ASHESI UNIVERSITY COLLEGE

From filthy to filthy rich: Exploring opportunities for social enterprise to improve solid waste management in the Accra Metropolitan Area.

Thesis

B.Sc. Business Administration

VICTOR KAFUI VORGBE

April 2016

ASHESI UNIVERSITY COLLEGE

From filthy to filthy rich: Exploring opportunities for social enterprise to improve solid waste management in the Accra Metropolitan Area.

Thesis

Thesis submitted to the Department of Business Administration, Ashesi University College in partial fulfilment of the requirements for the award of Bachelor of Science degree in Business Administration

VICTOR KAFUI VORGBE

April 2016

Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:

……

Candidate's Name:

……

Date:

……

I hereby declare that preparation and presentation of this [capstone type] were supervised in accordance with the guidelines on supervision of [capstone type] laid down by Ashesi University College.

Supervisor's Signature:

……

Supervisor's Name:

……

Date:

……

Acknowledgement

To the Creator for his creation, I am eternally thankful.

To my supervisor Dr. Stephen Armah for his time, correction and direction, I am sincerely grateful

To Dr. Esi Ansah, for kindling that fire for social enterprise and positive value creation,

To Dr. Sena Agyepong, advisor, friend and coach,

To friends and family innumerable, whose smiles, encouragement and wishes have spurred me on dark days,

May my appreciation not be doubtful.

Finally to the social entrepreneurs, who care not only for profit, but for people and planet, may this work in what way it can continue to grease your tired elbows in your silent fight for a more equitable equilibrium.

Abstract

Cities in developing nations round the world cannot keep up with the vast quantities of solid waste they produce daily. In Accra, Ghana's capital, despite the fact that about 100% of the waste collection function has been ceded to private waste contractors, about 30% of the waste produced remains uncollected, ending up in gutters, choking drains and blocking waterways. This poses a health risk to the people of Accra

Ironically, waste holds economic, environmental and social value, hence its potential benefits are worth exploring and exploiting. Current literature has largely ignored the role of social enterprises in improving waste management in the major cities of developing countries such as Accra. This paper uses the UN-Habitat Integrated Sustainable Waste Management benchmarking methodology, to evaluate waste management in Accra and to identify opportunities for social enterprises to contribute to improved waste management.

It was found that there is a lot more that can be done in Accra to improve its current waste collection coverage, controlled disposal as well as recycling rates, which are lagging behind the international median for lower-middle income regions. There is also a vibrant informal sector which social enterprises can organize and integrate into existing waste management structures to contribute to waste segregation, composting and recycling. There are however gaps in the policy framework and legislation for social enterprises which continue to hinder the scope and magnitude of their goal of positive social value creation.

Keywords: Social enterprise, solid waste, solid waste management

Table of Contents

LIST OF TABLES AND FIGURES

LIST OF DEFINITIONS

Asymmetric/imperfect information - Imperfect information occurs when economic agents have incomplete information when making a decision to buy or sell a given product or service.

Externalities - An externality (or external effect) refers to the effect of the action of an economic agent on another that is not mediated via the market

Moral hazard - A situation in which one party gets involved in a risky event knowing that it is protected against the risk and the other party will incur the cost.

Non-governmental organization – It is an organization that is neither a part of a government nor a conventional for-profit business. It has no shareholders and is not allowed to make profits.

Private good – a good that is both excludable (i.e. individuals can be excluded from use) and rivalrous (i.e. use by one individual reduces availability to others)

Public good - a good that is both nonexcludable (i.e. individuals cannot be effectively excluded from use) and non-rivalrous (i.e. where use by one individual does not reduce availability to others)

Social enterprise - businesses that tackle social and environmental challenges, creating jobs while prioritising impact over profit

Transaction cost - There are costs incurred in participating in a market or in making an economic exchange

LIST OF ACRONYMS

AMA - Accra Metropolitan Assembly

CCC - Communal Container Collection

GDP - Gross Domestic Product

HDPE – High Density Polyethylene

HH - House to House

IMF - International Monetary Fund

ISWM - Integrated Sustainable Waste Management

LDC - Less Developed Country

MDG - Millennium Development Goals

MSW -Municipal Solid Waste

NGO - Nongovernmental organizations

NPO - Non-profit organization

SDG - Sustainable Development Goals

SWM – Solid Waste Management

SSIP - Small-scale independent providers

WHO - World Health Organization

CHAPTER 1: INTRODUCTION

Introduction

Solid waste management and sanitation in general are a challenge for most countries. Indeed "wherever humans gather, their waste also accumulates" (WHO, n.d.). According to the Bill and Melinda Gates Foundation, (2015) "the need for better sanitation in the developing world is clear: 2.5 billion people practice open defecation or lack adequate sanitation facilities, with devastating consequences for human health as well as the environment."

The 2011 WaterAid Report suggests that, "diseases attributable to poor sanitation currently kill more children globally than AIDS, malaria and measles put together. In fact diarrhoea is the single biggest killer of children in Africa" (Velleman & Slaymaker, 2011). "Locally, uncollected solid waste contributes to flooding, air pollution, and public health impacts such as respiratory ailments, diarrhoea and dengue fever" (Hoornweg & Bhada-Tata, 2012, p. vii).

It is for this reason that "safe sanitation is widely acknowledged to be an essential foundation for better health, welfare and economic productivity." Despite this, progress in reducing sanitation related diseases is slow, especially among the poor, leading to delayed development (Velleman & Slaymaker, 2011).

When the United Nation's 8 Millennium Development Goals (MDG) expired in 2015, they were replaced by 17 Sustainable Development Goals (SDG), which are universal targets that member nations are expected to use to frame their policies for the next 15 years (the 8 MDG and 17 SDG are listed in Appendix A).

MDG 7 which was to ensure environmental stability, was replaced with the sixth SDG. SDG 6 seeks to ensure availability and sustainable management of water and

sanitation for all (United Nations n.d.). Statistics from the World Health Organization suggest that in 2004, 59% of the world's population could access improved sanitation facilities. This was an improvement from 1990 when sanitation coverage was only 49%. With sanitation coverage at 68% at the end of 2015, the MDG target of 75% has been missed. There is therefore the need for major efforts to be made in order to expand sanitation coverage.

Global categorization only gives an average of sanitation cover, which may misrepresent the sanitation cover of individual sub regions. Developing regions for example have an average cover of 50%. The lowest coverage exists in sub-Saharan Africa which has a sanitation cover of only 37%. Western Asia has the highest coverage of 84% among developing nations.

In Ghana, a performance audit report of the auditor-general on solid waste management by the Accra Metropolitan Assembly (AMA) in 2011 reported that in Accra alone, between 1,800 and 2,000 tonnes of solid waste are generated daily.

Of this amount private and public waste contractors are only able to collect between 1,500 and 1,800 tonnes, representing approximately 87% of waste generated. This was done at an average daily expenditure of GH¢18,000.00 ($10,978.20).

The implication is that 300 to 500 tonnes or 13% of total waste generated remains uncollected daily, typically resulting in unsightly environments and giving off unpleasant odour. More recent data indicates that there is an increase in daily waste generated to between 2,000 – 2,500 tonnes (Asomani-Boateng, 2015), although no updates were given for collection rates.

According to Dr. Simpson Boateng (Director of the Metro Public Health Department of the Accra Metropolitan Assembly), in some areas such as Abossey Okai,

Odawna area and Agbogbloshie among others, almost 90% of the houses do not have access to toilets (Smith-Asante, 2013). The residents in these areas defecate in open sewers or parcel the excrement in “black polythene bags” then throw them unto the streets or into neighbouring houses: A practice called “shit-bombing”.

Access to sanitation facilities was 47% as at 2013 in Accra. The reason for these poor numbers has been attributed to the conversion of toilets into rooms, shops and offices by landlords (Smith-Asante, 2013). In some cases, people do not see the need for sanitation facilities [especially given the cost] (Senior, 2010).

With a current population of 26.79 million (World Bank, 2015), growing at an annual rate of 2.18% (World Factbook , 2015) and perpetually plagued by never-ending rural-urban migration, consumption of consumer goods and services will inevitably increase in Accra. Increased consumption is typically associated with an increase in the amount of waste generated as the population swells (Accra Metropolitan Assembly, 2011). This problem still persists despite the fact that 100% of waste collection function has been ceded to over private waste contractors (Asomani-Boateng, 2015).

