing the fear of loss of access to waste materials at the dump site as their reason for opposing the establishment of the facility. The study showed that the facility would be at a new site and the current dump site converted to a transport station. This showed that waste pickers would lose access to the current dump site and the waste materials there. Though pickers intend moving to a new dump site to recover materials should they lose access to the current dump site, the municipal assembly has also promised to provide some assistance to the pickers. With the promised assistance by the municipal assembly likely to face challenges in reaching its intended impact considering the number of pickers at the dump site, it is still a laudable intention. Despite the possibility of this challenge, the researcher suggests that further assistance should be provided to waste pickers by way of skills training to enable them pursue alternate livelihoods even as more waste processing facilities are likely to be established with time.
DEDICATION

To Rita Duffour: May the light you brought into our lives forever shine bright.
ACKNOWLEDGEMENT

I wish to acknowledge foremost my supervisor, Dr Simon Bawakyillenuo for his constructive criticism, guidance, dedication and continuous encouragement throughout the study. Without your help, this study would not have been possible. I am also grateful to the staff at ISSER, both teaching and non-teaching, who supported the cause of this study.

I would also like to appreciate the support given by Mr. Derrick Tata-Anku (Principal Environmental Health Officer) and Mr. Alex Amoah (Municipal Planning Office) of the Ga-East Municipal Assembly for the immense contribution to the study.

My profound gratitude goes to the waste pickers and buyers at the Abokobi dump site without whose contributions and cooperation the study would not have been possible. My final appreciation goes to my fellow mates at ISSER who in diverse ways supported me to conduct the study.

God bless you all.
# TABLE OF CONTENTS

DECLARATION ................................................................................................................................. i  
ABSTRACT ........................................................................................................................................ ii  
DEDICATION ....................................................................................................................................... iv  
ACKNOWLEDGEMENT ...................................................................................................................... v  
TABLE OF CONTENTS ..................................................................................................................... vi  
LIST OF TABLES .............................................................................................................................. x  
LIST OF FIGURES .......................................................................................................................... xi  
LIST OF PLATES ............................................................................................................................. xii  
LIST OF ABBREVIATIONS .............................................................................................................. xiii  

CHAPTER ONE .................................................................................................................................. 1  
1.1 INTRODUCTION ....................................................................................................................... 1  
1.2 PROBLEM STATEMENT ........................................................................................................... 4  
1.3 AIMS AND OBJECTIVES OF THE STUDY ............................................................................ 5  
1.4 RESEARCH QUESTIONS ......................................................................................................... 6  
1.5 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY ...................................................... 6  
1.6 ORGANISATION OF THE STUDY .......................................................................................... 7  

CHAPTER TWO .................................................................................................................................. 8  
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK ..................................................... 8  
2.1 INTRODUCTION ....................................................................................................................... 8  
2.2 RESOURCE RECOVERY .......................................................................................................... 8  
2.3 RESOURCE RECOVERY IN GHANA ....................................................................................... 12  
2.4 THREATS TO RESOURCE RECOVERY .................................................................................. 13  
2.5 SOLID WASTE MANAGEMENT (SWM) IN GHANA ........................................................... 17  
2.6 GAPS IN THE LITERATURE ................................................................................................... 18  

vi
2.7 CONCEPTUAL FRAMEWORK .............................................................................. 19
2.8 CONCLUSION .......................................................................................................... 26

CHAPTER THREE ....................................................................................................... 27
RESEARCH METHODOLOGY AND STUDY AREA ............................................ 27
3.1 INTRODUCTION ..................................................................................................... 27
3.2 RESEARCH DESIGN AND METHODOLOGY ..................................................... 27
3.3 DATA REQUIREMENTS AND SOURCES OF DATA .............................................. 28
3.3.1 PRIMARY DATA NEEDS AND SOURCES ....................................................... 28
3.3.2 SECONDARY DATA NEEDS AND SOURCES ................................................. 29
3.4 DATA GATHERING TOOL, PROCEDURE AND MODE OF ANALYSIS .......... 29
3.5 TARGET POPULATION, SAMPLE SIZE AND SAMPLING TECHNIQUE ...... 31
3.6 LIMITATION OF THE STUDY .............................................................................. 33
3.7 OVERVIEW OF THE STUDY AREA ..................................................................... 35
3.7.1 DISTRICT PROFILE ............................................................................................. 35
3.8 CONCLUSION .......................................................................................................... 40

CHAPTER FOUR ......................................................................................................... 41
PRESENTATION AND DISCUSSION OF KEY FINDINGS ................................... 41
4.1 INTRODUCTION ..................................................................................................... 41
4.2 DEMOGRAPHIC CHARACTERISTICS OF WASTE PICKERS AND BUYERS 41
4.3 ACTORS, WORK EXPERIENCES AND RULES OF WORK ............................... 45
4.3.1 ACTORS, THEIR ROLES AND MODE OF RESOURCE RECOVERY .......... 45
4.3.2 PREVIOUS WORK EXPERIENCES, WHY AND HOW THEY JOINED RESOURCE RECOVERY ................................................................. 48
4.3.3 WASTE PICKER ASSOCIATION MEMBERSHIP AND WORK RULES ...... 54
4.3.4 SOCIAL STIGMA AND WASTE PICKING ........................................................ 56
4.4 WORK DAYS, RESOURCE RECOVERY AND SUPPORT FROM PROCEEDS. 58
4.5 ESTABLISHMENT OF RECYCLING FACILITY, EXPECTATIONS AND ANTICIPATORY COPING MECHANISMS. ................................................................. 63
4.5.1 VIEWS OF WASTE PICKERS AND BUYERS ON INTENDED FACILITY .... 63
4.5.2 ANTICIPATORY COPING MECHANISMS BY WASTE BUYERS AND PICKERS .......................................................................................................................... 66
4.5.3 WASTE BUYERS AND PICKERS EXPECTATIONS ........................................ 68
4.5.4 INTENDED ASSISTANCE FROM MUNICIPAL ASSEMBLY ......................... 70
4.6 BETTER WASTE MANAGEMENT PRACTICE .................................................... 71
4.7 LINKAGE BETWEEN MATERIALS FLOW AND LIVELIHOOD OF WASTE PICKERS ................................................................................................................. 74
4.8 CONCLUSION ...................................................................................................... 75

CHAPTER FIVE ........................................................................................................... 76
SUMMARY, CONCLUSION AND RECOMMENDATION ........................................ 76
5.1 INTRODUCTION .................................................................................................. 76
5.2 SUMMARY OF KEY FINDINGS ........................................................................... 76
5.2.1 ACTORS IN RESOURCE RECOVERY .............................................................. 76
5.2.2 MATERIAL RECOVERY AND SUPPORT FROM SALE OF MATERIALS.... 77
5.2.3 VIEWS AND EXPECTATIONS ON FACILITY ............................................... 77
5.2.4 ANTICIPATED COPING AND SUPPORT MEASURES ................................. 78
5.3 CONCLUSION ...................................................................................................... 79
5.4 RECOMMENDATIONS ........................................................................................ 80

REFERENCES: .......................................................................................................... 83
APPENDIX 1: QUESTIONNAIRE FOR WASTE PICKERS ........................................ 87
APPENDIX 2: QUESTIONNAIRE FOR WASTE BUYERS ........................................ 91
APPENDIX 3: INTERVIEW GUIDE FOR MUNICIPAL ENVIRONMENTAL HEALTH OFFICER ............................................................... 93

APPENDIX 4: INTERVIEW GUIDE FOR MUNICIPAL PLANNING OFFICER 94
LIST OF TABLES

Table 3.1: Linkages between research objectives, questions and data collection method

Table 3.2: District Projected Population

Table 4.1: Summary of demographic characteristics of waste pickers and buyers

Table 4.2: Previous work experiences of waste pickers and waste buyers

Table 4.3: Previous work engaged by waste pickers and buyers

Table 4.4: Reasons for engaging in resource recovery

Table 4.5: Years spent in waste buying, and buying from Abokobi waste pickers

Table 4.6: Years spent in resource recovery by Abokobi waste pickers

Table 4.7: Reasons for picking at Abokobi dump site

Table 4.8: Work days of waste pickers

Table 4.9: Prices of recovered materials at the Abokobi dump site

Table 4.10: Monthly income distribution of some Abokobi waste pickers

Table 4.11: Reasons for either support or opposition to establishing a facility

Table 4.12: Anticipatory coping measures by waste buyers and pickers

Table 4.13: Experience of picking at a different site influencing decision to relocate

Table 4.14: View of waste pickers and buyers on better waste management methods
LIST OF FIGURES

Figure 2.1 Waste Management Hierarchy ................................................................. 11
Figure 2.2: DFID Livelihood Framework ................................................................. 20
Figure 2.3 Livelihood of waste pickers ................................................................. 25
Figure 3.1: Map of Ga-East Municipality ............................................................... 36
LIST OF PLATES

Plate 1: Paper (left) and tin cans (right)............................................................................ 59

Plate 2: Broken bottles (left) and plastics (right).............................................................. 60
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACARP</td>
<td>Accra Composting and Recycling Plant</td>
</tr>
<tr>
<td>AMA</td>
<td>Accra Metropolitan Assembly</td>
</tr>
<tr>
<td>CDM</td>
<td>Clean Development Mechanism</td>
</tr>
<tr>
<td>DFID</td>
<td>Department for International Development</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>MMDA</td>
<td>Metropolitan/Municipal/District Assembly</td>
</tr>
<tr>
<td>MRF</td>
<td>Material Recovery Facility</td>
</tr>
<tr>
<td>MSW</td>
<td>Municipal Solid Waste</td>
</tr>
<tr>
<td>SWM</td>
<td>Solid Waste Management</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
</tr>
<tr>
<td>WTE</td>
<td>Waste to Energy</td>
</tr>
</tbody>
</table>
CHAPTER ONE

1.1 INTRODUCTION

Production and consumption activities within a country result in the creation of residuals or externalities referred to as waste. Waste is described as an externality since it is not an ultimate aim of any socio-economic activity. According to the German Waste Act of 1993, any portable object abandoned by its owner constitutes waste. This view is shared by the Framework Directive on Waste in the United Kingdom which defines waste as a substance or object discarded by its owner (Porteous, 2000). On the contrary according to Baptiste (2007), the Mexican General Waste Amendment (2003) definition of waste goes beyond just the discarding of an object, to include the possibility of revaluing, treating and the proper disposal of that object in accordance with specific regulations.

Waste can be classified as solid, liquid or gaseous waste, with solid waste being further differentiated as Municipal Solid Waste (MSW), agriculture and animal refuse, industrial residue, and extraction and mining waste, among others. Waste, as used in this study, refers to Municipal Solid Waste (MSW), identified as waste generated from households, commerce, office buildings and institutions (examples include schools, hospitals). Though the process of collecting, processing and the final disposal of MSW is dependent on each country’s waste regulation, the least efficient practices are found in developing countries compared with developed countries, thus posing a threat to environmental quality and public health in developing countries (Beede and Bloom, 1995).

According to Oteng-Ababio (2011), the amount of waste generated in Ghana is increasing due to an increase in the size of the country’s population as well as a change in their lifestyle, which is seen to have resulted in an increased use in disposable
materials and containers. Though managing waste is seen as a general problem, it is much more difficult according to Ghana’s Environmental Protection Agency (EPA, 2002) to manage urban waste compared with rural waste. The challenge of urban MSW management in Ghana can be attributed to the extensive urban periphery settlements, which according to Boadi et al (2005) results from the massive migration of rural inhabitants to the cities and regional capitals, especially to Accra which is the political and economic capital of the country. Karani and Jewasikiewitz (2007) observe that with the growth of cities comes the challenge of land management, leading to an intense competition for land to serve as dump sites, coupled with rising volumes and variety of waste being generated. The state therefore finds ways to manage waste, because waste that has been generated must be disposed in an environmentally friendly manner. Efficient management approaches of waste include proper collection and storage, transportation, and where possible, it being processed to obtain other useful products from it (Bryant et al, 2010). The management of MSW in Ghana has been decentralised, with oversight responsibilities being given to each Metropolitan/Municipal/District Assemblies (MMDAs) as stated in the Local Government Act, 1990 (Act 462).

The history of solid waste management in Ghana can be traced to 1898 with the establishment of the then Accra City Council, where few sites were established for final waste disposal usually at the outskirts of towns (Oteng-Ababio, 2007). An increase in population size accompanied by an increase in waste production saw the use of incinerators in 1929, with the subsequent use of abandoned quarry pits when the 100 tonne capacity incinerator in Accra broke down in 1970 (Oteng-Ababio, 2007). The state of environmental deterioration that ensued resulted in the dumping of waste in abandoned old quarry pits found within the Accra Metropolitan area. Consequently, the country started engaging in the crude dumping of solid waste from that period until the

The use of landfills has its own challenges due to the nature in which huge portions of waste is burned in the open or dumped haphazardly, resulting in the increase in pressure on land, air, and water quality as seen in most developing countries. The impact of such landfill sites on its immediate surroundings include the emanation of high level of stench and smoke which are inhaled by those nearby; the leachate from the site seeping into water systems, and the loss of land to waste which would have hitherto been used for other purposes. However, waste materials dumped in landfills can still be of economic value.

Through waste picking, discarded materials which are potentially useful are obtained, which are then traded to be either re-used or recycled. The income earned from the resource recovery activity is used to cater for the needs of the waste picker, and where enough savings is made from such activities, can inform the waste picker whether to remain in that industry or pursue another livelihood. With unrestricted access, waste pickers are able to remove considerable amounts of recyclable materials from landfills, before waste materials that may take several years to decompose are covered by soil. Thus, waste picking and other resource recovery activities play critical roles in reducing the quantity of waste being buried at dump sites as well as creating employment opportunities [Tevera (1991), cited in Tevera (1994)].

Despite the contribution of waste pickers to the recycling process and socio-economic development, they face several challenges. According to Vivek (2000), waste pickers share a low social status by virtue of the nature of their work; they lack employment security, receive poor wages and also face health hazards in their line of work. Because
they obtain their materials from dump sites or landfills, their ability to sustain their activities is dependent on the operation of such dump sites. However, the difficulties in obtaining land to be used as landfill sites due to the competition for land especially in urban areas, coupled with the reluctance of residents to allow landfills to be located near them underpin the precarious nature of waste picking.

1.2 PROBLEM STATEMENT

Opened about thirteen (13) years ago as a temporary dump site, the Abokobi waste dump site located in the Ga-East Municipal Assembly in the Greater Accra region of Ghana, is now a major one, with a total size of about 800-square metres. With Accra generating about 2,500 tonnes of waste daily, Abokobi serves as the receptacle of waste for Ga-East and West, Ledzokuku-Krowor, Madina-Nkwananang, and Adentan Municipalities, receiving about 8,150.47 tons per month (Ga-East Municipal Environmental Health Officer, 2014). There are about eleven (11) registered waste management agencies that are involved in the collection, transportation and final disposal of waste to the municipality as at December 2013, with Zoomlion Waste Management Company Limited being responsible for managing the facility for about four (4) years now.