“The first challenge for countries seeking to solve the problem of access to sanitation is to define what “sanitation" really means. The second challenge is to decide what aspects are the most important” (UN Water, 2008). Sanitation is seen by most professionals as covering:

- safe collection, storage, treatment and disposal/re-use/recycling of human excreta (faeces and urine);
- management/re-use/recycling of solid wastes (trash or rubbish);
- drainage and disposal/re-use/recycling of household wastewater;
- drainage of storm water;

- treatment and disposal/re-use/recycling of sewage effluents;
- collection and management of industrial waste products; and
- management of hazardous wastes (including hospital wastes, and chemical/ radioactive and other dangerous substances).

This paper recognizes the existence and importance of different types of waste. However for reasons of practicality and feasibility this research will focus on trash collection, which is mainly comprised of solid waste.

In 2014, an outbreak of cholera occurred in West and Central Africa with Ghana being one of three most affected countries. There were 28,944 reported cases which resulted in 247 deaths. The 2014 outbreak caused 3 times more deaths than the 2013 outbreak (UNICEF, 2014).

Recent flooding in parts of Accra, which led to multiple deaths and destruction of property were caused by a combination of factors, including "poor disposal of garbage and choked drains" (Owusu-Koranteng, 2015).

Prior to these floods, the National Sanitation Day was declared on Saturday, November 1, 2014. Per the declaration, Ghanaians are expected to communally clean their environments every first Saturday of the month (Asamoah, 2014).

Monthly cleaning exercises remove waste from gutters but leave them lying in heaps by the roadside due to lack of an organized system to collect them. The removed waste is thus dumped back into the drains whenever it rains. The deterioration of the sanitation problem in Ghana is evident in the country being ranked the 7th worst performing country globally with respect to sanitation (WHO, 2015).

Despite sanitation being a problem, Devarajan, (2014) believes that "sanitation [management] is one of the most productive investments a government can make." According to him, there is empirical evidence that improved sanitation systems reduce the incidence of diarrhoea among children, improves their nutritional status, cognitive skills, as well as their lifetime health and earnings.

Thus the gains of sanitation investment are substantial. It is evident that government and private sector still have a huge gap to fill in efforts to improve sanitation in Accra and Ghana.

Recent developments in the field of social enterprise may provide an additional line of attack to improve waste management process in. The application of the social enterprise model may also be extended to other market failures that exist in sub-Saharan Africa and other developing nations of the world.

A definition of social entrepreneurship according to Dees (2001) refers to individuals who play a role of change in society through the adoption of a mission to create and maintain positive social value by continually identifying and pursuing opportunities that serve that mission. They achieve this through a process of constant innovation, adaptation and learning, by leveraging currently uncontrolled resources, while exhibiting accountability to constituencies they serve.

This definition covers key characteristics of social entrepreneurs to distinguish it from other entities. Jean-Baptiste Say, a French economist, coined the word entrepreneur around 1800. He defined the entrepreneur as one who "shifts economic resources out of an area of lower and into an area of higher productivity and greater yield." The entrepreneur is therefore "one who undertakes an enterprise, especially a contractor acting as the intermediary between capital and labour" (Drucker, 1985, p.

21). Schumpeter's description of "creative destruction" is "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one" (Schumpeter, 1942, p. 83).

Drawing on Jean-Baptiste Say and Joseph Schumpeter, Dees believes entrepreneurs are people who improve society's productive capacity and provide the "creative destruction" needed to bring economic change (Dees, 2001). Social entrepreneurs do the same for social change by combining people and resources to improve society's ability to address problems (Bornstein & Davis, 2010). Strong focus is also placed on accountability and their command over resources they do not control (Dees, Emerson, & Economy, 2001).

Organizations such as the Schwab Foundation, Acumen Foundation and Ashoka Foundation provide funding and training to social entrepreneurs while connecting them to growing networks of similar minded people.

A portion of the funding to social enterprise is from donors who support a cause, such as sanitation. Donor support is however a form of aid, and the issue of the effectiveness of aid to attain goals remains controversial in academia. One important finding in the literature is that a necessary condition of strong institutions is a prerequisite for effectiveness of aid in developing nations (Armah, 2009). An implication is that even if one of the sources of funding of a social enterprise is from donors, if it has the characteristics of strong institutions, it will still thrive.

The actors of any economy have traditionally consisted of the private and public sector. Typically, the public sector deals with the provision of public goods which are non-rivalrous and non-excludable. Due to the many inefficiencies of government, it

finds itself unable to satisfy all the needs of its population, including the provision of public goods even if it is mandated to do so (Hansmann, 1987).

The private sector on the other hand deals with private goods which are rivalrous and excludable. There may be overlap between the private and public sector, but there exists a huge sphere of markets that are not catered for by either of these parties.

This necessitated the creation of nongovernmental organizations, NGOs, which cover areas of market failure by connecting funds with people in need items which can be supplied using the said funds. Their non-profit making status means that profits can be made but cannot be paid as dividends to owners, but must be reinvested in the organization's projects (Anheier, 2014). The down-side of these organizations is that they may not be sustainable as they live off donations.

Social enterprise can be considered as the fourth sector which exists to continue to satisfy the market failures using a more sustainable approach. This sustainability is achieved by their balance between social and commercial objectives, enabling them to be self-sustaining, rather than rely on donations (Luke & Chu, 2013).

Social entrepreneurs have been active in the field of sanitation and waste management. Works of social enterprises like Wecyclers in Itire, Nigeria; Waste Concern in Dhaka, Bangladesh (Dees, 2010); Bali Recycling in Indonesia (Dhingra, 2015); and entrepreneurs like Dela Wosornu in Ghana (Forbes Africa, 2015) are already existing solutions to tackle the waste problem in different parts of the world. These projects provide some evidence albeit anecdotal, that social enterprise can thrive in LDCs.

Problem Statement

At least 300 to 500 tonnes of solid waste remains uncollected every day in Accra. This waste, which many pay to be disposed of, continues to pollute the environment, choke gutters and block waterways in times of flooding. The collected portion of waste mostly ends up in landfills and dump sites, so that the full benefit of waste as a resource is not harnessed. This problem is indicative of the existence of gaps in the waste management value chain: from collection, to transport, treatment and disposal/reuse in Accra.

This problem of improper waste management is harming the environment and the health of Ghana's human capital, making it sick and undermining its potential. Existing waste management methods employed by the government, private sector as well as the informal sector are still insufficient to curb the problem of poor waste management. So far, little attention has been put on the potential of social enterprises to improve waste management in Accra.

Research Questions

This paper seeks primarily to answer the question:

- Are there opportunities for social enterprise to improve solid waste management in Accra?

Pursuant to answering the above research question, this paper will seek to answer the following sub questions:

- How is waste currently managed in the Accra?
- What are the challenges facing waste management in Accra?

Research Objectives

In order to answer the questions raised in the previous section, this paper will:

- Determine if there are opportunities for social enterprise to contribute to solving the problem of poor waste management in Accra.

To achieve this objective, the paper will additionally seek to:

- Document and describe how waste is currently managed in Accra and
- Identify the challenges facing waste management in Accra.

Significance of Study

Existing literature looks mostly to the public, private and informal sector to manage waste in Ghana. This paper seeks to explore the role of social enterprise as a type of business in contributing to the waste management process, which is an identified gap in the literature. It will also contribute to the rather scant body of knowledge on social enterprise in Ghana.

The paper will sensitize government and policy makers to begin the process of creating legislation to regulate the social enterprise sector which is gradually growing and gaining steam in Ghana (British Council, 2015).

Finally the results of the research should provide useful information to policy makers in other African countries that are suffering the same negative consequences of improper management of waste that has befallen Accra.

CHAPTER 2: LITERATURE REVIEW

Overview of the Literature Review Section

This section reviews literature on social enterprise, waste management and the interaction of social enterprises with other stakeholders such as government, private and public sector.

The chapter begins with a definition of social enterprise, gives a brief history of non-profit organizations as well as social enterprises in the Ghanaian and international context, focusing on how they are formed, registered and regulated in the US and in Ghana.

The purpose is to gain an understanding of what social enterprises are and to differentiate them from other non-profit organizations. Majority of the literature on social enterprise is from the context of the United States, thus most international insights will be drawn from an American perspective. The discussion then focuses on the theories of social enterprise and the markets they operate in, to explain the theoretical reasons for existence of social enterprises. Relationships which exist between social enterprises and government are also explored.