At the Abokobi waste dump site, waste pickers sift through the waste, and in the process identify and retrieve materials considered to be of economic value, either in its current state or after it has been recycled. Such materials are later traded to cater for the needs of the waste pickers. Public perception of their activities is mostly negative, due to nearby residents accusing them of setting portions of the dump on fire to enable them obtain some materials like copper and other metallic wires which are usually encased in plastic. The smoke that emanates from such fires is considered injurious to the health and
economic activities of such residents. With the dump site now at its full capacity, there have been calls especially from the community in which it is located for its closure due to the fear of a possible environmental calamity. The Ga-East Municipal Assembly is in talks with potential waste processing companies (with Gbi Hanza Limited being mentioned as at the time of the study), in a public-private partnership (PPP) effort to establish an integrated waste management facility. The purpose of the facility is to receive and process waste into other products, thus leading to the reduction in the amount of waste finally disposed at the dump site as well as the generation of economic value from the new products produced. The company is to be located at a new site different from the current dump site, with construction expected to begin in 2015. Considering the importance of the existence of the Abokobi dump site in supporting the livelihood of the waste pickers, this study seeks to identify the possible effect that the intended facility would have on the activities of the pickers at the Abokobi dump site.

1.3 AIMS AND OBJECTIVES OF THE STUDY

The main aim of this study is to assess the extent to which the establishment of the proposed waste treatment plant will affect the activities of waste pickers and how they will sustain their livelihoods should they lose access to the dump site.

The specific objectives of the study are:

- To identify the main actors in the resource recovery activity and their roles.
- To understand the modes of operation of the waste pickers.
- To examine the nature of waste materials pickers recover and how the proceeds from the sale of the materials support them.
• To assess the alternative coping measures waste pickers intend adopting, as well as possible support mechanisms by the Ga-East Municipal Assembly, should the waste pickers lose access to the dump site.

1.4 RESEARCH QUESTIONS

• Who are the actors involved in informal resource recovery and what role do they play?
• How do the waste pickers retrieve materials?
• How much are the waste pickers able to recover in a week, and how does the proceeds from the materials support them?
• What plans do the waste pickers have in place to sustain their livelihoods should they lose access to the dump site?
• What plans does the municipal assembly have in place to support the scavengers should they lose access to the dump site?

1.5 SIGNIFICANCE AND JUSTIFICATION OF THE STUDY

Resource recovery is an essential component of waste management. In the absence of an extensive formal resource recovery programme in Ghana, the informal resource recovery industry has emerged not only to obtain materials for re-use and recycling, but has also created employment for the otherwise unemployed. Though some perceptions about the activities of waste pickers are negative, they provide an essential service by way of helping manage waste in the country. The introduction of a formal waste processing facility to replace crude dumping at the Abokobi dump site can be seen as a good attempt
to enhance the resource recovery process, possibly to increase the quantity of materials recovered.

However, with the existence of an informal resource recovery industry at the Abokobi dump site providing an equally good service, the study seeks to look at ways by which resource recovery can be made more efficient without necessarily making those in the informal resource recovery industry worse off. With the possibility of recycling industries being put up to manage waste in place of crude dumping of waste, the results of this study could provide useful information in guiding the actions of policy makers. This would help prevent the loss of livelihoods for waste pickers even as the country pursues more sustainable ways of waste management.

1.6 ORGANISATION OF THE STUDY

This dissertation is organised into Five Chapters. Chapter One covers the introduction, problem statement, objectives of the study, research questions and the justification of the study. Chapter Two covers the literature review and the conceptual framework of the study. Chapter Three covers the methodology employed to carry out this study, as well as the profile of the study area. Chapter Four presented and discussed the key findings of the study. Chapter Five entailed a summary of the findings, conclusion and recommendations of the study.
CHAPTER TWO

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 INTRODUCTION

Millions of people worldwide are considered to be engaged in resource recovery. Over the years, many studies have been carried out on the activities of waste pickers or resource recovery across different countries. This chapter reviews some of such studies by researchers on resource recovery activities, its importance in helping reduce the quantity of waste that is finally disposed, as well as some of the challenges waste pickers face in the performance of their activity.

2.2 RESOURCE RECOVERY

A scavenger is a person who searches for and collects discarded items (Oxford Dictionaries, 2014). Blincow (1986) defines scavenging as “the activity involved in the collection and disposal of culturally-defined waste materials, whether that activity be done directly for subsistence (food, clothing and artefacts), for exchange, for sale, or for wages, or as is sometimes the case, for some combination of these” [Blincow (1986), cited in Tevera (1994)]. According to Samson (2009), scavenging is seen as comprising all the activities involved in obtaining materials which have been discarded by others, either for reuse or recycling. Furedy (1984a) also defined scavenging as the recovery of waste materials from public places, and recycling as the transformation of the recovered waste products rather than simple reuse. Because of the derogatory meaning associated with the name given to those engaged in resource recovery, the name ‘scavenger’ was changed to ‘waste picker’ during the First World Conference of Waste Pickers in 2008.
[Global Alliance of Waste Pickers (2012), Samson (2009)]. Resource recovery is seen as the selective collection of materials from waste which would have ended in the environment by either irregular deposition or at landfills (Gutberlet, 2008). From these definitions and for the purpose of this study, waste pickers would refer to those who obtain materials from dumpsites for the purpose of reusing, recycling or exchanging for a reward. Resource recovery will be seen as comprising all the activities by which potentially useful materials are obtained from discarded ones by waste pickers.

In the view of Tevera (1994) and Gutberlet (2008), poverty and the need to meet basic needs compel some of the urban poor to earn livelihoods by pursuing activities such as resource recovery. Furedy (1990), in distinguishing between formal and informal resource recovery based on Solid Waste Management (SWM), stated that informal resource recovery include the retrieval of waste materials from public places by waste pickers, dump waste picking, and the informal networks of waste exchange involving waste pickers, collectors, traders, and wholesalers. Formal resource recovery on the other hand involved a contractual arrangement between waste producers and managers on the collection and disposal of waste. Waste collectors employed by either municipal councils or private waste management companies to collect waste using trucks provided for such a purpose also on their own engage in waste recovery. This is usually frowned upon by the employing authority because such workers use the resources of the company to obtain such materials, with the waste recovery activity conducted during working hours [Furedy (1984a); Furedy (1990)].

Sicular (1993) indicates that resource recovery is the first phase of waste management, as it involves the gathering, sorting and cleaning of waste rather than processing into another form. By their activities, they are able to remove considerable amounts of
recyclable materials before they get covered by soil. Resource recovery activities therefore provide waste recycling industries with raw materials and the urban poor with employment (Tevera, 1994). Waste pickers obtain their materials from different sources. These include going from house to house to ask for materials which they pay for, by sifting through dumpsters, and going through commercial or industrial waste dumps. Some are also employed in recycling ware houses or as processors in the recycling activity at a particular facility (Dias, 2010). Waste pickers are also differentiated according to the purpose of their activity; those who engage in this activity to obtain food and other materials for sustenance, and those who obtain materials to be sold to other middlemen or businesses.

The activities of waste pickers find expression in the Waste Management Hierarchy model. According to the Department for Environment, Food and Rural Affairs (DEFRA, 2011), the waste hierarchy is a model for managing waste by ranking the waste management options on the basis of what is best for the environment. On the basis of this order, the model first seeks to prevent the creation of waste but once it has been created, it uses other corrective measures to manage the waste down to the least preferred option which is disposal.
Figure 2.1 Waste Management Hierarchy

Most preferred method

AVOID
REDUCE
REUSE
RECYCLE
RECOVER
TREAT
DISPOSE

Least preferred method

Source: ZERO WASTE SA (2014)

The level at which waste pickers operate, shown in Figure 2.1, is at the Recover point, where they obtain materials from the waste which can then be later reused or recycled. Though this model shows a preference for specific waste management forms, some of the stated measures are used together with other ones, and not necessarily in an exclusive manner. For instance, before a material is finally disposed of, parts of it might have been obtained (recover), and then put to some use (reuse), manufacture a new product from a part of the initial waste (recycling), and then ensure that it is being introduced into the environment in a safe state (treat). Also, the decision to adopt a particular tool in practising one of these methods would be dependent on some factors. These may include the type of waste that has been generated, and the availability of the requisite technology and personnel for the management of waste per the adopted method.

Despite the contribution of waste pickers to the recycling process, they face some challenges. According to Vivek (2000), pickers share a low social status by virtue of the
nature of their work; they lack employment security, receive poor wages and also face health hazards in their line of work. Pickers get exploited because they end up selling their materials cheaply and not because they are part of a defined production process. Because they collect what has been rejected by others, they are also seen as ‘social rejects’. According to Keyes (1974), some officials in Asian countries consider waste pickers as a source of embarrassment, making efforts to shield them from view especially when foreign dignitaries visit. In Africa, some people perceive them to be social misfits who must be pitied when in actual fact they are ordinary people who consider waste to be a resource (Keyes, 1974, cited in Tevera, 1994).

2.3 RESOURCE RECOVERY IN GHANA

With about 20% of solid waste in developing countries collected properly, the role of waste pickers in MSW should not be under estimated (ILO, 2007). The activities of pickers, though not formally recognised, serve to fill the gaps in waste collection and management. As an example of their contribution to waste management, the informal sector collects about 300,000 tons of waste generated in Mali annually, while also collecting about 30% of all waste generated in Zambia (UN-HABITAT, 2010). According to the Accra Metropolitan Assembly (AMA, 2010), waste pickers in Ghana are estimated to recover about 80% of all metals and 3% of plastics as the only informal agent in resource recovery, providing materials either for reuse or new material production. In Ghana, the numbers engaged in resource recovery is in its thousands, though the actual number of waste pickers is not readily available. The high number of pickers is an indication of the high levels of poverty in the country that compels those who are vulnerable, socially excluded and disempowered members of society to resort to resource recovery as a source of livelihood [AMA (2010), cited in Gugssa (2012)]. Apart
from using the amount of materials recovered from waste as a measure of environmental sustainability in the conservation of natural resources within the country, resource recovery also serve as a cheaper form of reducing the amount of waste that ends up at dump sites, saving some space at dumpsites as well as the added advantage of obtaining raw materials at a cheaper cost (Gutberlet, 2008).

Waste pickers in Ghana, according to the AMA (2010), are responsible for almost all the recycling done in the country, obtaining the recyclables by sorting through mixed waste on either the streets or at dump sites [AMA (2010), cited in Gugssa (2012)]. The Accra Composting and Recycling Plant (ACARP), which is a resource recovery facility (MRF), now separates waste brought to the tipping floor of the facility, though it is yet to operate at full capacity. Despite the existence of both an informal resource recovery activity and the introduction of formal ones, a study has shown that there are some levels of collaboration between the waste pickers, Environmental Protection Agency (EPA), and the AMA (Annapu and Themelis, 2013).

2.4 THREATS TO RESOURCE RECOVERY

A landfill provides different functions. Apart from serving as a dumping place for waste, it also serves as a place where people obtain recyclables, which the pickers either use directly or exchange for money. Many governments, being under the impression that landfills end up polluting the environment, are now increasingly adopting the use of incinerators as a waste management practice. The use of incinerators, however, has the tendency to rather increase the threat of pollution that it seeks to prevent, because burning waste releases carbon dioxide into the atmosphere, despite the advantage of
Because paper and cardboards are made from wood, burning them would result in the cutting down of more wood to supply paper products, thus reducing the number of trees serving as carbon sinks. Factories that produce plastics are also seen to pollute the environment from the gases given off during the production process. This is attributed to the use of oil as its raw material, which can be prevented if plastics are recycled. From these, it must be noted that recycling has a positive effect on climate change as it prevents waste and pollution, ultimately preventing harmful climatic change impacts.

Despite the benefits of recycling indicated above, the preference for the use of other methods to manage waste is also based on the benefits such practices yield. By using incinerators, the energy that is produced is harnessed and transformed into electricity. Methane gas which is generated in dump sites can also be obtained by laying pipes within the waste to capture such gases, which is also converted into energy. The generation of such energy not only supports existing energy production methods, but also serves as a source of revenue from its sale. This makes the use of incinerators considered as a more preferred method to resource recovery and recycling, because the generated revenue by waste pickers does not accrue to local authorities. This is seen to inform governments and local authorities preference for WTE to recycling due to the opportunity of governments to not only receive finance for the establishment of such facilities, but to also obtain further revenue from the operation of such facilities and this is resulting in their neglect of waste pickers. Industries are also able to convince governments that waste picking is bad for their business, and with the risk of losing out on potential sources of revenue, governments and municipal authorities hardly reject such offers (Global Alliance of Waste Pickers, 2012).
Industries are therefore seen to be taking advantage of climate change to make huge profits, even at the expense of sacrificing the source of livelihoods of others working within the resource recovery industry. There is the possibility of recycling almost every waste that is burnt in incinerators: once solid waste has been recycled, wet waste can be put to other uses, amongst which include the production of compost for agricultural use, feeding wet waste to animals, or the transformation of such waste into biogas. Because the process of recycling produces relatively low levels of any toxic waste, and with recycling having a comparative advantage of creating about ten times more jobs per ton of waste than incineration, recycling should be a preferred option in the waste management process over the use of incinerators (Global Alliance of Waste Pickers, 2012).

According to the Global Alliance of Waste Pickers (2012), Clean Development Mechanism (CDM) is an international institution created by some 192 countries with the aim of reducing greenhouse gas emissions. They provide funding for companies for the construction of landfill gas systems and incineration facilities, which happens to be their preferred method of waste management. The practice of CDM, which does not support resource recovery and recycling, makes no provisions for the waste pickers in its design and implementation. Though the premise for the establishment of some CDM projects is to generate energy to assist especially the poor, their activities serve to deny the poor who engage in resource recovery access to their sources of livelihood by fencing off landfills to the waste pickers. The implication of this decision is the threat to the livelihoods of waste pickers, with about 10,000 waste pickers losing their jobs due to CDM in Delhi (India). Waste pickers in Dakar (Senegal) are also resisting the attempt by the government to close down the landfill at Mbuessbuess in favour of constructing an
incinerator in its place with funding from CDM (Global Alliance of Waste Pickers, 2012).

Though it has been difficult establishing the numbers of waste pickers in some countries due to their fear of having their information used as a basis to exact taxes, and the seasonal fluctuations of their numbers, they are still estimated at millions of people worldwide. Because resource recovery is considered as a survival response (Tevera, 1994), the loss of access to dump sites, which serves as the source of waste pickers livelihoods, has the potential to disrupt the ability of pickers to meet their basic needs. With studies showing about 1.5 million waste pickers in India, 18,000 in Colombia, and 15,000 in Uruguay (Global Alliance of Waste Pickers, 2012), the loss of jobs of these numbers of people could adversely affect the countries in which they reside, as there would be the need to put in place some support mechanisms to assist them. With the possible increase in the adoption of CDM projects, the livelihoods of waste pickers can be seen as likely to be threatened.