Next, the review gives a snapshot of waste management across the globe, focusing on high, lower middle and low income areas. This is compared with waste management in Ghana and Accra, to gain insights on how waste management differs from one region to another and between different geographical regions of different economic circumstance. Methods of evaluating waste management are then discussed to inform the decision on a good model for evaluating waste management in Accra.

The chapter concludes with literature concerning how the social enterprises model has been used to improve waste management in cities around the world. Though

this may be anecdotal, it still gives some insights and inspiration to new ideas which could be used in Accra to better manage waste.

What are Social Enterprises?

Martin and Osberg (2007), define social entrepreneurship as having three components: (1) they identify a stable but fundamentally unjust equilibrium that "causes the exclusion, marginalization, or suffering of a segment of humanity that lacks the financial means or political clout to achieve any transformative benefit on its own"; (2) they then identify an opportunity in the unjust system and develop a social value proposition to challenge the existing unjust system; and (3) forge a new stable equilibrium through direct action, which "releases trapped potential or alleviates the sufferings of the target group".

The new equilibrium so formed is imitated by others and an ecosystem grows around it to improve the lot of the target group. An example is the Grameen Bank, which helps individuals to access small loans and has led to the microcredit boom all over developing nations (Martin & Osberg, 2007).

With this definition, social enterprise is differentiated from other social ventures such as social service provision (which does not lead to the creation of a new superior equilibrium) and social activism (which does not involve direct action).

This definition is intended to be rigid in order to clearly define what a social enterprise is and is not, although there are instances where social enterprise overlaps with other social ventures. An example is the Grameen Bank, a social enterprise founded by Muhammad Yunus, which used social activism to accelerate the impact of the social enterprise (Martin & Osberg, 2007).

The British Council in 2015 sought to loosely define social enterprise in the Ghanaian context. They did not specify a rigid definition of social enterprise but reviewed a wide range of enterprises in order to understand how the social economy is developing in Ghana. The study team spoke to a range of organisations from non-profit organisations seeking to generate revenue streams through to for-profit businesses with dual profit and impact missions, without analysing in detail whether the enterprises fit a tight social enterprise definition.

For the purpose of this paper, a more strict definition provided by Dees (2001) and Martin and Osberg (2007) will be used. The reason for this is that, existing models of waste management have created an unjust equilibrium, evident in the inadequate sanitation coverage, prevalence of waste-related diseases and flooding of the capital during the raining season. True social enterprise is therefore necessary to create a superior equilibrium which will be stable and persist in creating positive social value for the inhabitants of Accra.

Despite the narrow definition of social enterprise employed in this paper, the following section will look at a brief history of the broadly-defined non-profit sector of which social enterprise is an important constituent.

A Brief History of the Non-profit Sector

A non-profit organization is one "formed for the purpose of serving a public or mutual benefit other than the pursuit or accumulation of profits for owners or investors" (Luckert, n.d.). The non-profit sector comprises a group of private organizations which are non-profit distributing, self-governing, voluntary, and exist for the benefit of the public (Salamon, 1999). Social enterprises fall under the umbrella of non-profit

organizations. They are a specific type of non-profit entity which engage in commercial activities to generate profit while creating social value. Although workers receive salaries, there are opportunities for interested individuals to volunteer their time and skill to non-profit organizations.

The non-profit distributing nature of the non-profit sector does not prevent them from generating profit. Rather, it prevents profits generated from being distributed to shareholders and investors. This sector has been variously called the third sector, independent sector, social sector, tax-exempt sector, among others. The non-profit sector predates the formation of the United States as also does their tax exempt status (Arnsberger, Ludlum, Margaret, & Stanton, 2008). These associations were distinguished into public-serving and self-serving organizations such as schools and churches in America.

The 19th century paper by Andrew Carnegie (a Scottish-American philanthropist who led expansion in the 19th century American steel industry) titled "Gospel of Wealth" postulated that it was an embarrassment for a man to die wealthy, but that he should use his knowledge or "genius for affairs" to put back wealth into the community (Hall, 2005). This paper articulated the vision of a number of American industrialists who directed their wealth to "altruistic endeavours… and [created] private foundations, which remain prominent today" (Arnsberger, Ludlum, Margaret, & Stanton, 2008).

Non-profit organizations persisted and forged relationships with the government which still exists in the 21st century. A significant part of this relationship is government recognition of the sector and its support in the form of tax exemption (Arnsberger, Ludlum, Margaret, & Stanton, 2008).

Legislatively, the definition of the non-profit sector in law can be traced back to the Statute of Charitable Uses, which was enacted by the English Parliament in 1601 and has been described as the "starting point of modern law on charities" (Douglas, 1987, as cited in Luckert, n.d.).

English common law granted tax exemptions to organizations which "disposed of certain responsibilities that would otherwise fall to the government" (Livingston, 2008, p. 4). In the United States, the Wilson Tariff Act of 1894 was the first statute to formally exempt organizations from taxes (Arnsberger, Ludlum, Margaret, & Stanton, 2008; Livingston, 2008). Livingston (2008) argues that the American rationale for the exemptions drew on the English model of giving back to organizations that provide social benefits.

In the US, legislation of the tax-exempt sector developed over period stretching from 1894 to 2006. Key legislation within the period in the United States include the Revenue Code of 1954 which esablished the modern tax code, including section 501(c) for tax exempt organizations, and the Pension Protection Act of 2006 which required section 501(c)(3) organizations to make their income tax returns available for public inspection (Arnsberger, Ludlum, Margaret, & Stanton, 2008). United States law recognizes 27 different types of tax exempt organizations. Organizations within the non-profit sector are classified for tax purposes as 501(c)(3) (Dees, Emerson, & Economy, 2001; Hall, 2005; Arnsberger, Ludlum, Margaret, & Stanton, 2008). Social enterprises fall under the 501(c)(3) category.

Ghana, as a former British colony, had its law shaped by British Common law (Bondzi-Simpson, 2014). In Ghana, section 10 of the Companies Act 1963 (Act 179) regulates the non-profit sector. Non-profit organizations are registered as

Ghanaian/External private/public companies limited by guarantee and are disallowed by law to be incorporated with the aim of making profit. Officers of the company who are aware of any intention to do business for profit are liable to fines for every day of profit-making business.

Members of a company limited by guarantee are required to pledge funds not as working capital, but as a contribution to meet any shortfalls in meeting creditor's requirements in the event that the company winds up (Bondzi-Simpson, 2014). Examples of companies limited by guarantee include old student and alumni associations, professional bodies and church based organizations and charities.

According to a 2011 report by the Japan International Cooperation Agency (JICA), companies can register with the Department of Social Welfare under the Ministry of Employment and Social Welfare as either a local or international NGO after getting a certificate from the Registrar General's Department. The benefits of being a non-profit organization in Ghana include exemptions and reductions in taxes and duties paid by the NGO on items donated from abroad. There are also tax reliefs to donors who contribute to charitable activities by NGOs (JICA, 2011).

Social Enterprise in Ghana

A paper by the British Council in 2015 gives a general but non-exhaustive account of the social enterprise landscape in Ghana. The paper used a combination of desk-based research and interviews with stakeholders to gain insights into social enterprise in Ghana. The report interviewed 24 social enterprises, the oldest being set up in 1999, with majority being registered between 2013 and 2015.

The sectors operated in included agriculture, education, health, water and sanitation, justice as well as creative industries. This is very similar to the distribution in the developed world where health and education were among the biggest sectors for social enterprises (Anheier, 2014).

The impact of these social enterprises was mainly nationwide with more efforts focused in Accra. The companies were a mix of for-profit and non-profit firms. About 532 jobs were created by social enterprises, yet salaries earned were not at par with what might have been earned in other sectors.

The main funding for social enterprises are mainly from foundations (27%), donors and governments (21%), entrepreneurs themselves, their family and friends (16%). Other sources include awards and competitions, incubators, banks and academic institutions (British Council, 2015).

Market Failure and the Nature of Goods

It is important to discuss the nature of goods as this plays an important role in the creation of social enterprise. Market failure has been defined as the inability of the market to allocate resources efficiently.

Titmuss (1970) in "The Gift Relationship" asked why valuable goods like blood have no market price or are not exchanged via the market. This is despite the fact that goods and services are priced through price mechanism in market economies. He cited the reason to be the actual and assumed market failure in the supply of goods. Titmuss (1970) believed that the failure of the free market system was caused by information asymmetry, trust, externalities and transaction costs.