From the examples above, it can be realised that CDM projects results in the loss of thousands of resource recovery jobs, as well as ignoring the good impact that the activities of waste pickers has on the climate. The lack of interest of CDM projects in resource recovery and recycling has been identified as the reason for the inability of CDM projects in making provisions for waste pickers who derive their livelihoods from dump sites, a concern that must be addressed especially in the numbers seen to have lost their jobs to CDM projects. This is because denying people access to their sources of livelihood, without any alternative plans to enable them sustain themselves, has the potential for the victims of such policies to end up in abject poverty or engage in illegal activities to cater for their needs.
2.5 SOLID WASTE MANAGEMENT (SWM) IN GHANA

Solid materials such as plastic and paper which have been generated by households and other institutions are referred to as solid waste (Government of Ghana, 2010). Such wastes in Ghana are disposed by either burning or land filling (Ghana Statistical Service, 2013). Solid waste management is described by Tchobanoglous et al (1993) in Baptiste (2007: 34) as “the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes in manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics and other environmental considerations, and that is also responsive to public attitudes”. According to Bilitewski et al (1994: 21), waste management incorporates “the collection, transport, storage, treatment, recovery and disposal of waste”. It is also considered as the body of actions related to waste characterization and classification, waste selection, storage and transportation, as well as its transfer, treatment and final disposal [Reyes (2004), cited in Baptiste (2007)].

In the view of Boadi et al (2005), Ghana is dealing with extensive urban periphery settlements due to the massive migration of rural inhabitants to the cities and regional capitals especially, to the political and economic capital, Accra. According to the United Nations Environmental Programme (UNEP, 1999), the rate of urban growth in Ghana is more than three percent per annum, thus ranking the country 53rd among 184 countries covered by the UNEP (Armah et al., 2009). Rapid urbanization in most third world countries has resulted in the inability of the appropriate authorities to provide adequate employment, waste disposal, water supply, and housing, among others [Boadi et al (2005), cited in Bryant et al (2010)].
Even though the processes of collecting, processing and disposing of MSW varies from one country to the other relative to the country’s rule governing such activities, the least efficient practices are found in developing countries as compared with developed countries, thus posing a threat to environmental quality and public health (Beede and Bloom, 1995). The use of landfills has its own challenges due to the nature in which huge portions of waste is burned in the open or dumped haphazardly. However, waste materials dumped in landfills can still be of economic value through resource recovery and recycling practices developed informally in most developing countries including Ghana.

The interest in MSW management can be attributed to the nature in which huge portions of waste is burned in the open or dumped haphazardly even in face of attempts at proper collection and disposal of waste in controlled incinerators or sanitary landfills, resulting in the increase in pressure on land, air, and water quality as seen in most developing countries. Secondly, waste materials can still be of economic value through resource recovery practices developed informally in most developing countries, though some countries are trying to formalise such activities. MSW, when managed properly further promotes the social good.

2.6 GAPS IN THE LITERATURE

Many studies have been conducted on resource recovery and waste pickers. However, the attention has been on how the recovery activity is done, how the activities of waste pickers support the recycling process, as well as how the practice of a different waste management method affects the activities of waste pickers [Oduro-Appiah and Aggrey (2013); Gugssa (2012); Global Alliance of Waste Pickers (2012); Gutherlet (2008);
among others]. Despite these works, issues pertaining to the concerns of waste pickers relative to the adoption of waste management strategies with the potential of negatively affecting their sources of livelihood has seen little attention. The purpose of this study would be to address issues arising out of the intended establishment of a waste processing plant to replace crude dumping at a site where waste pickers operate. Particularly, the study would seek to identify the concerns of the pickers whose livelihood depend on access to an operational dump, measures the local authority intend to put in place to mitigate whatever negative effect the facility might have on the pickers, as well as possible coping mechanisms to be adopted by the waste pickers.

2.7 CONCEPTUAL FRAMEWORK

To better understand the activities of waste pickers, their challenges as well as identify how they can preserve their source of livelihood, the concepts of sustainable livelihood (from the livelihood framework) and materials flow is used to develop a framework for the study. According to the British Department for International Development (DFID) (1999), the sustainable livelihood approach, which received much recommendation by the DFID in the 1990s, shows how livelihoods are developed in response to prevailing socio-economic and other structural conditions. Widely used in planning projects on how to tackle poverty, the livelihood framework also looks at how measures can be put in place to sustain livelihoods once it has been developed (DFID, 1999). The publication of the Brundtland Report in 1987 resulted in the emphasis on the sustainability of attempts to improve the lives of individuals, becoming the dominant idea from the late 1980s and the early 1990s.
A livelihood refers to the combination of capabilities, assets and activities that provide a means of living. It becomes sustainable if the means of living can adapt to or withstand stresses or shocks without negatively affecting its natural resource base on which it depends, while maintaining or improving upon the existing capabilities and assets it has, as well as make provision for future generations and other livelihoods to also benefit from that livelihood [Chambers and Conway (1992); Carney (1998), cited in Njoroge, et al. (2013)]. The livelihood framework is seen in Figure 2.2.

Figure 2.2: DFID Livelihood Framework

- H – Human Capital: human capital refers to the traits (both acquired and ascribed) necessary for an individual to pursue different livelihood strategies in a given environment. These include skills, knowledge, ability to labour and good health. The quality of these traits possessed by the individual or household largely determines the economic situation that is likely to be attained. As indicated by Rakodi (2002a), the quality of one’s education and skills influences...
the livelihood likely to be engaged in relative to rural and urban labour markets. However, this observation is not likely to hold in all situations as the acquisition of skills or education may not be the only requirement necessary to determine the livelihood one will engage in. This is seen in people who hold specific skills or education engaging in livelihoods which differs from what their skills would have allowed them to do.

- **P – Physical Capital**: the existence of some facilities or items serves as a means to the realisation and pursuit of livelihood strategies. Referred to as physical capital, it includes transport, shelter, water, energy, communications, machinery and other means which aids in the realisation of livelihood strategies.

- **S - Social Capital**: according to Aristotle, man is social by nature and as such strives to establish some relationships with other people. Because humans deal with, and relatively depends on other humans in their daily activities, the ability to establish social networks, belong to a family and/or group, establish relationships of trust, as well as other forms of linkages with other individuals is an indispensable requirement for the attainment of a livelihood strategy.

- **F – Financial Capital**: this refers to financial resources which take the form of credit, salary, savings, remittances, pensions, among others which allow the individual to make purchases in fashioning out a livelihood strategy.

- **N – Natural Capital**: land, water, wildlife, biodiversity, and other environmental resources constitute natural capital. However, the existence of many forms of natural resources does not necessarily guarantee wealth, but rather the ability to identify and make use of the resource to develop a livelihood. Despite this, the existence of an unused natural resource is still desired as the potential and benefit of that resource can be identified with time. Also of import to the use of natural
resources is the type of, condition and levels of access, ownership and protection of the resource. As indicated by Luong and Weinthal (2001), the form of ownership of a resource largely determines the returns obtained from the resource, with preference given to local ownership of a resource than foreign control.

The use of natural resources must also take into account how activities will affect the state of the resource. The recognition of the likely impact informs the nature of practice to adopt in making use of the resource so as to prevent or mitigate effects on the resource. All this is done to avoid pollution or permanent damages to the natural resource from which livelihoods is derived.

- **Vulnerability Context:** because the attainment of livelihoods do not occur isolated from external influences, prevailing conditions or changes to them presents challenges to the pursuit of a livelihood. According to Chambers and Conway (1992), vulnerability is of two forms: the occurrence of the shock, and the ability of the individual or household to cope to such a change. In the view of Plänitz (2014), the poor are affected more by such shocks due to their already inadequate levels of resources, which may not also be enough to help them recover from such shocks.

Source: Adapted from DFID (1999)

The use of the livelihood model by the DFID in this study is due to the people-centred nature of the model relative to access to assets, as well as the role institutions and politics play in the development of a livelihood. According to the FAO (2013b), the success or failure of an individual in developing a livelihood is dependent on the interplay of the capitals as identified above. This, however, doesn’t occur in a vacuum, but also within
the existing structures and institutions as well as the forms of vulnerability at the time of the development of the livelihood.

To achieve a means of livelihood, some measures are taken or adopted to make the pursuit of that livelihood possible, with the particular measures adopted referred to as livelihood strategy. According to Scoones (1998), the particular way in which an individual or household combine their assets to attain a livelihood is a livelihood strategy. It is also the combination of activities that a person decides to practice to achieve their livelihood goals, and may include productive activities, investment strategies and reproductive choices (ELDIS, 2014). The choice of particular livelihood strategies is however affected by some factors including access to assets, existing policies and institutional arrangements (ELDIS, 2014). Other factors include the desired goal the individual wishes to attain, as different combinations of the forms of capital results in different forms of livelihood.

Scoones (1998), using farmers as a reference point, identified three forms of livelihood strategies. The first involves the direct extraction/use of a particular asset or capital as a livelihood strategy. The second, livelihood diversification, involves the combination of assets to develop a livelihood away from the dominant asset the individual depended upon. The third strategy entails the migration of an individual or household from a particular location (and its unique assets) to another place to utilise its existing resources to create a livelihood. This approach by Scoones has been criticised by Bebbington (1999) because Scoones is seen to have focused on those dependent on natural resources (such as farmers) and ignored those who used other resources apart from natural resources in the development of a livelihood strategy. The emergence of sustainable livelihood approach, as a livelihood strategy, is to help address lapses that liberalization
(free market) approach has with respect to the inability of the poor to access productive assets.

Materials flow refer to the movement of materials from extraction through production, consumption, and the generation of waste which is then recycled, burned, or disposed of in landfills (Sznopk and Brown, 1998). With production and consumption activities cited as the cause of waste generation, the collection and transportation of waste materials to dump sites is seen as a Solid Waste Management practice (Baptiste, 2007). On the other hand, socio-cultural and other processes (laws, policies, institutions) result in unequal access to assets or other forms of capital (DFID, 1999), resulting in some people becoming poor in society. In order to survive, they engage in waste picking as a livelihood strategy to survive (Tevera, 1994), depending on dump sites to obtain materials to sell. Whereas dump sites serve as a point for the final disposal of unwanted materials by local authorities, to the waste pickers, it is a resource vital to their livelihood survival. The intended introduction of a waste processing plant at the Abokobi dump site has the potential to deny waste pickers access to dump sites, as shown by previous CDM projects (Global Alliance of Waste Pickers, 2012). The diagram in Figure 2.3 shows the relationship between waste generation (materials flow) and the emergence of resource recovery as a livelihood strategy.
Figure 2.3 Livelihood of waste pickers

PRODUCTION AND CONSUMPTION ACTIVITIES

SOCIO-CULTURAL FACTORS
LAWS, POLICIES, INSTITUTIONS
ECONOMIC ACTIVITIES

UNEQUAL ACCESS TO ASSETS AND OTHER FORMS OF CAPITAL

POOR PEOPLE
Inadequate income, poor wellbeing, vulnerable, food insecurity

LIVELIHOOD STRATEGY:
WASTE PICKING

DUMP SITE: SOURCE OF ECONOMIC/MATERIAL RESOURCE

LIVELIHOOD
Income, increased wellbeing, reduced vulnerability, improved food security

COPING MEASURES:
What are the plans of the assembly to help sustain livelihood of waste pickers?
What do the waste pickers intend doing to cope with situation?

ESTABLISHMENT OF RECYCLING PLANT
LOSS OF ACCESS TO DUMP SITE (SOURCE OF LIVELIHOOD)
THREAT TO LIVELIHOOD

Source: Author’s own construct (2014).
The framework in Figure 2.3 shows how resource recovery has emerged as a livelihood strategy relative to materials flow and factors which influence the development of livelihoods. The introduction of a new facility has the potential to deny the waste pickers’ access to the dump site, thus threatening the survival of waste pickers in the absence of an alternative mitigating measure to support them. This framework (Figure 2.3) is to help guide the researcher in determining how waste pickers have emerged at the Abokobi dump site, as well as determining the possible effects the establishment of a waste processing facility would have on the livelihood of the pickers.

2.8 CONCLUSION

This chapter reviewed literature on waste pickers and resource recovery, the importance of recovery activities, and the threats pickers face. Solid waste management in Ghana was also discussed to indicate how the country has been managing its waste. These helped in identifying issues concerning waste picking as well as shortfalls in the literature concerning studies on the possible effect that the establishment of a recycling facility could have on waste pickers at a dump site. The concepts of sustainable livelihood and materials flow were used to develop a framework for the study which shows how resource recovery has emerged as a livelihood strategy, the challenges they are likely to face as well as how to address them.
CHAPTER THREE

RESEARCH METHODOLOGY AND STUDY AREA

3.1 INTRODUCTION

This chapter shows how the entire study was carried out and it consists of two sections. The first section presents the nature of the study and the kinds of information needed for the study. The tools and methods for data collection, as well as how the information obtained was analysed (methodology) is also explained. This served as the basis on which a conclusion was drawn and recommendation(s) offered. The second section of this chapter gave a general overview of the study area.

3.2 RESEARCH DESIGN AND METHODOLOGY

A research design is the framework that outlines the various research activities required in order to effectively address the research question(s) (Ahiadeke, 2008). It the overall strategy a researcher employs to logically address the research problem, therefore serving as the framework for the collection, measurement and analysis of the research problem (De Vaus, 2001). A research methodology, on the other hand, is a defined structure that directs a study by way of planning and implementation, and it’s based on the ability of the type of methodology adopted in achieving the intended goal of the study (Burns and Grove, 2001).

The purpose of the study as indicated in chapter one is to examine how the establishment of a waste processing facility will affect the livelihoods of waste pickers at the Abokobi dump site. The nature of questions asked from which data was produced in the study
required the need for the application of both quantitative and qualitative methodologies. Quantitative methodology is the use of numerical data that has been collected and analysed to explain a particular phenomenon, usually in the form of descriptive statistics (Muijs, 2010). Qualitative methodology on the other hand involves seeking explanation of social phenomena based on the views of respondents (Hancock, 1998). The use of tools and techniques of both methodologies helped enrich the kind of data that was collected.

3.3 DATA REQUIREMENTS AND SOURCES OF DATA

Information needed for the study was obtained from two main sources: Primary Data sources and Secondary Data sources. The solicitation of information from these two sources was to help attain a broader view on the work of pickers.

3.3.1 PRIMARY DATA NEEDS AND SOURCES

The primary data required for the purposes of this study included information on the various actors in the resource recovery activity at the Abokobi dump site and what they did. Also needed was how much they were able to recover from the site and how proceeds from the recovered materials supported them. To achieve this, the views of waste pickers and buyers were sought on the possible effect the recycling plant could have on the activities of pickers, as well as the possible coping mechanisms they intend to adopt should the recycling plant deprive them their source of livelihood. This was done with the use of questionnaires. In addition to the responses obtained from the pickers and buyers, key informant interviews were conducted with heads of the Health
and Planning Departments of the Ga-East Municipal Assembly under whose territorial jurisdiction the resource recovery was done.

3.3.2 SECONDARY DATA NEEDS AND SOURCES

Information on waste pickers, their activities, challenges and sustainable livelihoods was also needed. This was to help understand waste pickers at the Abokobi dump site as well as draw some comparisons between them and waste pickers elsewhere. Such information was obtained from literature as presented in previous researches, official and governmental reports.

3.4 DATA GATHERING TOOL, PROCEDURE AND MODE OF ANALYSIS

This study was mainly in the form of a survey, with data collected by the use of questionnaires. The questionnaire was composed of both open-ended and closed-ended questions. In addition to the questionnaire, in-depth interviews using a semi-structured interview guide was also conducted. The interview questions were designed to obtain the necessary information on the intended recycling plant as well as the views of the local municipal authority on the informal solid resource recovery activity.

The questionnaires were administered by the researcher. This decision was taken at the instance of most of the pickers who did not want people who were not related to their work to be present at the dump site to observe them. This request was borne out of earlier experiences in which other people (journalists and other researchers) who came to ask questions about the nature of their activities secretly recorded, and in the view of the pickers, misinformed the public about their work. Because they did not want their associates to know the work that they did, the pickers wanted to avoid any ridicule or
stigma that would arise from any public exposure. This reason was given by some pickers for their reluctance to partake in the study, while those who did insisted that no recordings (whether openly or secretly, audio or audio-visual) were done. As a matter of ethical consideration, the decision to interview a respondent was based on the willingness of that respondent to answer the questions posed. This was only after the purpose of the research had been satisfactorily explained to the respondent.

Most of the responses which were sought in the study were qualitative in nature. Such responses can be difficult to analyse and interpret due to the differences in meaning which can be generated from them [Bryman (2012); Bryman and Burgess (1994)]. Based on this challenge, the responses were analysed and interpreted by organising the data under thematic areas and further discussed relative to existing literature, with direct quotations from some of the respondents being presented in support of some of the discussions. The thematic areas included demographics of respondents, resource recovery as a livelihood, anticipated coping and assisting mechanisms. In support of this, descriptive statistics such as percentages, frequencies and cross-tabulations as well as the establishment of linkages between the variables used in the study were used in presenting the data obtained from the field. Some of the results were also presented by using simple tables and bar graphs to give a better expression. The semi-structured interview was analysed by first transcribing and organising the responses on identified themes and they were then discussed further.
3.5 TARGET POPULATION, SAMPLE SIZE AND SAMPLING TECHNIQUE

The Abokobi dump site had been in the news lately for almost all the wrong reasons, particularly due to the operation of the dump site at near capacity and the challenges the dump site posed to residents who lived in its proximity. These challenges mainly revolve around the stench and smoke that emanates from the dump, culminating in many residents protesting against its operation and calling for its total shutdown and the possible evacuation of the waste. The decision to conduct the study at the Abokobi dump site was influenced by several factors. Some of these included the operation of the dump site at the time of the study unlike other dumps sites which had been temporarily closed down, the presence of waste pickers at the dump site, as well as the proximity of the dump site to the researcher relative to other dump sites. The major factor which influenced the decision to study pickers at the dump site was the announcement of the intention to establish a waste processing facility near, and the subsequent closure of the present dump site. The population of interest for the study were all waste pickers and buyers (both male and female) who work at the Abokobi dump site. Because waste pickers are very mobile relative to the operation of a dump site, the sample frame for the study were all the pickers and buyers who regularly worked at the dump site during the period of the study, with the accessible population (the population available for the study) being those present at the time the questionnaires were administered. Two questionnaires were designed for the respondents at the dump site, one for the pickers and another for the buyers.

The number of pickers at the dump site was reported as between 200 to 400 waste pickers. Reasons for this disparity in numbers of pickers included whether the dump site was operating or not, the ability of waste collection companies to bring waste to the
dump site (negatively affected when their dump trucks break down), as well as seasonal activities (picking is relatively high during festive occasions due to the waste generated). The absence of a reliable database that provided information on the number of, and details of waste pickers and buyers at the dump site prevented the researcher from using probability sampling methods. This setback also affected the ability to pursue gender parity in the administration of questionnaires as the researcher could not determine prior to the study the number of males and females at the dump site. A sample size of one hundred (100) waste picker respondents was selected while five (5) waste buyers were also selected to respond to the questionnaires. The researcher decided to use hundred (100) respondents as the sample size for the waste pickers based on the desire to capture the views of as many pickers as possible relative to the numbers estimated as working at the dump site. In addition to the waste pickers and buyers, key informant interviews were conducted. This involved an official each from the Planning and Environmental departments of the Ga-East Municipal Assembly.

In the selection of waste pickers and buyers at the Abokobi dump site, and Municipal Planning and Health Officers of the Ga-East Municipal Assembly, purposive and convenience sampling methods which are non-probability methods were adopted. The decision on the use of a purposive sample was necessitated by the focus of the study on only waste pickers, waste buyers and the municipal officers. This was to also help avoid the inclusion of individuals and their subsequent information not related to the study, but rather from subjects of interest to the study. The decision to use convenience sampling was based on the unavailability of a reliable document bearing the details of the waste pickers and buyers, thus making the use of probability sampling methods difficult. As a result, participants were selected based on their presence and willingness to partake in the study at the time of the administration of questionnaires. The snow-ball method was
also used in identifying prospective respondents, as respondents who were willing to partake in the study also convinced some of their colleagues to also take part.

3.6 LIMITATION OF THE STUDY

Despite the outline of how the study was to be conducted, some challenges were encountered. The first was the inability to interview an official of Gbi Hanza Limited, the company which had presented a proposal for the establishment of a recycling plant at the Abokobi dump site at the time of the study. This was because the company had no official contact in Ghana. As a result, any information given as to the operation of the facility was based on the information provided to the Ga-East Municipal Assembly by the company. Secondly, the use of a convenience sampling method made it difficult to establish the representativeness of the population by the sample selected. This was because the researcher could not control how the characteristics of the sample could match that of the study population by drawing the sample from a sample frame.
Table 3.1: Linkages between research objectives, questions and data collection method

<table>
<thead>
<tr>
<th>No.</th>
<th>Objective</th>
<th>Questions</th>
<th>Data needs</th>
<th>Who to contact</th>
<th>Data collection method</th>
<th>Sampling method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify the main actors in the resource recovery activity and the role they played</td>
<td>Which people were involved in resource recovery, what they did?</td>
<td>Categories of individuals or groups engaged in resource recovery and their roles.</td>
<td>Waste pickers, Waste buyers, Municipal assembly</td>
<td>Questionnaire administration</td>
<td>Purposive and convenience sampling, Snowballing</td>
</tr>
<tr>
<td>2</td>
<td>Discover modes of operation of actors in resource recovery</td>
<td>How the actors go about recovering materials?</td>
<td>Information on material recovery activity by actors.</td>
<td>Waste pickers, Waste buyers, Municipal assembly</td>
<td>Questionnaire administration</td>
<td>Purposive and convenience sampling, Snowballing</td>
</tr>
<tr>
<td>3</td>
<td>Examine how much was recovered weekly and how proceeds supported them.</td>
<td>Quantity recovered weekly, revenue accrued, and how it supported?</td>
<td>Report on quantity of materials recovered, revenue obtained and how it helped.</td>
<td>Waste pickers</td>
<td>Questionnaire administration</td>
<td>Purposive and convenience sampling, Snowballing</td>
</tr>
<tr>
<td>4</td>
<td>Assess intended supporting means by pickers should they lose access to dump site</td>
<td>How you will support yourself if access to dump site is lost.</td>
<td>Coping mechanisms by scavengers, waste buyers and other workers</td>
<td>Waste pickers, Waste buyers, Municipal assembly</td>
<td>Questionnaire administration</td>
<td>Purposive and convenience sampling, Snowballing</td>
</tr>
<tr>
<td>5</td>
<td>Identify initiatives by municipal assembly to mitigate possible negative effect of facility.</td>
<td>What plans were in place to assist the waste pickers should they lose access to dump site?</td>
<td>Possible support mechanisms by municipal assembly</td>
<td>Municipal assembly, Waste pickers, Waste buyers</td>
<td>Semi-structured interview</td>
<td>Purposive sampling</td>
</tr>
</tbody>
</table>
Table 3.1 shows the objectives of the study, the information needed and the questions asked. It also shows the sources of the desired information, how they were collected, as well as how the informants/subjects to the study were selected.

3.7 OVERVIEW OF THE STUDY AREA

This section provides a description of the Ga-East Municipality. It includes the location and size of the municipal area, population traits and institutional arrangement at the municipal assembly. Also presented are the educational situation, economic activities, and how waste is managed within the municipality.

3.7.1 DISTRICT PROFILE

The Ga-East Municipal Assembly (GEMA) is located at the northern part of the Greater Accra Region. It is one of the Sixteen (16) Districts in the Greater Accra Region and covers a land area of about 96 km$^2$. The capital of the Municipal Assembly is Abokobi. The Assembly is bordered on the west by the Ga-West Municipal Assembly (GWMA), on the east by the La-Nkwantanang Municipal Assembly (LaNMA), the south by Accra Metropolitan Assembly (AMA) and the north by the Akwapim-South District Assembly. The Municipality is sub divided into two administrative as Zonal Councils. Namely the Abokobi Zonal Council, and Dome Zonal Council.
The Ga-East Municipal Assembly was curved out of the then Ga District which was established in 2004 by an Act of Parliament (Legislative Instrument 1589) as a district. It was elevated to a municipality in 2008 by LI 1864. In June 2012 the Municipality was split into two, Ga East and La-Nkwantanang-Madina Municipalities. The Assembly is the highest political authority in the municipality and is headed by the Municipal Chief Executive (MCE). The assembly is responsible for the preparation and effective
implementation of development plans and budget. The Municipality consists of ten (10) electoral areas which are represented in the General Assembly by elected and appointed Assembly members. The electoral areas within the municipality include Abokobi, Agbogba, Ablahdjei, Atomic, Dome East, Dome West, Haatso, Kwabenya, Taifa North, and Taifa South.

The General Assembly is headed by an elected Presiding Member with the Municipal Coordinating Director as the Secretary. To enable the Assembly perform its function of overall development of the municipality, the following sub-committees and decentralized departments have been established: Development Planning, Finance and Administration, Justice and Security, Works, Social Services, and Women and Youth Sub-committees. These departments serve as avenues through which the various needs of the assembly are addressed in a collaborative manner, as each department is not mutually exclusive of each other.

The 2010 National Population and Housing Census put the Municipal Assembly’s population at 198,220 with an intercensal growth rate of about 4.2%. According to the Municipal Planning Coordinating Unit (MPCU), the growth of the population is mainly due to the influence of migration inflows to the municipality. The structure of the population is composed of about 51% males and 49% females, with an average household size of 4.6.

Table 3.1: District Projected Population

<table>
<thead>
<tr>
<th>District</th>
<th>Base Year</th>
<th>Projected Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>2011</td>
</tr>
<tr>
<td>GEMA</td>
<td>198,220</td>
<td>206,723</td>
</tr>
</tbody>
</table>

Source: Ga-East Municipal Assembly, 2013.
The Municipality can be described as urban because the urban/peri-urban population constitutes 82% of the Municipality’s total population, with the remaining 12% residing in the rural portion towards the Akwapim Hills. The population is concentrated mainly along the urban and peri-urban areas of the Municipality particularly along the border with AMA to the south. These include Dome, Taifa and Haatso among others. There are about 52 settlements in the district with Abokobi, a well-known Presbyterian community as the Municipal capital.

In terms of basic education (early childhood development centres, primary and junior high schools), and as at 2013, there are 67 public schools but no public senior high school in the municipality (GEMA, 2013). This is supported by 234 private basic educational institutes and 3 senior high schools. Most of the public schools lack libraries; ICT resource centres and recreational grounds. The problem of inadequate and poor quality infrastructure in the public schools is reported throughout the municipality. Academic enrolment in the municipality is reported to be higher in the urban areas compared with the rural areas. This situation, coupled with Capitation and School Feeding Programmes, has resulted in overcrowding in urban public schools, with an average of about 120 pupils per class. This situation has affected the quality of education (GEMA, 2013), negatively affecting the performance of students as well as their ability to continue to other higher levels of education after the basic level.

The district economy is composed of four main activities: industry, service, construction and agriculture (GEMA, 2013). Despite the existence of manufacturing companies, financial institutions and a fast growing estate development sector, agriculture is the single highest employing sector of the municipal economy. Agriculture (crop, livestock and agro-processing) is the major economic activity for about 55% of the economically active population (70% of the rural population depends on agriculture as their main
source of livelihood). The municipality also boasts of a number of tourist sites but the Municipal Assembly is yet to tap its existing potentials and as such they are highly undeveloped (e.g. the Danish Slave Fort), even though tourism can become one of the main sources of income and employment generation.

Land in the Municipality is owned by chiefs, clan or family heads who hold them in trust for their subjects. However, land could be acquired through direct purchase, rental, and lease hold. Specifically for farming purposes in which land cannot be bought outright, share cropping is arranged. Because these parcels of land can be inherited through established processes (familial or default), this has led to a lot of sale and resale of land with its attendant land litigations and chieftaincy disputes (GEMA, 2013). This situation is reported to have contributed to the rapid loss of farm lands with its attendant unemployment and subsequent migration to other areas in search of work.

The municipal assembly, through its Water and Sanitation Development Boards (WSDBs), manages waste and access to water. Concerning waste, about 385 tonnes of solid waste is generated monthly out of which 261 tonnes (67%) is properly collected (GEMA, 2013). The amount of waste generated within the municipality is attributed to the steadily increasing population through the influx of skilled and unskilled labour from the rural areas, rapid urbanization and the presence of a large market (at Dome) which together generates huge amounts of human and industrial waste. The properly collected waste is mainly done through door-to-door collection, with the rest collected in containers placed at vantage points by the Assembly in which residents dump refuse for a fee. The assembly has the added responsibility of managing waste generated outside the municipality in addition to the internally generated one. This is due to the location of a major dump site at Pantang which receives waste from other municipal assemblies in the Greater Accra Region of Ghana.
The incident of poor quality education affects the ability of residents in the municipality to obtain jobs in the formal labour market which mostly requires specific academic qualifications. For those engaged in informal employment, particularly those engaged in agriculture, the loss of farmlands especially by peasant farmers who depend on rainfall for production has resulted in people becoming vulnerable within the municipality. This situation, coupled with the irregular nature of some informal work represents dominant shocks which are seen to affect incomes, availability of food and wealth accumulation. In order to overcome these challenges, some of the vulnerable engage in resource recovery as a livelihood strategy, though it must be mentioned that not all waste pickers at the dump site are from the Ga-East Municipal area.