Information asymmetry occurs when people conceal relevant information to receive money, creating the need for trust. Trust goods are also prone to market failures unless mechanisms to correct the market are implemented in the form of laws, insurance coverage and prohibition of profit distribution.

There are also externalities in the form of negative effects being transferred from supplier to recipient, and occur when there is either a benefit or cost which is not accounted for by the market price and can be passed on to third parties. Transaction costs reduce efficiency of market exchanges by adding to the cost of a transaction. Trust in the quality of a good can reduce the transaction costs in cases of informational asymmetry.

Limitation of market size will arise due to a combination of the above and it is important to appreciate that market failure will lead to excess supply of a good, both the pure good, provided by altruistic people, and those more likely to be defective by those seeking monetary benefits. Limitation of the voluntary system mirrors market failure since it leads to the free-rider problem, resulting in the under-supply of goods. Voluntary system may not be efficient since people will refuse to donate goods. This is because whether or not they donated the good, they have access to publicly provided goods.

"The tension between private and public benefits and individual incentives to contribute to some common good relative to moral hazards and free-riding potentials come together in a basic distinction between public and private goods" (Anheier, 2014)

According to Anheier (2014), pure public goods are goods to which property rights can be established and are available to all, no matter their contribution. This makes them non-excludable. Further, the use of the good by one non-rivalrous person,

does not in any way detract from the use of the same good by another. Pure public goods are thus non-excludable and non-rivalrous.

If therefore excludability and rivalry are both present in the good or service, then it can be described as a pure private good. These two are seen in table 1. Any good which has one of these two attributes with the other being much less or non-existent is a quasi-public good. These come in two varieties: non-excludable quasi-public goods which are rival but have a possibility of exclusion at a certain price, and excludable quasi-public goods, which are non-rival with exclusion of nonpayers being possible.

Examples are museum exhibitions whereby once payment is made, all can enjoy the good irrespective of who is there, making it an excludable quasi-public good.

Table 1

Types of goods

	Excludable	Nonexcludable
Rival	Pure private good, eg. food	Common-pool good, eg. air
Nonrival	Excludable public good, eg. museum	Pure public good, eg. defence

Source: (Anheier, 2014)

One fundamental principle of economic theory is that markets are best suited to provide pure private goods and the state, pure private goods. This then leaves the gap in terms of who provides quasi-public goods; a gap filled by non-profit organizations, though not perfectly. The concept of quasi-goods allows for multiple solutions from different parties.

An implication is that the various parties; governments, markets and non-profits are more or less suited to supply some types of goods, a situation referred to as failures. Anheier (2014) highlights three types of failures; market failures, government failures and voluntary failures.

Market failures occur due to lack of perfect competition such that markets fail to achieve optimally efficient allocation of goods and services (Trémolet, 2012), due to externalities, and asymmetric information. The spectrum of market failure ranges from there being no market, to limited market, to low profit market, neither of which is ideal for private sector (Wolk, 2007). Government failure occurs when a social problem cannot be solved by government since the behaviour of agents in government regulated markets cannot maximise their utility. This is as a result of private information among agents.

Voluntary failure is where non-profits cannot address a social problem at a scale necessary for its alleviation. This results from their inability to marshal resources needed for prolonged periods. This predicament of the Non-governmental organization (NGO) is what social enterprises seek to overcome through sustainability (Bornstein & Davis, 2010).

Foundational Theories of Social Enterprises

A number of theories have been advanced to explain the economic role of social enterprises. They include the public goods theory, contract failure theory and subsidy theory. These theories are underpinned by the nature of goods that exist in the market and the phenomena that affect the ability of the market to provide these goods, as discussed in the previous section.

Weisbrod (1977, as cited in Hansmann, 1987), and Anheier (2014) offered the public goods theory of non-profits. These authors posit that non-profits act as private producers of public goods in economic terms based on heterogeneous demand of the median voter (Anheier, 2014; Hansmann, 1987).

Weisbrod believed that government would usually provide public goods to a level sufficient to satisfy the median voter, thus leaving "residual unsatisfied demand" for public goods by those whose demand exceeds that of the median voter. Hansmann (1987) however believed that government programs were established to cater for supramedian demands. He believed the desire of public goods to be unsatisfied due to idiosyncratic demands. Non-profits thus arise to satisfy the residual demand through the provision of public goods in supplemental amounts. This captures the phenomenon of non-profits providing services which have the character of public goods to limited people.

Contract failure theory was explored by Nelson (1997), Arrow (1963), Weisbrod and Schlesiger (1986, as cited in Hansmann, 1987) and Krashinsky (1973, as cited in Hansmann, 1987).

Krashinsky in looking at the day-care industry in the United States believed the strong presence of day-care to be because parents could not judge them easily. Parents wanted a day-care they could trust that would not take advantage of them (Anheier, 2014). Arrow (1963) also believed that a similar phenomenon in hospitals may be due to asymmetric information. Hansmann built on the theories of Nelson (1997) and Krashinsky (1973, as cited in Hansmann, 1987) to argue that non-profits typically rose where customers feel unable to accurately evaluate quality and quantity of services provided. In this event, a for-profit would have more incentive to take advantage of

customers by offering less value than was paid for. Given the non-distribution constraint, non-profits therefore have less incentive to offer low quality services since they stand to gain nothing. Empirical work was done to test contract failure theory, using data on nursing homes in Wisconsin. Consumer complaints to authorities were used as a proxy for service quality. Non-profit nursing homes had significantly lower complaints than proprietary equivalents (Hansmann, 1987).

Contract failure theory applies especially to donative non-profits in cases where purchasers have no contact with beneficiaries and so cannot tell if the service has been provided (Anheier, 2014). The non-distribution constraint gives added assurance that payments made are used to provide services donors wish to purchase.

The subsidy theory simply believes that non-profits exist due to the tax-exemptions they enjoy, which act as subsidies to their costs (Hansmann, 1987).

Given the findings from literature, it can be said that in theory, from the standpoint of funding, asymmetric information and the nature of goods, that social enterprises do appear to be a sector that will reduce the lack of supply of goods due to market failures. The next section will look at how social enterprises are categorized.

Categorizing Social Enterprise

A theory of social enterprise proposed by Hansmann (1987) classified non-profit firms according to their source of income and the way they are controlled. Those which receive large proportion of income through donations are described as “donative” non-profits. An example is the Red Cross. Those whose income is mainly from the sale of goods and services are classified as “commercial” non-profits, like hospitals (Hansmann, 1987). Patrons were defined as the firm’s ultimate source of income.

Patrons of donative non-profits are donors while those of commercial non-profits are customers. Those which relied on both would have patrons comprising both.

Firms which had ultimate control resting with patrons were referred to as mutual non-profits while those who had control over their affairs were defined as entrepreneurial non-profits. The intersection of these two classes led to four types of non-profits: donative mutual, donative entrepreneurial, commercial mutual and commercial entrepreneurial as seen in table 2 below.

Table 2

Four-way categorization of non-profit firms

	Mutual	Entrepreneurial
Donative	Common Cause National Audubon Society Political clubs	Care March of Dimes Art museums
Commercial	American Automobile Association Consumers Union Country clubs	Educational Testing Service Hospitals Nursing homes

Source: (Hansmann, 1987)

There are cases of overlap which blur these divisions. An example is universities which raise income from student fees, yet rely on substantial donations, making them donative and commercial. They also have boards of trustees which comprise individuals who are self-perpetuating and some who are elected by alumni (who are past customers and present donors), making them fall in all four quadrants. The phenomenon of

overlapping boundaries lends credence to the social enterprise spectrum postulated by Dees, Emerson and Economy (2001). This spectrum illustrates two extremes of social enterprise – purely philanthropic organizations on one end, and purely commercial organizations on the other – and all other possibilities that could exist between.

Purely philanthropic Hybrids Purely commercial

Figure 1, The social enterprise spectrum *Source: (Bornstein & Davis, 2010)*

Social Enterprise and Government

Traditionally the private, public and non-profit sectors have held their individual roles while interacting with other sectors. According to Wolk, however, "Social entrepreneurship has emerged at the nexus of public, private and non-profit sectors" (Wolk, 2007, p. 156). This section will look at the relationship between government and social enterprises.

The main roles of government according to public finance theory are to provide public goods such as national defence and to resolve inequalities created by the markets through the redistribution of resources (Wolk, 2007). Although government is huge and plays the role of serving unmet needs it faces tough choices with respect to allocating scarce resources to satisfy society's changing wants. The operation of social enterprises has been described as an implicit critique of the limitations of government's ability to provide public services. Government has in some instances assumed the role of funding and commissioning services without providing them. This is achieved by depending on non-profit and for-profit providers instead (Leadbeater, 2007).