3.8 CONCLUSION

This chapter shows how the study was conducted. In doing so, the nature of study, the needed information, where to obtain it, how to obtain it and also how to analyse it has been shown. In addition the general profile of the study area comprising the demographic, economic activities, and the institutional arrangement in place. Also discussed was the infrastructure, waste management, as well as some of the limitations of the study.
CHAPTER FOUR

PRESENTATION AND DISCUSSION OF KEY FINDINGS

4.1 INTRODUCTION

This chapter discusses the results of the information obtained from the field under five main themes. The first is a description of the demographic characteristics of the respondents. This is followed by the various actors’ involved in resource recovery including their roles, past work experiences, and rules of work at the Abokobi dump site. The third section examines how disposed materials are recovered and the support they provide, followed by a discussion of views on the operation of the intended facility and its possible effect on resource recovery. Finally discussed in this chapter are views on the right approaches to waste management.

4.2 DEMOGRAPHIC CHARACTERISTICS OF WASTE PICKERS AND BUYERS

One hundred (100) waste pickers were interviewed to obtain their views on their livelihood patterns and how the intended facility could affect their activities. As shown in Table 4.1, which presents all the features of the respondents’ demographic and educational features, 85% of the respondents were males and 15% were females. The mean age of the respondents was 31.84 years, with the oldest age recorded as 63 years (woman), while the youngest was 18 years old (male). The age distribution of the respondents showed that the highest recorded age group was between 20 – 29 years (45%), followed by 30 - 39 years (28%), then 40 – 49 and 50 – 59 years with 9% each,
with 7% of the respondents being less than 19 years, with the remaining 2% being over 60 years. The Ministry of Youth and Sports, Ghana (2010) defines a youth as a person who falls within the ages of 15 and 35 years, showing that the pickers could be described as a youthful one because 72% of them fell within the ages of 15 and 35 years.

The study also showed that in terms of the level of formal education attained by the waste pickers, 27% of them had completed or were still in Senior High School (SHS) which was the highest level of education recorded. 50% had completed or failed to complete the various stages of Primary and Junior High School (JHS), with the remaining 23% not having any form of education at all. The male respondents had received more levels of formal education than the females. This is because of the 50 respondents who completed Primary/JHS, 43 of them were males with the remaining 7 being females. Also, 26 out of the 27 respondents who went to SHS were males with one female. Even though the male respondents in the survey had pursued more levels of formal education than the females, the number of pickers who had not received formal education was also dominated by males. Of the 23 respondents with no levels of formal education, the males were 16 and females were 7.

In addition, the results revealed that 60% of the respondents were single, 34% were married, 3% were divorced and the remaining 3% widowed. The waste picker’s had people they were taking care of with the income earned from resource recovery. The mean number of dependants was 2.61, with the highest number of dependants per a picker being eight (8) people, with the lowest being one (1) person. 20% were caring for at least 1 person, 32% had 2 people, 26% had 3 people, 14% had 4 people, 7% had 5 people, 1% had 8 people there were caring for respectively.
Table 4.1: Summary of demographic characteristics of waste pickers and buyers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Waste Picker</th>
<th>Waste Buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency distribution</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td><strong>Gender:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 19</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>20 – 29</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>30 – 39</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>40 – 49</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>50 – 59</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>+ 60</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td><strong>Marital status:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Married</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Divorced</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Widowed</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td><strong>Education:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Primary/JHS</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>SHS</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>Tertiary</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

In addition to the waste pickers, 5 waste buyers (4 males and 1 female) were also interviewed to also help gain a better perspective on resource recovery. Their average age was 44.2 years, with the oldest being 52 years and the youngest being 39 years old. One person had completed SHS, 3 had completed at least one of the stages of Primary/JHS, and one person had never received any form of formal education. 4 of the waste buyers were married, with 1 person being single. 1 person had 3 dependants, another had 5 and another had 6 dependants. 2 people had 4 dependants, with the average dependants of the buyers being 4.4 people.

The demographics of the pickers reflect that of pickers as shown in other studies [e.g. Gugssa (2012) and Gutberlet (2008)]. Not being able to complete school and the poor quality of education for those who are able to make it to school subsequently affects the qualification a person can have relative to formal labour market requirements. This situation excludes these individuals of any ‘formal’ employment opportunities except in cases where other employment opportunities are available in other informal industries. In cases where such individuals are unable to gain employment in the informal industry too, being youthful and also having dependants compels some of these individuals to earn a livelihood through resource recovery.

The higher number of male to female respondents as shown in Table 4.1 was due to the unwillingness of the females to take part in the study. Reasons cited by them included the fear of being exposed as waste pickers, and the possible submission of their information to the Municipal Assembly to be used as a basis for taxation. Another reason was that previous researchers who expressed interest to either study or report on their work ended up using the information obtained to project a bad image about them. These reasons were also shared by some potential male respondents even though the researcher had explained to them that no form of personal identification would be included in the
questionnaires. The existence of these fears contributes to the difficulty in obtaining much information about waste picker’s and their activities, a difficulty reported in previous studies including, the Global Alliance of Waste Pickers (2012).

4.3 ACTORS, WORK EXPERIENCES AND RULES OF WORK

This section, covering four parts, first explains who the actors’ involved in resource recovery at the Abokobi dump site are, and how they recover materials. The second part looks at their work experiences, why and how these actors joined the resource recovery. The third and final part covers the rules of the resource activities and the perceptions sections of society hold about this activity.

4.3.1 ACTORS, THEIR ROLES AND MODE OF RESOURCE RECOVERY

Two (2) main actors were identified as being involved in the resource recovery activity, namely the waste pickers and the waste buyers. The pickers can be further differentiated into two based on how they recover materials. The first consists of those who work with waste management company garbage trucks, with the second being those who pick at the dump site. Those who work with waste management companies sift through and potentially useful materials during door–to-door waste collection as part of their work. The recovered materials are then sold to either waste pickers at the dump site or to waste buyers. The waste pickers at the dump site on the other hand wait for dump trucks to tip waste collected from various points and then sift through to obtain materials which are considered to be of economic value. The waste buyers on the other hand go round, or on the invitation of waste picker’s, to buy materials which have been recovered. They sometimes also place requests for some distinct materials to be recovered for them based
on either prevailing market demand or desire to use a particular material for some particular purpose.

Three approaches were identified as the methods used in resource recovery:

- The first involves sifting through waste as it is being tipped from garbage trucks unto the dump to quickly obtain materials before others get their hands on it. This sees a lot of pickers gathering around the dump trucks and quickly collecting into their sacks whatever materials they consider as valuable.

- The second involve moving close to bulldozers and compactors as it works to obtain materials. This is because during the operation of these machines to move waste materials to desired points or compress them, other materials previously buried are turned up which are immediately picked. This however involves a lot of skill and experience to avoid being run over by the machines as experienced sometimes, though rarely so. To avoid a possible injury, some usually move behind the machines as it operates, with the more daring ones moving alongside and in some instances in front of it just to be the first to reach a material.

- The final method involves digging through compacted waste to further obtain materials. Though this is considered as the most tedious of the three means of recovering materials, it is still practised because some of the recoverable materials get buried and away from view, thus requiring some digging to get to them. This is done at less busy points of the dump and is also usually resorted to during periods when dump sites were temporarily shut down due to various reasons and dump trucks not bringing in new waste.

These three methods of resource recovery as shown above are also applied by other waste pickers as shown by Gonzales (2003) in his study of waste pickers at the Payatas
dump site in the Philippines. Other methods of resource recovery not identified at the Abokobi dump site include the picking of waste in dump trucks whiles they wait to tip their waste by the pickers from the dump (Gonzales, 2003). This method is carried out by pickers referred to as ‘jumpers’ (Gonzales, 2003). As one of the pickers at the Abokobi dump site noted:

“The workers attached to dump trucks use that time to quickly recover materials to sell so they won’t let another person come to the truck” (Interview with male waste picker, 2014).

Also, the view that obtaining materials as bulldozers operated was for those not physically ‘strong’ to compete whiles dump trucks were tipping their waste, or having to dig up buried materials as shown by Gonzales (2003) was not shared by the pickers at the Abokobi dump site. According to one of the pickers, this is because of the value attached to the waste. In his own words:

“If I can recover materials in that manner, why should I leave it for another person to collect it? We are all here to recover materials” (Interview with male waste picker, 2014).

Thus, by whichever means possible, the ultimate aim is to be able to obtain materials at the end of each resource recovery activity.
4.3.2 PREVIOUS WORK EXPERIENCES, WHY AND HOW THEY JOINED RESOURCE RECOVERY

The results from the study as indicated in Table 4.2 showed that 34% of the waste pickers were engaged or still engaged in some form of work before becoming picker’s, with the remaining 66% starting work as waste pickers, while all the waste buyers were also engaged in some work in addition to, or before resorting to resource recovery. Out of the 34% of waste pickers who were previously engaged in some form of work, 12 of them were engaged as artisans (carpenters, masons), 10 were into various forms of trading, 4 worked with waste garbage trucks, 2 were learning a trade, and 1 person each worked as a house painter, driver, cloth designer, factory worker, store keeper, and video recording as shown in Table 4.3. Out of the 5 waste buyers, 2 were involved in some form of trading, 2 had worked as waste pickers, and 1 was a welder.

Table 4.2: Previous work experiences of waste pickers and waste buyers

<table>
<thead>
<tr>
<th>Different occupation before resource recovery</th>
<th>Waste picker</th>
<th>Waste buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency distribution</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>Yes</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>No</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.3: Previous work engaged by waste pickers and buyers

<table>
<thead>
<tr>
<th>Work type</th>
<th>Waste picker</th>
<th>Waste buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artisan</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Trading</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Painting (building)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cloth designing (‘tie and die’)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Factory work</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Store keeper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Video recording</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Garbage truck worker</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Learning trade</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Driving</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Waste picking</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Welding</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>5</td>
</tr>
</tbody>
</table>


The study also showed that the actors engaged in resource recovery at the Abokobi dump site had various reasons for joining the industry. As shown in Table 4.4, 32% of the waste pickers interviewed attributed their inability to find jobs as their reason for becoming waste pickers, 24% said it was due to lack of financial assistance from their families, and 16% linked it to the irregular demand for their services and as such they engaged in waste picking to support themselves during such periods. 9% attributed it to the loss or collapse of their jobs, 8% were in to make quick money, 6% engaged in waste picking to sponsor their education, 4% picked waste as a form of assistance to a relative already engaged in it, while 1% attributed it to the flexible nature of the work. 2 out of the 5 waste buyers based their decision on their making enough money out of waste picking to now being able to buy from fellow pickers. With the remaining buyers, one
buyer attributed it to the irregular demand for their work, another to the collapse of their trading business, while the other attributed it to the lucrative nature of the work.

Table 4.4: Reasons for engaging in resource recovery

<table>
<thead>
<tr>
<th>Category of waste dealers</th>
<th>Reasons</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste picker</td>
<td>Lack of jobs</td>
<td>No financial support</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>24</td>
</tr>
<tr>
<td>Waste buyer</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>


The assertion by Tevera (1994) that scavenging or waste picking is practised as a survival response was shared by the waste pickers at the Abokobi dump site, who had to engage in resource recovery due to the inability to find work, the loss of jobs, and the lack of financial support. However, the practice of resource recovery in times of intermittent demand for one’s skill came out clearly as a key reason for people’s engagement in the sector. This showed that some waste pickers have other skills to support themselves and do not rely solely on resource recovery as their only source of livelihood. The irregular demand for their skills, which pushes them to engage in resource recovery, can be addressed by developing a mechanism that links such individuals to work opportunities in places where their skills may be in demand. The implications of not having waste to pick could result in an increase in the unemployed and vulnerable in society, as well as the possible engagement in legally and socially unacceptable activities to be able to meet their basic needs.
According to one of the students who engaged in waste picking to sponsor their education:

“As for this work, I can come here to pick no matter the time I close from school. This makes it better than another job where they won’t let me work and go to school because they will fix a time for me to work” (Interview with young male waste picker, 2014).

In an interview, the leader of the waste pickers at the Abokobi dump site gave an overview of how a person partakes in resource recovery. The prospective picker, after having expressed interest of working in that industry:

- First seeks the consent of the waste pickers already engaged in it. It involved an introduction to a recognised leader of the pickers as well as some of the other pickers, especially the most experienced in the work.

- Then obtain the name of the picker as well as the contact of someone known to the prospective picker so that in instances of emergencies, someone could be reached on behalf of the prospective picker.

Though this act hardly resulted in the denial of the prospective picker, it was seen as a sign of respect to those who are already engaged in it.

Concerning how they ended up engaging in resource recovery, the study showed that 55% of the waste pickers were introduced to the work by another picker, while 38% came on their own to seek work as a picker. The other 7% had been picking for relatively longer periods (years), and as such they started by visiting dump sites and collecting materials but they still had to introduce themselves to other waste pickers whenever they visited a new site. Of the 5 waste buyers, 2 who already worked as waste pickers just
transited from picking to buying, 2 were introduced by another buyer from whom they learnt from, while 1 had to learn on his own.

The waste buyers and pickers had been engaged in resource recovery for different periods (years) of time. As shown in Tables 4.5 and 4.6, the longest period recorded among the waste buyers was 13 years and the least was 1 year, with the mean years being 4.6. The longest period engaged in resource recovery by the waste pickers was 23 years; the least was 1 year, with the mean number of years being 7.06 years.

Table 4.5: Years spent in waste buying, and buying from Abokobi waste pickers.

<table>
<thead>
<tr>
<th>Years spent buying</th>
<th>Waste buyer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 1 1 1 1</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>1 3 2 4</td>
<td>23</td>
</tr>
<tr>
<td>Years spent buying from Abokobi</td>
<td>6 1 3 2 3</td>
<td>15</td>
</tr>
</tbody>
</table>


Table 4.6: Years spent in resource recovery by Abokobi waste pickers.

<table>
<thead>
<tr>
<th>Years spent in resource recovery</th>
<th>1-5</th>
<th>6-10</th>
<th>11-15</th>
<th>16-20</th>
<th>21-25</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency distribution</td>
<td>43</td>
<td>36</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>


Confirming a report by the Global Alliance of Waste Pickers (2012), a significant characteristic of waste pickers at the Abokobi dump site is that they are mobile as they do visit other dump sites aside the Abokobi site. Consequently, it was realised that 41% of the waste pickers had worked at a different dump site apart from the one at Abokobi,
with the remaining 59% having only picked at the Abokobi dump site alone. Other dump sites recorded as being visited by the waste pickers included dump sites in Achimota, Oblojo, Weija, Anyaa, Lomnava and Tantra Hill. Table 4.7 captures reasons given by the pickers for working at the Abokobi dump site. About 56% of the pickers said it was because the site was operational; 20% attributed it to their closeness to the dump site; 15% indicated that because the Abokobi dump site was where they were introduced to or started as pickers; 7% attributed it to the closure of other dump sites; while 2% said because it was easier picking at the Abokobi dump site compared with other sites.