It could also be argued that the tax exempt nature of non-profits and social enterprises are indicative of their playing roles which should normally have fallen to the government (Livingston, 2008). Governments and social entrepreneurs have been seen to have an almost symbiotic relationship given the mutual benefits they derive from each other: while governments recognize social enterprises through tax exemptions, funding and favourable legislation, social enterprises create social value that government is unable to (Wolk, 2007).

Solid Waste Management

This section will look at waste management, through generation to disposal from a global perspective as well as in comparison to literature on Ghana and Lagos, Nigeria. Lagos was selected as it has been described as a model state in Nigeria with its commitment to sustainable waste management (Tobore, 2012)

Global Overview of Solid Waste Management

Globally, about 1.3 billion metric tonnes of municipal solid waste (MSW) are generated every year (Hoornweg & Bhada-Tata, 2012). Solid waste is one of the by-products of the urban lifestyle and is growing faster than the rate of urbanization. In the year 2000, the world's 2.9 billion urban residents generated 0.64 kilograms of MSW per person per day. In 2012, 3 billion urban residents were generating 1.3 kilograms of MSW per person per day, amounting to 2.2 billion tonnes per year (Hoornweg & Bhada-Tata, 2012).

Ghana uses the "collect and dispose" approach to waste management, which fails to see waste as a resource but places emphasis mainly on waste disposal (Asomani-Boateng, 2015). After Ghana's independence, the Accra Municipal Council was solely

in charge of managing municipal solid waste. As far back as 1944, waste management became a problem at the national level. It was not until the onset of the economic crises in the 1980s and 1990s before private sector involvement became accepted as an alternative. The private sector also focused on collection and disposal, which continued from then till date, with private sector now performing 100 percent of collection (Asomani-Boateng, 2015).

Waste Generation

Waste generation is linked to urbanization and economic development such that the higher a city's standards of living, the higher the disposable income and the higher the waste generated. Waste is seen as an urban problem and is significantly less of a problem in rural areas, as urban areas generate twice as much as rural counterparts (Hoornweg & Bhada-Tata, 2012). Sub-Saharan Africa generates about 62 million tonnes per year, compared to 270 million tonnes in East Asia and 572 million tonnes in OECD countries. This translates to 0.65kg per capita per day in sub-Saharan Africa, 0.95 kg per capita per day in East Asia and 2.2kg per capita per day in OECD countries. (Hoornweg & Bhada-Tata, 2012).

Annepu and Themelis (2013) and Asomani-Boateng (2015) give a snapshot of waste management in Ghana. Per their account, Accra, with its 3.9 million inhabitants, generates 2,000 – 2,500 tonnes of municipal solid waste daily (Asomani-Boateng, 2015). This equates to 0.64 kilograms per capita per day which is consistent with the sub-Saharan average as reported by Hoornweg and Bhada-Tata (2012). Waste generation was also seen to vary by income with low income countries generating 0.6kg per capita per day on average. Lower middle income areas generate an average of 0.78kg per capita per day and high income regions 2.13kg per capita per day. Here, Accra is seen to be more similar to low income regions than to lower middle income.

Lagos, Nigeria's capital, produces about 0.63kg per capita per day (Tobore, 2012) which is comparable to Accra.

Waste Collection and Transportation

MSW collection is done using various methods. House-to-house method involves waste collectors visiting each house to collect garbage. The user usually pays. Community bins method has users bringing their garbage to bins placed in fixed locations. Curb side pick-up involves users leaving garbage outside their homes based on the collector's schedule. Under the self-delivered method, generators of waste deliver their garbage to disposal sites. Delegated service involves businesses hiring firms to arrange schedules for waste collection (Hoornweg & Bhada-Tata, 2012).

Worldwide waste collection rates as at 2012 stood thus: 41% collection in low income countries, about 69% in lower middle income countries and 98% in high income countries. Waste collection by region also showed sub-Saharan Africa with the lowest rates of 45% and OECD countries at 98%. All other regions ranged between 60% and 85% (Hoornweg & Bhada-Tata, 2012).

Waste collection in Accra has been outsourced completely to private sector. These private companies use house to house collection in higher earning communities with well planned settlements, low population density and accessible homes. This involves waste collectors visiting homes of customers to their rubbish (Oteng-Ababio, 2011).

In low income areas with poor settlements, the communal container collection (CCC) method is used, which involves households transoprting their rubbish to large skips in central areas (Amoah & Kosoe, 2014; Asomani-Boaeng, 2015). A skip is a large open-topped waste container made for loading onto a special type of truck. In

Nigeria, collection is mailny done by public sector, though states like Lagos have some level of private-public partnership (PPP). The informal sector also uses push carts for door to door waste collection. Collection frequency is either once or twice a week (Tobore, 2012).

Waste Composition

The main components of collected waste include organic and inorganic materials. The inorganic component comprises glass, metals, plastic, paper and other inert materials. It has been noted that the compositions for similarly developed regions are the same. A good benchmark is the level of organic waste content. The higher the organic content, the less developed the region and vice versa. Low income areas on average have 64% organic content, lower middle income regions have 59% and high income regions have 28% (Hoornweg & Bhada-Tata, 2012).

Findings from research in Accra New Town (Alhassan, Gabbay, Arguello, & Boakye-Boaten, 2010) found 67% of waste to be organic. Again findings from the AMA Waste Management Division (WMD) indicate that waste in Accra is composed of about 65% organic material (Anku, 2000; Amoah & Kosoe, 2014; Asomani-Boateng, 2015). This composition is consistent with low income regions. Findings from Nigeria reveal that about 50% of waste is biodegradable (Tobore, 2012).

Waste Recovery and Recycling

Before waste is disposed, there are opportunities to divert some portions of it from the landfill. Integrated Sustainable Waste Management (ISWM) is an approach to solid waste management which considers the roles of solid waste managers and the community. It draws strongly on the hierarchy of waste management: reduce, reuse,

recycle and recovery (waste diversion options) before incineration, landfilling and disposal (waste disposal options) (Hoornweg & Bhada-Tata, 2012).

An observation in most developing countries is the critical role of informal sector in recycling with over two million informal waste pickers. This has become a global business with international markets and streamlined transportation networks and supply chains (Vincentian Missionaries, 1998; Velis, et al., 2012; Hoornweg & Bhada-Tata, 2012). In 2009, the post-consumer scrap metal and paper markets processed an estimated 400 million tonnes and 175 million tonnes respectively (Modak, 2011) representing $30 billion. The informal sector has been known to reduce waste by up to 30 percent in some LDCs (Tobore, 2012; Vincentian Missionaries, 1998; Velis, et al., 2012) with growing participation due to profitability (Tilaye & Pieter van Dijk, 2014).

Globally, about 22% of waste in high income areas is recycled and 11% composted. Lower middle income regions recycle 5% of their waste and compost about 2%. In low income areas, only about 2% of waste is recycled and composted (Hoornweg & Bhada-Tata, 2012).

Literature posits that due to the lack of source separation of waste, recycling and composting efforts are hampered such that their potential cost are increased by involving additional staff to sort (Amoah & Kosoe, 2014). Due to the unregulated nature of the informal sector, there is little data available on the Accra metropolis' performance in waste recovery, recycling and composting. Due to the high level of organic content and inert materials, there are huge opportunities for composting waste in Accra (Accra Metropolitan Assembly, 2011). The informal sector is also very vibrant in recycling in Nigeria. Recycling activity in Lagos include a compost plant which generated between 24,000 tonnes and 42,000 tonnes the second half of 2011. It also

includes a waste-to-energy plant that converts market waste to power, plastic recycling plant to convert sachet water to polythene bags, as well as a government buyback program for sachet water, paper, glass and cartons (Tobore, 2012).

Waste Disposal

Data on waste disposal is mostly uncollected, hence unavailable (Hoornweg & Bhada-Tata, 2012). Despite the absence of this data, it has been observed that high income earning regions usually use landfilling and thermal treatment of waste while low and lower-middle income regions resort to the use of open dumps (Hoornweg & Bhada-Tata, 2012). This is in stark contrast with Sweden, where 1% of waste is sent to the dumpsite (Fredén, 2015).

Ghana, and by extension Accra, can be said to have a "collect and dispose" mind-set which fails to see waste as a resource (Asomani-Boateng, 2015). The waste collected daily in Accra is sent to the disposal site, while uncollected waste is either burnt or buried, even in high income areas (Annepu & Themelis, 2013; Ghana Statistical Service, 2014). At these landfill sites, scavangers in search of scrap metals burn waste which destroys the organic and plastic components of waste. Furthermore, the activities of scavangers who seek plastic materials for recycling also leave waste collection points in very dirty states (Oteng-Ababio, 2011; Prasad, Jain, Tata, & Parthan, 2012; Sim, Wilson, Velis, & Smith, 2013; Tilaye & Pieter van Dijk, 2014).

Waste is disposed at dumpsites and landfill sites, which, according to the Ghana Landfill Guideline (2002), should be sanitary, have impermeable lining, be located away from human settlements and have a minimum lifespan of 10 years. This has however not been the case with the Oblogo, Kwashiebu, Kokroko and Mallam SCC landfill sites which had lifespans ranging from 2 months to 5 years (Accra Metropolitan

Assembly, 2011). The Achimota landfill was also closed recently, requiring waste to be transported about 30 kilometres out of the metropolis to the Kpone landfill (Annepu & Themelis, 2013). In Lagos, waste is disposed in 5 state approved dumpsites, though there is still illegal dumping. The government is working on extracting methane from landfills but dumpsites still pose a health threat to environmental health (Tobore, 2012).

Methods of Assessing Waste Management

A paper by Allesch and Brunner, (2014) considered 151 waste assessment studies to review, categorize and summarize them with respect to the studies' goals and methodologies. The major assessment methods included benchmarking, cost benefit analysis, life cycle assessment and risk assessment. The study recommended that when assessing a waste management system, a mass balance approach on rigid input-output analysis of the entire system be integraed. The data, results and methodology should also be transparent and replicable (Allesch & Brunner, 2014).

In a study to profile the physical and governance features of municipal solid waste management in Bishkek, the capital city of Kyrgyz of the former Soviet Union, the UN-Habitat Integrated Sustainable Waste Management (ISWM) benchmarking methodology was employed (Sim, Wilson, Velis, & Smith, 2013). The benchmarking protocol was developed as a standard to analyse waste management data for 20 representative cities globally (Wilson, 2013). The framework has been simplified into seven components, with a single benchmark indicator reported for each component (Sim, Wilson, Velis, & Smith, 2013). The indicators below are discussed further in Appendix B:

1. Waste collection coverage
2. Controlled disposal
3. Recycling rate
4. User inclusivity
5. Provider inclusivity
6. Financial sustainabiilty
7. Institutional coherence

The ISWM benchmarking methodology is argued to have the ability to quickly assess the state of solid waste management situation in a city, while identifying areas of strong and weak performance. The benchmark also allows comparison between cities and measures stakeholder involvement in waste management (Sim, Wilson, Velis, & Smith, 2013; Wilson, 2013; Allesch & Brunner, 2014).

Social enterprise solutions to poor waste management problems

Social enterprise, although concentrated in education and health (Anheier, 2014), have been active in waste management all over the world. Innovative methods have been applied to leverage available resources to improve waste management. Jobs are created for the underprivileged and marginalized in society by collecting, recycling, composting and upcycling waste in unserved areas. There is also extensive work in raising awareness, performing waste audits to promote internal collection systems and creating fair trade systems for recycled waste. Some of these initiatives are leading to significant reduction in waste (Mesias, 2009; Barazzetta, 2015; Kazeem, 2015; The Bali Recycling Company, 2015; Rreuse, 2016). Some of these initiatives are presented in Appendix C.

CHAPTER 3: METHODOLOGY

Overview of the Method Section

In order to achieve the research objectives, the research was divided into in two parts. The first part documented waste management in Accra and analysed it using the United Nations Habitat Integrated Sustainable Waste Management (ISWM) benchmarking method. This method profiles waste management in cities based on their income level and compares it to the average of cities within the same income bracket (Sim, Wilson, Velis, & Smith, 2013).

Information for this section was obtained using a combination of primary and secondary data collection techniques. The second part focused on social enterprise and also involved the analysis of a combination of primary and secondary data on social entrepreneurs in and out of Ghana.

Similar work done by the British Council (2015); Steinerowski and Steinerowska-Streb (2012); Sim, Wilson, Velis, and Smith (2013); as well as Asomani-Boaeng (2015) were largely drawn on to model and justify the research design and method employed in this section. Information from Sarantakos (2005) as well as Trochim (2009) were also used, supplemented by online resources.

Research Design

Research design is defined as "a plan of the research… It explains in detail how the how the researcher intends to conduct the work" (Sarantakos, 2005, p. 105). The

purpose of research design is to among other things, direct the research action by giving it structure (Trochim, 2009).

Research design could be either qualitative or quantitative. The aim of this study is to explore opportunities for social enterprises to improve waste management. This objective required description of the waste management process and associated challenges.

Blakstad (2008) categorizes research designs into: descriptive design, correlational studies, semi-experimental designs, and experimental designs among others. "The choice of research design depends on the aim of the study and nature of the phenomenon" (Blakstad, 2008). Descriptive research is "a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way" (Shuttleworth, 2008). Survey research employs the use of questionnaires to assess opinions and trends, even on a small scale (Shuttleworth, 2008). Flexible designs are presented in a non-specific manner, allowing freedom of movement between data collection, analysis and uses new information to fine-tune sampling and analysis. It does not employ a one-way process (Sarantakos, 2005).

This study uses a mixed method design, combining qualitative and quantitative data to achieve the research objectives. A flexible qualitative design was used, combining descriptive research and survey research design. The descriptive design has been used extensively in conducting the ISWM benchmarking model (Scheinberg et al., 2010; Wilson et al., 2012; Sim, Wilson, Velis, & Smith, 2013), which was replicated in this work. The research was also flexible to enable the researcher review the research design depending on observations from the field (Trochim, 2009). Research was done single-handedly.

Table 3

Research design

Waste value chain activity	Responsible organization(s)	Organizations sampled	Reason	Method
Demand creation	Government agencies	Ministry of Local Government Accra Metropolitan Assembly	Regulatory body with jurisdiction over all issues related to waste management	Structured interview Questionnaire
Waste collection and transportation	Waste management companies Government agencies Informal sector collectors	Asadu Royal Waste Jekora Ventures Zoomlion ltd. Ghana Borla Taxi Union Informal waste collectors	Waste management companies collect rubbish daily and are supervised by government	Structured interviews

Recycling and composting	Informal sector Recycling companies	Accra Compost and Recycling Plant (ACARP) Blowplast Skyplast City Waste Managers 2 unregistered informal recyclers	To quantify to an extent the activity of both the formal and informal recycling in Accra.	Structured and unstructured interviews Observation
The new proposed model	Social enterprises	Junk Ventures Trashy Bags Recyclon The Africa Network of Entrepreneurs (TANOE) Songhai Advisory LLP	To gain insights on the advantages, if any, of being a social enterprise and to explore their ability to improve waste management in Accra	Self-administered questionnaires Focus group discussion

Source: Field data

Research Scope

This research was targeted at the stakeholders in the waste management value chain which includes individuals, households and firms (as creators of waste), formal and informal waste management entities (as collectors and transporters of waste), social entrepreneurs (as potential contributors to improving waste) and the government bodies responsible for their regulation, in this case, the Accra Metropolitan Assembly (Sim, Wilson, Velis, & Smith, 2013).

The research focused mainly on the bodies which collect, transport and treat waste. The reason was to document the movement of waste from collection to disposal. It also gave insight into some challenges from the perspective of stakeholders of waste management as well as inform the opportunities for social enterprise involvement. Private collectors, informal collectors as well as the government bodies which regulate them also had insights into the problems and opportunities within the sector.

Social enterprises, proposed as a possible contributor to reduce the problem of poor waste management were also interviewed to access their ability to capitalize on any opportunities found given the challenges they face.

3.3.1 Study Population

According to a 2011 report by the AMA, there are at least 11 private waste management contractors in the country who will be able to share insights from the waste management industry. Since the zoning of Accra however, the number of operators was established to be 7. The AMA is the body responsible for managing waste management companies and was thus the source of information. The pool of social entrepreneurs in waste management according to the study by the British Council (2015) was consulted.

The reason for this was to capture as many respondents as possible from the various segments of the waste value chain.