Table 4.7: Reasons for picking at Abokobi dump site

<table>
<thead>
<tr>
<th>Frequency of occurrence</th>
<th>Reason for picking at Abokobi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operational</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Live close by</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Place of introduction</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Closure of other dump sites</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Relatively easier picking</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


The highly mobile nature of the work of waste pickers is also attributed to the difficulty in determining the number of people engaged in waste picking at particular times (Global Alliance of Waste Pickers, 2012). The need to be on the move is informed by the periodic temporary closure, and shutdown of dump sites due to reasons such as the breakdown of machinery and dump sites getting full. During such periods, waste pickers move to different dump sites to recover materials, as failure to do this would likely result in they not having work to do and therefore no income source.
4.3.3 WASTE PICKER ASSOCIATION MEMBERSHIP AND WORK RULES

Studies have shown that waste pickers form associations to protect and promote their interests, even to the point of organising an international conference of waste pickers [Global Alliance of Waste Pickers (2012), Gonzales (2003), Dias (2010), and Gugssa (2012)]. However, results from the study showed that the waste pickers and waste buyers at the Abokobi dump site have a weak association. Two main reasons were identified by the waste pickers for that state of the association. The first was the highly mobile nature of the pickers and buyers as indicated previously. This was reported to have made keeping a proper record of who worked where difficult, resulting in irregular membership and the difficulty in tracking members. According to the leader of the waste pickers:

“Waste pickers come and go all the time because the dump is sometimes closed, so they go to other places to work. Because of this, I can’t keep a proper record of all of them because different people come around almost all the time, with only a few picking here regularly” (Interview with leader of waste pickers, 2014).

Though some attempts had been made to occasionally revamp the association, the difficulty in reaching a consensus on the purpose and activities of the association was also cited as the second reason. To the waste picker leader:

“The pickers will tell you that it is not always they come here, so why should they contribute at the dump site, and that they are sure the money will be spent by whoever keeps it” (Interview with leader of waste pickers, 2014).

According to the leader of the waste pickers, in spite of this setback, the pickers did rally themselves to contribute to the cause of another when the need arose because:
“If one of us gets sick or injured, or loses a close relative, we can’t just look at the person so we contribute some money to help that person” (Interview with leader of waste pickers, 2014).

It was also realised from the study that despite the association of the waste pickers being weak, some informal rules existed to guide how the waste pickers conduct themselves at the dump site. Three main rules were identified from the various interviews with waste pickers:

- The first was that no fighting was permitted among the pickers. The urge to sometimes confront another arose out of the actions and inactions of the pickers as they competed with each other to recover materials. Thus, when one felt offended by the conduct of the other, what was expected was to lodge a complaint with any of the identified leaders of the pickers for a possible redress to be made. Under no circumstance could one attack the other. Attacking another picker could result in the sacking of the picker from the dump site.

- The second rule was that no one was to steal from what the other had recovered. This rule was needed because the pickers sometimes had to gradually pile recovered materials over periods in order to obtain a sizeable quantity before they could sell. This results in pickers heaping their recovered materials at distinct points. The danger here was that one could easily take advantage of the absence of the owner of the recovered materials to steal and quickly sell them to unsuspecting buyers. These buyers are those who usually come from other dump sites and after requesting for a particular material, are sold stolen materials without crosschecking the true owners of those materials.
• The third was that no one was to be restricted to either picking or buying alone.

As such, waste pickers could also buy and sell from others, while waste buyers
could also decide to pick materials whenever they could.

These rules are generally similar to those identified by Gugssa (2012) in his study on
informal resource recovery in Ghana. The difference between these and those he found is
that while the ones he identified were established by a waste picker association these
ones were established through consensus over time.

4.3.4 SOCIAL STIGMA AND WASTE PICKING

Waste picking is associated with a lot of social stigma by those who do not understand
why someone should engage in such an activity. Reasons given for the stigma include
the perception that waste picking is degrading and dirty for any person to engage in,
thereby rendering it the lowest form of activity in society (Vivek, 2000). The study
showed that 21% of the waste pickers had experienced some form of social stigma due to
the nature of their work, with the remaining 79% not having such an experience.
According to those who had such an experience, the reason cited for this was mainly due
to the conditions under which they worked, considered largely as not conducive enough
for any form of human activity to occur there. This was because the nature of the waste
dump was such that it had a strong stench emanating from the waste materials partly due
to the mixture of various discarded materials, rain water and the decomposition of some
waste materials, as well as the presence of houseflies. This was difficult for other non-
waste pickers to understand why pickers engaged in such activity. According to Vivek
(2000), the fear of social stigma informed the decision by some waste pickers to not
disclose their occupation. This fear was shared by one woman at the Abokobi dump site
as she noted that;
“After losing my work as a second hand clothes seller I will lose the respect of my friends if they find out that I have now resorted to resource recovery to support myself”

(Interview with 52 year old female waste picker, 2014).

This view informed the decision by some of the waste pickers to decline to be interviewed for the study for fear of being exposed as waste pickers. The waste buyers however did not experience such stigma being attached to their work. In addressing the stigma associated with waste picking, there should be a way of showing the importance of the work of waste pickers to the local economy concerning how it helps remove potentially harmful substances from the environment.

If not addressed and waste pickers decide to stop picking waste, there would be an increase in waste materials in our environment while also reducing the life span of waste dumps. Also, industries which depend on materials from waste picking would also suffer as they would have to look for other sources of materials which may come at a higher cost, thereby increasing their costs of production. When the cost of production increases with time, there is the likelihood of the cost being passed on to consumers by way of higher prices on goods and services, which the citizens may find it difficult to access. Should industries which depend on such materials also close down, those who work in such industries would lose their jobs with the state also losing taxing which would have been paid by both the industry and its workers.
4.4 WORK DAYS, RESOURCE RECOVERY AND SUPPORT FROM PROCEEDS.

Table 4.8 showed that on the average, waste pickers worked 5.88 days a week, with 89% working 6 days a week, 10% working 5 days a week, and 1% working about 4 days a week. The results showed that workers worked at most 6 days a week, a day lesser than some waste pickers who actually worked every day of the week (Tevera, 1994). It was discovered from the study however, that the number of days worked within a week depended on whether the dump site was operating or not, as well as how favourable the weather condition was. The pickers did not have a target of materials to be recovered on a daily or weekly basis. This was due to the uncertain nature of their work, thus making it difficult for one to project how much they could recover and by what time too. As a result, they worked for as long as they could during the day and almost every day of the week too, as the amount made from the recovered materials would depend on the nature and quantity of materials recovered.

Table 4.8: Work days of waste pickers

<table>
<thead>
<tr>
<th>Number of days worked per week by waste picker</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of waste pickers</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td>89</td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>


Studies have shown that materials recovered from dump sites include tin and plastic materials, metals, paper products, bottles and electronic waste (e-waste) (Guggsa, 2012; Tevera, 1994). Though most of these were recovered at the Abokobi dump site, the study revealed that majority of the waste obtained were plastics and tin materials. The poor recovery of materials such as metals and e-wastes was attributed to itinerant buyers who
go round buying such materials from households and other places where they can be found, thus reducing such materials finding their way unto dump sites. Though this confirmed the earlier study of Gugssa (2012), it was also realised from the study that another material less recovered at the dump site was also sachet ‘pure water’ rubber and it was attributed to other pickers who go round public places to collect them. Despite these setbacks, such materials are still recovered at the Abokobi dump site. Some of the recovered materials from the Abokobi dump site are shown in Plates 1-2.

**Plates 1 – 2: Some materials recovered from the Abokobi dump site**

Plate 1: Paper (left) and tin cans (right)

Source: Field Survey, 2014
Of the two most recovered materials, waste pickers preferred plastic products to tin materials. Two main reasons were identified as an explanation for this. The first was that the demand for plastic materials was higher and fetched a relatively higher price than tin materials. This was also attributed to the presence of recycling plants in Ghana that processed plastics into various products. The second was that it was easier to work on plastics than tin materials. This was because tin materials had to be ‘beaten’ down into flat pieces and sometimes burnt up a bit before being sold out to buyers. This had to be done because the various shapes of the tin materials made it more difficult to pack compared with plastics. Also is the process of flattening the tin materials, some of the pickers end up being cut by the tin materials. This makes the work on tin materials less attractive than plastic materials.

The findings of the study showed that the recovery of materials at the dump site according to the waste pickers is declining per waste picker. 87% of the waste picker respondents attributed this to an increase in the number of waste pickers at the dump site. 10% attributed the decline to the activities of those who recover some of the materials
while making rounds with garbage trucks, with 3% linking the decline the activities of itinerant buyers. With the number of waste pickers operating from the dump site as being between about 200 to 400 pickers, the recovery rate per person would surely fall as there would be more pickers recovering materials per truck. Also, the temporary or permanent closing down of other dump sites results in the movement of waste pickers from such sites to those which are still in operation. With those who work with garbage trucks recovering materials while working, they end up reducing the quantity of materials of economic value before it gets to the dump site. This was seen to have resulted in some waste pickers now going round and sifting through dust bins around just to recover materials before garbage trucks come to empty them into their trucks.

Prices of the recovered materials are predetermined by both the buyers and the sellers, with the unit price per material depending on the approved weight, number or size. A picker, after recovering materials, sorts them into the various categories of useful materials. Then together with the buyer, the materials are weighed or counted to determine the amount the picker is to be paid. Due to the pressure of the many pickers at the dump site, it was estimated that it takes about 1 to 2 weeks to recover tin materials to sell. It also took about 3 to 4 weeks to recover plastic materials to sell. Despite the time taken to recover such materials to sell, the waste picking activity was still described as lucrative due to the ability to sell whatever has been recovered in a day to make quick money if the need arose, or still pile them up to be sold later. The prices obtained from some of the recovered materials at the Abokobi dump site are shown in Table 4.9.
Table 4.9: Prices of recovered materials at the Abokobi dump site.

<table>
<thead>
<tr>
<th>Material</th>
<th>Price (GH ¢)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals:</td>
<td></td>
</tr>
<tr>
<td>Aluminium (tin materials)</td>
<td>10 pesewas/kilo</td>
</tr>
<tr>
<td>Light – thick weight</td>
<td>25 – 30 pesewas/kilo</td>
</tr>
<tr>
<td>Paper bags</td>
<td>2 – 5 pesewas/kilo</td>
</tr>
<tr>
<td>Bottles:</td>
<td></td>
</tr>
<tr>
<td>Medicine bottles</td>
<td>2 pesewas/1 – 5 bottles</td>
</tr>
<tr>
<td>Vita milk bottles</td>
<td>5 pesewas/bottle</td>
</tr>
<tr>
<td>‘Coke’/Malt/Incense bottles</td>
<td>10 pesewas/bottle</td>
</tr>
<tr>
<td>Beer/Guinness bottles</td>
<td>20 pesewas/bottle</td>
</tr>
<tr>
<td>Plastics:</td>
<td></td>
</tr>
<tr>
<td>‘Sachet’ rubber</td>
<td>30 pesewas/kilo</td>
</tr>
<tr>
<td>Gallons</td>
<td>60 pesewas/kilo</td>
</tr>
<tr>
<td>Bowls</td>
<td>90 pesewas/kilo</td>
</tr>
<tr>
<td>Broken chairs</td>
<td>1.5 cedis/chair</td>
</tr>
</tbody>
</table>


Despite the quotation of the prices as seen in Table 4.9, some bargaining was still done to suit both the waste buyer and the pickers. Of the 57 respondents who indicated how much they made from the sale of recovered materials, their mean income for the month was GH¢ 437.7. The distribution of the income of the 57 respondents, shown in Table 4.10, saw the least earned in a month to be between GH¢ 200 to 299, with the most being GH¢ 500 or more. With Ghana’s minimum daily wage at GH¢ 6 (Essel, 2014) means that on the average, a person would earn between GH¢ 120 to GH¢ 180 (20 and 30 days per month respectively). The earnings of waste pickers, being well above the minimum earnings for a month, can be seen as enough to provide its actors with a decent living, thus keeping the actors in the resource recovery industry. According to the waste pickers, income earned from selling recovered materials is what they use to pay for
accommodation, provide food, healthcare, and education for themselves and their dependants.

Table 4.10: Monthly income distribution of some Abokobi waste pickers

<table>
<thead>
<tr>
<th>Income range for the month (GHS)</th>
<th>Frequency distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100</td>
<td></td>
</tr>
<tr>
<td>100 – 199</td>
<td></td>
</tr>
<tr>
<td>200 – 299</td>
<td>7</td>
</tr>
<tr>
<td>300 – 399</td>
<td>21</td>
</tr>
<tr>
<td>400 – 499</td>
<td>23</td>
</tr>
<tr>
<td>+500</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
</tr>
</tbody>
</table>


4.5 ESTABLISHMENT OF RECYCLING FACILITY, EXPECTATIONS AND ANTICIPATORY COPING MECHANISMS.

This section discusses expectations about the facility and how it will operate, as well as anticipated coping and supporting measures to be adopted.

4.5.1 VIEWS OF WASTE PICKERS AND BUYERS ON INTENDED FACILITY

Results of the study showed that 48% of the waste pickers’ interviewed had been aware of the intention of the municipal assembly to put up a facility with the remaining 52% not having any idea. 2 out of the 5 waste buyers also knew about the proposed facility while the remaining 3 had no idea. Those who were aware of it got to know because the
Municipal Assembly had their names and telephone numbers taken with the intention of providing them some assistance to their work, with some also hearing about it through rumours. According to those who knew about the intended facility, their views had not been sought relative to the establishment of the facility, and as such they did not know exactly what the facility would be about and had not made further attempts to find out. For those who did not know about the facility, they expressed surprise about the decision to put up such a facility considering the high cost such a venture would be. Their view was informed by the enormous heap of waste at the dump site which they said would be very difficult and expensive to clear to make way for the facility.

The study also revealed that 49% of the waste pickers were of the view that it was good to have such a facility with 51% expressing a different view about the intended facility. The reasons for either the support or opposition to the establishment of the facility are summed up in Table 4.11. The table showed that support by the pickers was based on the possibility of the pickers gaining employment if the facility was established. Other reasons were the prospect of the facility buying materials which had been recovered from them, the facility enhancing their work through the introduction of machinery, while another reason was that the facility would be a better approach to waste management. For those, who did not support the idea of the establishment of the facility, reasons given were based on the fear of losing their jobs, the possible loss of access to the dump site and as well as the inability of the facility to employ most of them. All the waste buyers were in support of the establishment of the facility, and their decision was based on the facility possibly buying recovered materials from them, thus making their work much easier as they wouldn’t have to spend more in transporting their materials to other companies as they currently did.
Table 4.11: Reasons for either support or opposition to establishing a facility

<table>
<thead>
<tr>
<th>Reason for either support or opposition to facility</th>
<th>Number of Waste pickers</th>
<th>Number of Waste buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Support:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment opportunity in facility</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Purchase of recovered materials</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Enhance work of pickers</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Better waste management</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>49</strong></td>
<td><strong>5</strong></td>
</tr>
<tr>
<td><strong>Opposition:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eventual loss of job</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Eventual loss of access to dump site</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>No employment opportunity in new facility</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>51</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>


The study also found that despite 49% of the waste pickers supporting the establishment of the facility, 97% of the waste pickers further indicated that the facility would affect their ability to recover materials, with the remaining 3% not expecting any effect on resource recovery as a livelihood. Reasons cited by the waste pickers to affect their work was the possible loss of access to the dump site. This, they attributed to the facility being possibly cordoned off to outsiders, inevitably restricting the access of the waste pickers to waste materials. Cordonning off such facilities is often done to protect the machinery used in managing waste, even though it also ends up denying waste pickers’ access to
waste materials (Global Alliance of Waste Pickers, 2012). Another reason was the fear of some of them becoming salaried workers. This fear was due to the uncertainty of how much they would be paid monthly compared with how much they were making as individual pickers, which as has been shown earlier is above the minimum wage in Ghana.