Recycling companies which collect waste from the formal and informal waste sector were a reliable source of information and provided a vital nexus between the researcher and small scale waste collectors. Information from all these stakeholders helped provide a more holistic overview of how waste is managed in Accra.

Study Area

The area under study in this paper is the Accra Metropolitan Area (hereafter referred to as Accra). It has been the regional capital for the Greater Accra Region and national capital of Ghana since 1898, covering total land area of 139.674 square kilometres (Appendix G).

Accra, which is an entirely urban area, has a population of 1,665,086 people, representing 42% of the Greater Accra region's total population. The City of Accra is bounded by the Ga West Municipal to the north, the Ga South Municipal to the west, the La Dade Kotopon Municipal to the east and the Gulf of Guinea to the south (Ghana Statistical Service, 2014). It has a high population density of 1,235.764 per square kilometre, the second highest in Ghana (Ghana Statistical Service, 2014).

Accra, being among the most populated cities in Ghana, all things being equal, will have higher population density and produce more waste. It is therefore imperative that solutions to poor waste management be effected where the situation is likely to be direr. There also exists a good amount of literature on waste management in Accra which could make research on the city more accurate than others.

Sampling Strategy

In order to capture activities of stakeholders at each stage of the waste value chain, this paper categorized potential respondents according to their role in waste management to gather a diverse number of views for the purpose of analysis. Due to the poor web presence of some waste management companies and the difficulty in contacting actors in the informal sector, the sampling was structured to use visible sources to link with less visible sources.

Sampling techniques

The sampling techniques used were a combination of non-random sampling, convenience sampling and snowballing. Nonprobability, purposive sampling technique was used to select waste management companies within the study area based on their large size and involvement with recycling activities. Selection of social enterprises was done using snowballing technique (Sim, Wilson, Velis, & Smith, 2013; British Council, 2015).

The primary list of social enterprises contacted was provided by agents of Songhai Advisory LLP, which recently conducted research work on social enterprises. The number of social enterprise interviewed by the 2015 British Council report was 24 in total. Of this 24, only about 17% were involved in sanitation, hence there was a very small population of about 4 social enterprises in waste management to interview. The number working in Accra was even smaller. Waste recycling companies which collect recyclable materials were contacted via details retrieved from Google searches on the internet and from waste management companies.

Snowballing was used to lead the researcher to informal actors to provide information on their role in the waste management value chain (Steinerowski & Steinerowska-Streb, 2012). Convenience sampling was used to interview informal sector actors as and when they became available to be interviewed.

Sample Sizes

Below is a schedule of the various segments interviewed, their actual or estimated population size, the selected sample size and response rate.

Table 4

Interview sample sizes and response rates

Segment interviewed	Actual or estimated population	Sample contacted	Response rate	Sample interviewed
Government agencies	2	2	100%	2
Waste management companies	8	3	100%	3
Informal waste collectors	Unknown	5	90%	4
Recycling companies	Unknown	10	60%	6
Social enterprises	Unknown	4	75%	3

Data Collection

Data was collected using a combination of questionnaires, interviews, focus group discussions and observation in accordance with the UN-Habitat data protocol (Sim, Wilson, Velis, & Smith, 2013). These interviews were structured with the help of an interview guide and lasted about 30 minutes with each stakeholder in waste management. All interviews were done by the author with permission from the target companies and with consent of individual participants. Questionnaires were also administered by the author with permission and consent sought from participants. The research process was approved by Ashesi's Institutional Review Board (IRB), a body which seeks to ensure the safety and protection of all human subjects of research performed by Ashesi students.

The main problems the researcher faced were difficulty in gaining an audience with key stakeholders like the Ministry of Local Government and informal sector operators. The time constraint limited the possibility of interviewing a larger sample of respondents from more geographical locations. Language barriers posed another threat to research since the researcher is not very fluent in most local languages. Most informal sector actors also felt threatened by the study and declined to take part.

It is suggested that researchers who seek to carry out similar research should contact major stakeholders well in advance of the research. This is to ensure an audience even in cases of delayed or rescheduled meetings. Areas for further study could be creating a comprehensive profile of social entrepreneurs to enhance their visibility. The huge informal sector and the quantum of waste recycled can also be of interest in arriving at a more reliable outcome in terms of the benchmark indicators. The study could also be replicated in other cities to do a city by city comparison of waste

management in Ghana. This could expose strengths and weaknesses of the various metropolitan areas in solid waste management in order to improve the process and general sanitation in Ghana.

Data Collection Instrument

The data required was collected using a combination of questionnaires, interviews, focus group discussions and observation. The point of the interviews was to get an understanding of waste management in Ghana and to find out if there are opportunities for social enterprises to make significant contributions to improving the management of waste along any points of the waste management value chain. Questionnaires, containing both open and closed ended questions were administered to waste management entities as well as social entrepreneurs since it was quicker to administer than interviews and lends itself to graphical and statistical analysis. The ISWM benchmark has a fixed set of questions which were used with government officials (Appendix B).

Data Collection Procedure

Data collected through interviews, observations and research were recorded as a combination of notes, audio files, pictures and videos. They were transcribed where possible for analysis. They will make it possible for information to be reviewed and analysed by other researchers to compare conclusions and test validity and reliability of the conclusions of this research.

Data Preparation, Collation and Processing

Collected data over a three month period from primary and secondary sources were translated where necessary and subsequently transcribed. The information from

various stakeholders was coded from qualitative to quantitative measures using the UN-Habitat protocol. Averages of the quantitative measures were then taken and the results converted back into quantitative form. The indicator was then be compared to the benchmark for a lower-middle income city with the aim of scrutinizing the level of waste management in Accra, vis-à-vis the international median for similar cities. Data collected from interviews with social entrepreneurs is also reported and discussed.

Data Analysis

In line with the UN-Habitat protocol, data was collected from key stakeholders under 7 categories, namely collection coverage (how much of the city's waste is collected), controlled disposal (to what extent are disposal sites controlled), recycle rate (the percentage of waste recycled), user inclusivity (the degree to which users take part in the waste management process), provider inclusivity (the degree to which waste service providers are involved in the collection process), financial sustainability (measured as a percentage of homes whose waste is collected and who in turn pay for the waste service), and institutional coherence.

Validity and Reliability

According to Sarantakos (2005) and Trochim (2009), the criteria for judging qualitative research include credibility, transferability, dependability and confirmability. This paper employed argumentative validation. Argumentative validation is described as "the form of validity established through the presentation of findings in such a way that conclusions can be followed and tested" (Sarantakos, 2005).

The study was compared to findings of similar studies to authenticate if findings support claims by other studies. Data from the various stakeholders was also cross referenced and triangulated to ensure that there was validity and confidence in the figures and information given

Ethical Considerations

Bailey, 1988; Sproull, 1988; Vlahos, 1984 (as cited in Srantakos, 2005) generally considered professional standards, researcher-researcher relationship and researcher-respondent relationships as areas which need to be considered with respect to ethics. In line with their proposal, this research maintained objectivity, chose appropriate interpretation of data, and avoided fabrication and falsification of data. All sources and estimation assumptions are clearly explained in order to be replicable.

A high level of confidentiality with respect to contributions of respondents as well as their right to anonymity was respected. Respondents were not given false impressions of the research. The research method avoided harm of any sort to the respondent, be it legal, mental or physical (Sarantakos, 2005). Consent forms were signed by willing respondents and clearly identified the researcher, institution, as well as nature of research in detail. Respondents were given the opportunity to withdraw from the interview at any time.

Limitations and Delimitations

There were some limitations to the research which made it less effective than desired. Time constraint was an important hindrance as the study needed to be completed within six months. The snowballing technique was also contingent on the

availability of a contact with knowledge of the desired research subjects. These contacts were eventually reached, but with difficulty, leading to a shorter period to contact social entrepreneurs. The social entrepreneurs were mostly unavailable for an interview and had to be given questionnaires. This reduced the richness of the interaction and limited what could have been deep conversations to quick and short answers. Some respondents, primarily in the informal recycling sector which plays a huge role, refused to take part in the research for unknown reasons. For this reason, the findings will not reflect the total recycling rates, but will be a huge underestimation of the actual. It also reduced the desired sample size. Financial constraints also limited the number of organizations and respondents that were interviewed as well as the scope of research. Language was yet another problem since some interviewees did not have English as their mother tongue.