Also the flexible nature of their work was such that one could come to work at any time, rest whenever they felt like and worked whenever they wanted to. Thus, they feared losing these privileges if they gained employment in the facility. For those who engaged in waste picking to sponsor their education, they are able to go to school, close and still make it to the dump site to recover materials, another opportunity likely to be missed if the facility was established. The possibility of the facility rather enhancing the work of the pickers was the view of those who did not think the facility would affect their resource recovery. 2 waste buyers were of the view that the facility could affect their work because the pickers could bypass them to sell to the facility directly. Of the remaining 3 who did not think it would affect their waste buying activity, their reasons were that they would now have a direct buyer making their supply much easier, as well as being also able to buy from other places to sell to the facility should the pickers at the dump site bypass them.

4.5.2 ANTICIPATORY COPING MECHANISMS BY WASTE BUYERS AND PICKERS

Concerning how the respondents intend supporting themselves should they lose access to the dump site, 70% of the pickers indicated their readiness to move to another dump site to recover materials. 12% said they did not know exactly what they would do, 9% said they would have to look for another job, while the remaining 9% said they would have to
wait for their skills/services to be demanded though they expected that to be irregular. All the waste buyers indicated their readiness to buy recovered materials from other dump sites if they lost the opportunity to buy from the current site. These views are shown in Table 4.12.

Table 4.12: Anticipatory coping measures by waste buyers and pickers

<table>
<thead>
<tr>
<th>Possible coping measure</th>
<th>Number of Waste pickers</th>
<th>Number of Waste buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search for new dump site</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>Search for different job</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Wait for work/demand for skill</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>No idea</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>5</td>
</tr>
</tbody>
</table>


The study also sought to determine if having recovered materials at a different dump site before could affect the decision to move to another site. The results, presented in Table 4.13, showed that 37 waste pickers out of the 41 who had worked at a different dump site were more willing to move to another site, 2 were ready to look for another job, and 1 was prepared to wait for work. The remaining 1 was at a loss as to exactly what to do. Of the 59 who had never worked at a different dump site, 33 were ready to move to another dump site, 11 did not know what they were going to do, 8 were ready to wait for work, and the remaining 7 were ready to look for another job. The frequency of the decision to move to other dump sites to recover materials also informs the highly mobile nature of the work of waste pickers, thus also contributing to the difficulty in determining the number of those engaged in resource recovery (Global Alliance of Waste Pickers, 2012).
Table 4.13: Experience of picking at a different site influencing decision to relocate

<table>
<thead>
<tr>
<th>Possible coping measure</th>
<th>Picked at a different dump site before</th>
<th>Only picked at Abokobi dump site</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search for new dump site</td>
<td>37</td>
<td>33</td>
<td>70</td>
</tr>
<tr>
<td>Search for different job</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Wait for work/demand for skill</td>
<td>1</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>No idea</td>
<td>1</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>59</td>
<td>100</td>
</tr>
</tbody>
</table>


4.5.3 WASTE BUYERS AND PICKERS EXPECTATIONS

The waste pickers and buyers, according to the study, did not expect the municipal assembly to provide any assistance to them. In giving reasons for that view, one of the pickers responded that:

“We have never received any assistance from any authority since we started picking waste, so I don’t think the local authority will help us” (Interview with female waste picker, 2014).

Another responded that:

“From the time they came here to take names of some of us some time ago, we have not heard from them again. I don’t think they will do something for us because if they would, we would have heard from them by now” (Interview with male waste picker, 2014).
In terms of what the intended facility could do to assist their work, 39% of the waste pickers reported that they had no idea, 38% had the hope that the facility could buy from them, 12% expected the facility to allow them access to the waste materials so they could still pick, 7% expected the facility to rather provide machines to make the process of resource recovery more efficient for the pickers, with the remaining 4% hoping that the facility would employ them. 3 out of the 5 waste buyers wished the new facility would buy from them, 1 expected an increase in the prices of recovered materials compared with what they were obtaining now, with the remaining 1 expecting the provision of machinery to enhance the recovery of materials. The lack of idea as to what the local authority could do for them, according to Tevera (1994), is also attributed to hostile policies especially in ‘Third World’ cities. According to Tevera (1994), policies on waste management mostly made waste pickers worse off because such policies do not consider the possible effect it would have on waste pickers. As a result, waste pickers do not look forward to being catered for when policies are being formulated. Also, the desire of the respondents, especially the waste pickers for the facility to buy their recovered materials was based on the pickers and sometimes buyers too having to sell their materials at a relatively cheaper price than they could possibly get, a fact identified by Sicular (1993).

Despite acknowledgment of the inability of the local authority to come to their aid should they lose access to the dump site, the pickers still expressed the desire of the local authority in providing machines, especially a bull dozer and a compactor, to enhance their resource recovery. The plea was based on the frequent breakdown of the machines of Zoomlion Company Limited which manages the Abokobi dump site on behalf of the Municipal Assembly. Such situations stalled the work of the pickers because without those machines working, no ‘new’ waste was allowed unto the dump site. This eventually deprived the waste picker’s access to waste materials to pick from, as well as
inconveniencing waste management companies who come to tip their waste at the dump site, compelling some to move waste materials to other dump sites.

### 4.5.4 INTENDED ASSISTANCE FROM MUNICIPAL ASSEMBLY

The decision by the Ga-East Municipal Assembly to enter into a public-private partnership (PPP) has been borne out of the need to find a:

“More sustainable means of managing the waste brought here” (Interview with Ga-East Municipal Health Planning Officer, 2014).

According to him, the facility which is expected to start in 2015 would be an integrated waste management facility. The facility would perform functions such as resource recovery and recycling, composting and final disposal. In pursuit of this, a new site would be allocated for the establishment of the facility, with the current dump site being cleared and transformed into a modern transport station. Waste pickers, according to him:

“Are people who worked at the Abokobi dump site to make a living” and as such there was therefore “the need to provide some assistance to them in the face of the establishment of the facility” (Interview with Ga-East Municipal Health Planning Officer, 2014).

According to the Municipal Planning Office, proposals are still being welcomed on the most appropriate model of the facility to implement and as a result, any:

“Possible assistance to the waste pickers would be informed by the final model adopted” (Interview with Ga-East Deputy Municipal Planning Officer, 2014).
This, according to him explains why no discussion had been held with the waste pickers at the Abokobi dump site concerning the facility. Concerning what the waste pickers were likely to do should they lose access to the dump site, the officers indicated that they could not tell because they were yet to have a purposive interaction with the pickers. This acknowledgement shows that, without the intended assistance proposed by the Ga-East Municipal Assembly, waste pickers who lose access to dump sites due to the implementation of the intended waste management plan are likely to be left to their fate, with little concern about how they would earn a livelihood.

Despite not taking a final decision on which particular model to adopt as well as knowledge on what the pickers were likely to do, the municipal assembly intends providing some assistance to the pickers as part of the establishment of the facility. These include training some of the waste pickers based on their willingness to work in the facility, while also planning to provide other waste pickers with logistics such as protective gears (Abokobi Municipal Health Planning Officer, 2014). It was in line with this that the names and telephone numbers of some of the waste pickers, who were present at a particular time the municipal office visited, were taken to help inform the decisions of the Municipal Assembly towards the intended assistance to the waste pickers.

**4.6 BETTER WASTE MANAGEMENT PRACTICE**

In the absence of a waste management facility at the Abokobi dump site, the study sought to determine the views of all the respondents concerning more appropriate means of waste management. The results, as shown in Table 4.14, showed that 80% of the waste pickers said they had no idea, 9% were in favour of the construction of waste
processing factories, and 1% desired the acquisition of more machines to enhance resource recovery at the dump site. Also, 5% were interested in having more waste being brought to the dump site so they could recover more, 2% were of the view that it would involve better supervision and the procurement of more machines to manage waste, while the remaining 3% asserted that it was the responsibility of the local government to manage waste. The waste buyers on the other hand saw the provision of dust bins and the proper collection of waste, waste processing and resource recovery as the better means of waste processing.

Table 4.14: View of waste pickers and buyers on better waste management methods

<table>
<thead>
<tr>
<th>Better waste management method</th>
<th>Waste pickers</th>
<th>Waste buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Frequency</td>
</tr>
<tr>
<td>No idea</td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Waste processing factories</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Use of dump sites to allow resource recovery</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Responsibility of local assembly</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Better supervision and use of machinery</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Use of machines to enhance resource recovery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Proper waste collection and recovery</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>5</td>
</tr>
</tbody>
</table>


The views of the officers at the municipal assembly on the other hand showed a two-way approach. The first, according to the Deputy Municipal Planning Officer was to:
“Enforce existing bye-laws on sanitation to tackle the attitude of people on waste” (Interview with Ga-East Deputy Municipal Planning Officer, 2014).

This, in his view would see more proper waste disposal methods being used, while also checking the dumping of waste at unapproved points, with the need to apply sanctions when needed. When this was done, some money could be saved which would have been used to collecting waste from unapproved places.

The second, according to the Municipal Health Officer, is to:

“Enhance the processes of recovery, recycling and composting” (Interview with Ga-East Municipal Health Officer, 2014).

Another approach which could be possibly explored according to the Deputy Municipal Planning Officer (2014) is the collection and transportation of waste from public places during the close of business (especially at night). In his view, waste generated during the working day can be collected and transported during the night to first of all clear waste before the start of another day. Secondly, it could help prevent the inconveniences associated with dump trucks competing with other vehicles during the day as it moved from collection to dump sites. When this happens, it creates an inconvenience to the public and other motorists who sometimes endure the stench that comes from the waste, as well as some waste materials being blown by the wind off improperly secured waste as dump trucks move, which may obstruct other moving vehicles.
4.7 LINKAGE BETWEEN MATERIALS FLOW AND LIVELIHOOD OF WASTE PICKERS

The conceptual framework developed for the study shown in chapter two was adapted from the concepts of sustainable livelihoods and materials flow. As indicated in the literature review and the conceptual framework, waste picking emerges as a livelihood strategy in the face of inadequate employment and financial support, and it is also linked to materials flow. As shown in Table 4.4 and supporting the view of Tevera (1994), about 87% of the respondents engaged in resource recovery due to inadequate employment and lack of financial support, thus resorting to waste picking as a livelihood strategy. In addition, because the ability to recover materials depends on dump sites being operational, any closure (temporal or permanent) of the dump site makes waste pickers respond by moving to other dumps to work. This makes frequent mobility a chief characteristic of waste picking as shown by 41% of the respondents who had to pick at different dump sites due to the frequent closure of waste dumps, and as reported by Global Alliance of Waste Pickers (2012).

The establishment of waste processing facilities is reported to deny waste pickers access to dump sites, and sees some opposition of waste pickers to the establishment of such facilities (Global Alliance of Waste Pickers, 2012). The study has shown that waste pickers are likely to lose access to waste materials at the Abokobi dump site, with about 97% of the respondents indicating that fear. This is because the crude dumping of waste materials as sometimes practiced as a method in materials flow is going to be replaced by an integrated waste management facility, which is likely to be fenced. Finally, in terms of anticipated coping and support measures, even though the municipal assembly wishes to offer assistance to the waste pickers, the perception that local authorities do not care
for the work they do has 70% of the respondents prepared to look for another dump site to recover materials should they lose access to the Abokobi dump site.

4.8 CONCLUSION

This chapter discussed the findings of the study. From the study, it was realised that the main actors in resource recovery at the Abokobi dump site were waste pickers and waste buyers. The actors were youthful, and engaged in resource recovery due to lack of jobs and financial assistance. The main materials recovered from the dump site are plastics and tin cans which are sold to be either re-used or recycled. The income earned from the sale of the recovered materials, which is above the current minimum wage in Ghana, is what the actors use to cater for their needs and that of their dependants.

The study also showed that due to frequent closure of dump sites the waste pickers were very mobile, but were at the Abokobi dump site because it was still operational. With the mobile nature of their work affecting their ability to have a strong association, they still have in place informal rules to guide their work, while also contributing to assist fellow pickers whenever the need arose. Most of the pickers had no idea the municipal assembly intended establishing a waste processing facility, but still opposed the idea because they were of the view that it would affect their ability to recover materials. From the study, it was realised that even though the municipal assembly intends providing some assistance to the waste pickers because they are likely to lose access to the dump site, most of the waste pickers on the other hand are also likely to move to another dump site to recover materials because they are of the view that the municipal assembly will provide no assistance to them.
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This chapter is in three sections. The first gives a summary of the key findings of the study, followed by the conclusion. The final section entails the advancement of some recommendations on the basis of the findings of the entire work.

5.2 SUMMARY OF KEY FINDINGS

The study sought to identify the actors who were engaged in resource recovery at the Abokobi dump site and the materials they recovered. Views on the proposed facility, as well as how it could affect resource recovery were also examined. The final objective was to determine possible coping and support mechanisms should waste pickers lose access to the dump site.

5.2.1 ACTORS IN RESOURCE RECOVERY

The study showed that resource recovery was done by two main actors at the Abokobi dump site, namely waste pickers and waste buyers. The waste pickers were youthful, and their levels of formal education showed that the highest attained among them was SHS, with the rest being lower. The main reason for engaging in resource recovery was the lack of financial assistance to support themselves and their dependents. Some of the waste pickers had worked, or still engaged in other occupations in addition to waste picking, while some had recovered materials at different dump sites apart from the one at Abokobi. The main reason for picking at the Abokobi dump site was because the dump
site was operational. Though the waste pickers did not have a strong association, they had informal rules guiding their work.

5.2.2 MATERIAL RECOVERY AND SUPPORT FROM SALE OF MATERIALS

Materials recovered at the dump site were mainly plastics and metals (aluminium), though other materials such as e-waste, glass bottles and paper were occasionally obtained. The reason for the decline in the recovery of the other materials at the dump site was attributed to itinerant buyers who went round to obtain those materials, thus reducing the quantity and possibility of such materials ending up at dump sites. The quantity of materials recovered per person was reported as having reduced, with an increase in the number of waste pickers attributed to the decline. Materials recovered were either sold on a daily basis, or was compiled till the picker felt the need to sell them. Prices of the recovered materials were quoted per kilo, size or quantity and were also pre-established, though some bargaining was still done to suit either the buyer or picker. Income generated from resource recovery was used by the pickers and their dependants to provide accommodation, education, health and nutrition, among others.

5.2.3 VIEWS AND EXPECTATIONS ON FACILITY

The intended facility, according to the Municipal Health Officer, is an Integrated Waste Management Facility which will receive, separate, recycle and compost waste brought to it. Most of the waste pickers had no idea about the intention of the municipal assembly to put up such a facility, a situation admitted by the municipal assembly as resulting from the indecision on the particular facility model to use, which would subsequently also inform the kind of information to be given to the waste pickers. Despite that, there was divided support for the establishment of the facility among the respondents. The possibilities of gaining employment, and of having their recovered materials purchased
by the facility were identified as the main reasons for the support of the facility. Those who opposed the facility had the fear of a possible loss of access to the dump site, and the uncertainty of not being employed as their reasons. The possibility of the facility affecting the ability of the respondents to recover materials was shared by almost all the respondents, despite initial acknowledgement of some positives to be provided by the facility.

5.2.4 ANTICIPATED COPING AND SUPPORT MEASURES

The waste pickers and buyers were of the view that it was unlikely the Ga-East Municipal Assembly would provide any assistance to them should they lose access to the dump site. Based on that view, majority of the pickers indicated they were likely to look for another dump site to recover materials, though some were also prepared to look for another job or apply the skills they had. The municipal assembly, despite not finalising the particular model to adopt were taking some steps to support the waste pickers. The decision by the municipal assembly was based on the recognition of the contribution of waste pickers to waste management, as well as the difficulty the pickers would face in terms of having a livelihood should they lose access to the dump site. The assistance to be provided was to be in the form of training for possible absorption into the intended facility, as well as the provision of protective gear for the pickers as they engaged in resource recovery. The intention to locate the facility at a new site within the municipality, as well as the proposal to turn the current dump site into a lorry station shows that the pickers will lose access to waste materials.
5.3 CONCLUSION

The study has shown that resource recovery at the Abokobi dump site is engaged in as a livelihood strategy in the face of lack of employment and financial support. In an attempt to better manage the waste brought into the Ga-East Municipal Assembly from other municipal assemblies, a waste processing facility is to be established. The intended establishment of the facility on a new site and the proposed conversion of the current dump site into a transport station by the municipal assembly mean that waste pickers are likely to lose access to the current dump site and the waste materials there. The municipal assembly has indicated their intention to provide some assistance to the waste pickers. However, considering the number of waste pickers who regularly work at the dump site, as well as the possibility of pickers from other dumps trooping to the Abokobi site to access the intended assistance from the assembly, the effort by the assembly may not achieve its intended impact. In the face of this possible challenge, and even though most of the pickers intend moving to a new dump site to recover materials should they lose access to the dump site, assistance should be provided to the pickers especially by way of skills training to enable them pursue other livelihoods even as more waste processing facilities are likely to be established with time.

The study has been able to identify the actors engaged in resource recovery at the Abokobi dump site and what they each do. Also addressed were how materials were recovered, what was recovered and how earnings from the sale of the materials provided support to them. Finally addressed was the identification of anticipatory coping and support measures to be adopted should the waste pickers lose access to waste materials.
5.4 RECOMMENDATIONS

Results from the study showed that people engaged in resource recovery as a livelihood strategy. Not only does it provide employment but also supports recycling industries by supplying them with recovered materials, thereby reducing the quantity of waste materials finally disposed and subsequently increasing the lifespan of dump sites. However, the need to find more efficient ways to manage waste is likely to see the introduction of waste processing factories. In doing so, the development of policies on waste management is likely to overlook waste pickers as asserted by Tevera (1994). Despite the intended assistance that the Ga-East Municipal Assembly wishes to provide to the waste pickers, the following recommendations should be considered by both the local authority and subsequently other agencies when such facilities are to be established:

- Need for extensive dialogue: There should be an extensive dialogue between the municipal assembly and at least the leadership of the waste pickers to help inform them about the intended establishment of the facility. Doing this will allow information dissemination and the waste pickers to also plan ahead in making provisions for alternative forms of livelihood should they lose access to the dump site. This can help avoid possible confrontations should the facility be commenced as has been shown to have occurred in Senegal (Global Alliance of Waste Pickers, 2012).

- Factor interests and expertise of pickers: The Municipal Assembly should incorporate the interests and knowledge of waste pickers in the eventual development of the facility. After spending some years in resource recovery, the waste pickers can share their experiences to better inform how the facility could
be managed, or other features to be associated with the facility, as well as how they can be integrated into the ‘era’ of new waste management measures.

- Provide broader skill training: Efforts should be made at providing some training in other fields to waste pickers in general. Thus, should more waste processing facilities be established to take over dump sites, waste pickers would have other skills to rely on in earning a living, especially as it was discovered in the study that some engaged in resource recovery to support when there was low demand for their skills. In the absence of this, and should waste pickers lose access to waste dumps, more vulnerable people will be created in society because they will lose their source of livelihood, which may require the state to spend more in providing welfare services to these individuals, and their dependents too. This could lead to such individuals engaging in legally and socially unacceptable activities to meet their basic needs. In addition, industries which depend on materials from waste pickers would also suffer as they may have to spend more in obtaining such materials elsewhere, subsequently increasing their costs of production.

- Pursue source separation of waste: Policies that encourages or compels waste to be separated at source should be introduced. This can help in the creation of job opportunities which deal with specific materials (e.g. glass, paper, plastics, metals), as they now become easily collected. Doing this will help reduce the cost of waste separation and processing, which will eventually enhance recycling and other waste management processes.

Apart from the recommendations above which address issues pertaining to the intended establishment of a waste processing facility, the following should also be considered:
• Better management of current dump site: There is the need to better manage the existing dump site. This is occasioned by the protestation of residents in the immediate surroundings of the dump site concerning smoke and leachate from the dump. There is the need for dialogue and conscientization of the waste pickers about the health implications of setting fire to the waste dump (which is done to obtain soft metals encased in plastics) to themselves and other residents. In the absence of underground pipes to collect and channel leachate from the dump site, there is the need to devise a means of doing so which may require some engineering work. This is to make our current dump sites more environmentally friendly especially in the absence of many waste processing facilities in the country, and this must also be considered when establishing other waste dumps.

• Practice safer waste recovery methods: the use of safety gears such as boots, gloves and nose covers should be insisted as a condition to allow an individual to pick waste. This would help reduce the possibility of contracting diseases and injuries from the dump site to prevent waste pickers from spending what they earn from the dump site in seeking medical treatment for diseases. This is especially important due to the non-separation of waste at the source, and the harmful nature of substances which are collectively brought to dumpsites and which waste pickers come into contact with. Doing this will not only protect the waste pickers but also other members of the society they come to contact with. This is because some of such possible diseases could be communicable, eventually also preventing the public outbreak of certain diseases.
REFERENCES:


DFID. (1999). *Sustainable livelihoods guidance sheets*. DFID.


http://www.fccenvironment.co.uk/assets/files/pdf/content/wrap-applying-wastehierarchy.pdf

APPENDIX 1: QUESTIONNAIRE FOR WASTE PICKERS

QUESTIONNAIRE FOR WASTE PICKERS

This study is to obtain information on the possible effect of establishing a recycling plant on waste pickers at the Abokobi dump site. Any information provided is purely for academic purposes, and will be treated as such.

Section A: Demographic characteristics of respondent

1. Gender? □ Male □ Female

2. Age? ......................

3. Educational level? □ None □ Primary level □ Secondary level □ Tertiary □ Other: ..........................................

4. Marital status? □ Single □ Married □ Divorced □ Widowed

5. Number of family members/dependents: ..................................

Section B: Actors, their roles and mode of work in resource recovery

6. Were you engaged in a different occupation before joining this one? □ Yes □ No
   If yes, please specify: ..............................................................................................................................

7. Do you have any other training/skills apart from resource recovery? □ Yes □ No
   If yes, please elaborate: .........................................................................................................................

8. Have you worked at a different dump site before? □ Yes □ No
   If yes, at which dump site(s)? ................................................................................................................

9. Reason for decision to work at current dump site: ......................
.................................................................................................................................................................

10. How long (years) have you been involved in resource recovery? .........................

11. Why did you join this activity? .........................................................................................

12. How did you join this activity? .........................................................................................

13. Which people/groups are involved in resource recovery?
14. What does each person/group do?

15. Is each person/group restricted to a particular activity they are to do?  □ Yes  □ No
   Please elaborate: ................................................................................................................

16. How do they go about their work?

17. Are there rules governing how you go about your work?  □ Yes  □ No
   If yes, please elaborate:

18. Are you a member of an association of waste pickers?  □ Yes  □ No
   If yes, how does it operate?

Section C: Material recovery and support from proceeds

19. How many days a week do you work here? .................................................................

20. Do you have a target of materials to be recovered weekly?  □ Yes  □ No

21. Does that affect the number of days your work a week?  □ Yes  □ No

22. What materials do you recover?
   □ Metals  □ Plastics  □ E-waste  □ Paper  □ Copper wire
23. How long does it take to recover enough of the materials stated above to sell?

<table>
<thead>
<tr>
<th>Material</th>
<th>Less than a week</th>
<th>1-2 weeks</th>
<th>3-4 weeks</th>
<th>+5 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper wire</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. How much do you make from the sale of the recovered materials in a day/week/month (GH₵)?

- □ Less than 100
- □ 100 – 199
- □ 200 – 299
- □ 300 – 399
- □ 400 – 499
- □ Above 500

25. What do you use your income earned from the sale of recovered materials for?

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

26. What is the trend of waste recovery at the dump site, do you now recover more or less?

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

27. What, in your view affects the amount of waste recovered from the dump site?

.............................................................................................................................................
Section D: Expectation, possible coping mechanism and recommendation.

28. Are you aware of the intent to establish a recycling plant at this dumpsite? ☐ Yes ☐ No

If yes, what was the source, how did you get to know, it’s content, and were your interests considered? If no, will you be surprised if such a facility is established at this dump site?

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

29. In your view, is it good to establish such a facility? ☐ Yes ☐ No

Reason:
........................................................................................................................................
........................................................................................................................................

30. Do you think it would affect your recovery activity? ☐ Yes ☐ No

Reason for answer: ....................................................................................................................
........................................................................................................................................

31. How do you intend to support yourself should you lose access to the dump site?
................................................................................................................................................
................................................................................................................................................

32. What do you think the local authority will do to support your livelihood?
................................................................................................................................................

33. Is there anything you wish the new facility could do to help your work?
................................................................................................................................................
................................................................................................................................................

34. What would you recommend as a better way of waste management?
................................................................................................................................................
................................................................................................................................................

THANK YOU
APPENDIX 2: QUESTIONNAIRE FOR WASTE BUYERS

This study is to obtain information on the possible effect of establishing a recycling plant on waste pickers at the Abokobi dump site. Any information provided is purely for academic purposes, and will be treated as such.

Section A: Demographic characteristics of respondent

1. Gender? □ Male □ Female
2. Age? ........................................
3. Educational level? □ None □ Primary level □ Secondary level □ Tertiary □ Other: ..............................................................
4. Marital status? □ Single □ Married □ Divorced □ Widowed
5. Number of family members/dependents? .............................................................

Section B: Nature of work and experience

6. Were you engaged in a different occupation before joining this one? Yes □ No
   If yes, please specify: ........................................................................................................
7. Why did you join this activity? ....................................................................................
8. How did you join this activity? ....................................................................................
9. How long (years) have you been engaged in this activity? ........................................
10. How long (years) have you been buying materials from this site? ............................
11. Is this the only site you buy your materials from? □ Yes □ No
   If no, which other place(s):
   ......................................................................................................................................
12. Which people/groups are involved in the resource recovery? ..............................
    ......................................................................................................................................
13. What materials do you usually buy from the waste pickers, and why? ............
    ......................................................................................................................................
14. How do you go about your work? .................................................................

15. Are there rules governing how you go about your work? □ Yes □ No

   If yes, please elaborate:
   ...........................................................................................................................

16. Are you a member of an association of waste buyers? □ Yes □ No

   If yes, how does it operate? .................................................................................

Section C: Expectation, possible coping mechanism and recommendation.

17. Are you aware of the intent to establish a recycling plant at this dumpsite? □ Yes □ No

   If yes, what was the source, how did you get to know, it’s content, and were your interests considered? If no, will you be surprised if such a facility is established at this dump site?

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

18. In your view, is it good to establish such a facility? □ Yes □ No

   Reason: ......................................................................................................................

19. Do you think it would affect your waste buying activity? □ Yes □ No

   Reason for answer: .............................................................................................
   ...............................................................................................................................................

20. How do you intend to support yourself should you lose access to the dump site?
   ...............................................................................................................................................

21. What do you think the local authority will do to support your livelihood?
   ...............................................................................................................................................

22. Is there anything you wish the new facility could do to help your work?
   ...............................................................................................................................................

23. What would you recommend as a better way of waste management?
   ...............................................................................................................................................

   THANK YOU
APPENDIX 3: INTERVIEW GUIDE FOR MUNICIPAL ENVIRONMENTAL HEALTH OFFICER

This study is to obtain information on the possible effect of establishing a recycling plant on waste pickers at the Abokobi dump site. Any information provided is purely for academic purposes, and will be treated as such.

1. Which people are involved in waste management in the Municipality?
2. Which people/groups are involved in the resource recovery?
3. What are your views on the intended recycling facility at the dump site?
4. How will the facility work?
5. Which materials would be used in the recycling process, and how does the facility intend to manage materials it wouldn’t use in its production processes?
6. What are your views on waste pickers and their activities at the dump site?
7. Will waste pickers still have access to the dump site even if the facility is built?
8. Can waste pickers be employed in the facility, if so how many?
9. What levels of skill/education would be required of the waste pickers in order to be employed by the facility if some are to be employed?
10. Are there any plans to assist the scavengers should they lose access to the dump site?
11. What, in your view, do you think the waste pickers will do if they lose access to the dump site?
12. Will the facility serve as a receptacle of waste, or are there plans to open a new dump site within the municipality?
13. What would you recommend as a better way of waste management?

THANK YOU
APPENDIX 4: INTERVIEW GUIDE FOR MUNICIPAL PLANNING OFFICER

This study is to obtain information on the possible effect of establishing a recycling plant on waste pickers at the Abokobi dump site. Any information provided is purely for academic purposes, and will be treated as such.

1. Which people are involved in waste management in the Municipality?
2. Which people/groups are involved in the resource recovery?
3. What are your views on waste pickers and their activities at the dump site?
4. What are your views on the intended recycling facility at the dump site?
5. Will scavengers still have access to the dump site even if the facility is built?
6. Are there any plans to assist the scavengers should they lose access to the dump site?
7. What, in your view, do you think the waste pickers will do if they lose access to the dump site?
8. Will the facility serve as a receptacle of waste, or are there plans to open a new dump site within the municipality?
9. What would you recommend as a better way of waste management?

THANK YOU