Another major challenge faced was the absence of data on the sources of waste. From research, it was found that some of the waste generated in Accra is moved out of Accra to be recycled, while some waste generated outside Accra is brought into Accra to be recycled. This posed a difficulty when attempts were made to track waste creation, disposal and treatment, all in Accra. It was decided that only waste which was generated in Accra would be considered.

In attempts to triangulate data to increase reliability, there were discrepancies that arose between two government bodies when answering the ISWM benchmark questions. The findings were compared due to significant differences observed. The submission from the interviewed respondent was chosen over findings that were generated from a self-administered questionnaire. The issue is discussed further in Appendix B.

CHAPTER 4: RESULTS

Overview of the Results Section

This chapter presents and discusses findings from the research. The findings are presented under each of the research objectives stated in previous chapters. The section begins with a description of how waste is managed in Accra, touching on the composition of waste and its implications for waste management.

Subsequently, the challenges facing waste management operators in Accra are also reported and discussed. The results from the UN Habitat ISWM benchmarking methodology are also presented and the implications discussed. Findings from social enterprises are then presented and discussed vis-à-vis findings in literature. The chapter concludes with a discussion of the opportunities observed for social enterprises to contribute to improving waste management in Accra from research and from literature.

The information from waste management companies was provided by officers of the research and development (R&D) division, as well as a director of innovation. The information was collected through structured interviews. Information on waste management from the government perspective was obtained from an officer of the AMA Waste Management Division and the Ministry of Local Government.

The presentation of the objectives will follow such sequence as to allow the discussion to flow rationally, and to be developed with the main objective being discussed last. This is done because the findings on how waste is managed and the problems of waste management will inform the presence or absence of opportunities for social enterprises to improve waste management in the capital city of Accra.

Results for objective 1 - How waste is currently managed in Accra.

The whole process of waste management in Accra has been broken down into various components, from generation to collection, transportation, composition recycling and disposal.

This information was provided by an officer of the Waste Management Division, and was supplemented with knowledge from interviews with officers of waste management companies and the secretary of an association of informal sector cart drivers.

Given the significant role of the informal sector in waste management, this section will include a brief description of the activities of the informal sector waste collectors. The data was collected using structured interviews and observation.

Generation of waste **–** Accra produces an estimated 3000 metric tonnes of waste per day, the vast majority of which is dumped together. Households and firms rarely separate their waste at source, although there are initiatives to separate waste.

All materials, organic, plastic, metal, paper, glass and textiles to name a few, are dumped together into the standard 120 litre or 240 litre bins provided by waste management companies.

Collection **-** Waste collection has been outsourced to private waste management companies by the AMA. Accra has been zoned into a 10 sub-metropolitan areas, each with an assigned waste management company under a franchise deal. Franchising is a "method for expanding a business and distributing goods and services through a licensing relationship" (International Franchise Association, n.d.) The franchise allows

the AMA to maintain control over geographic allocation of waste management companies and the fees they charge households.

Despite the zoning, the informal sector still collects waste from households across Accra. Some waste management companies believe the operation of the informal sector is undercutting their activities. This is despite the fact that collection rates are about 70% on average hence there is still a lot of waste to be collected. Under the franchising agreement, companies are expected to hold 80% of capital equipment while the AMA holds the remaining 20% for deployment in case of emergency. Appendices D and E contain a list of the zones and the associated waste collection company.

Collection frequency depends on the nature of the client. Busy market areas in peak seasons have the highest collection rates of up to five times a day during festive times like Christmas and Easter.

Corporate clients who generate more refuse have their waste collected between 2 to 3 times per week. Individual households have their waste collected on a weekly basis. Households have been divided into 3 classes based on the development of the area. The rates charged by waste management companies is also controlled by the AMA, who set a price ceiling, so that operators are free to charge below or up to the price. Rates as at 2016 are: 1st class area - GHS 80/month ($20.89), 2nd class area GHS40/month ($10.44), 3rd class area GHS30/month ($7.83).

Payments for services are collected by cash or cheque from corporate clients. In the case of house to house clients, monies are collected by revenue collectors working for waste management companies.

Some households do not use the waste management companies but opt for motor carts to collect their waste on an ad-hoc basis. These motor cart drivers charge

negotiable amounts based on the quantity of the load. They have no fixed price and are open to negotiation. The cart drivers operate all over Accra and can either be reached by phone call or are stopped as they move around the neighbourhood.

In some areas, the CCC method is used with skips placed at a central point so that waste operators collect them. The frequency of collection here varies based on the area and the season. Markets typically have the highest collection frequency of up to 5 trips per day.

Payment for CCC collection also varies based on the area. Some areas have the service paid for by their municipal leaders so that disposal is free. In other areas, the waste operators who service a particular skip have an attendant who charges based on discretion, such that a larger quantity of waste attracts a larger fee.

Public areas such as lorry stations in Kaneshie and Abeka Lapaz have street cleaners who sweep and heap rubbish every morning and transfer these to carts and waste trucks to be transported to dumpsites. Other households and individuals resort to heaping and burning waste in order to avoid the cost of disposing rubbish.

Transportation **-** Waste collectors typically transport waste to landfill sites or dumpsites scattered around the city. The main landfill sites are at Kpone, and Nsumia and the dumpsites are at Agbogbloshie and Mallam. Although Pantang is a noted waste dump, it does not fall within the confines of Accra. The waste is usually compressed and moved to the disposal site in trucks or carts.

Post-collection activities

Separation **-** Very few waste management companies are involved in treatment of waste. When waste is dumped at the landfill sites by various collectors, informal sector actors then proceed to separate the waste into materials which can be resold. The researcher observed that sachet water wrappers, high density plastics, PET bottles, aluminium cans, tyres, metals and salvageable materials are typically collected.

First, sachet water wrappers are collected and bagged to be sold to recycling companies. Plastic bottles are usually resold to vendors to be washed and used to bottle locally produced drinks. Salvageable materials such as slightly damaged electrical appliances, furniture and clothes are taken for use or for sale by informal collectors. The remaining materials are usually burnt in order to collect metal components which are sold as scrap.

Recycling **-** There is a huge informal plastic recycling sector in Accra. These entities operate on a small scale in typical neighbourhoods. The major recycled materials are pure water sachets which are cut, washed pelletized and reformed into black rubber bags. These black rubber bags are sold locally. Some recyclers buy their raw materials from aggregators and process them into pellets which they sell to other companies. HDPE and PET are hardly recycled in Accra. They are mostly compressed and exported to India, although a few companies are able to crush them locally for export.

Close to majority of the recycling plants researched sourced their materials from factories, so that the plastics they recycle are not mainly from the landfill and dumpsites but from factory suppliers. These are clean and require no washing. This is because the high cost of machinery and high import duties makes it difficult to purchase

sophisticated machines which can wash, cut and bag plastics. The additional cost of washing dirty plastics is a disincentive to some.

Composting **-** Although practiced on a limited scale, there is some amount of composting done on the organic component of waste. This compost is then sold as fertilizer to farmers on the open market. The Accra Compost and Recycling Plant in Ajen Kotoku is the only known functional composting plant.

Upcycling **-** There are a number of enterprises which upcycle waste products. They take waste materials and add value to them by converting them into other artefacts which are then sold for public use. Trashy bags, an Accra-based social enterprise, for example uses ice-cream sachets to make hand bags. These companies however use very little waste and their contribution to improving waste management is negligible.

Role of the informal sector – An interview with the secretary of the Ghana Borla Taxi Association revealed that although the informal sector is unrecognized, there is a very vibrant association which operates all over Accra with over 200 carts. The four year old association has 13 branches in Accra, with plans to expand to the central region. With a fee of GHS50.00 cart owners can join the association to collect waste from households as and when their services are demanded.

The collected waste is sent to the Mallam or Agbogbloshie dumpsites, where materials are sorted mainly into salvageable plastics, and scrap metals. The remaining materials, mostly organic, are heaped without treatment. At these dumpsites, some plastics are washed and crushed for sale.

Although the association exists, there are however some cart drivers who have not joined. According to secretary of the association, following the association's

inauguration in February 2016, there will be a taskforce set up to ensure that all informal sector carts are registered with the association.

The contribution of the informal sector is consistent with discussions by Velis et al (2012), who argue that incorporating the informal sector in waste management is an affordable means of building recycling rates. The inclusion of the informal sector could also address problems such as occupational and public health and safety, child labour, uncontrolled pollution and child labour (Velis, et al., 2012, p. 43).

Reuse **-** A number of homes reuse materials such as margarine buckets, plastic bottles, ice-cream containers and egg crates. This was however not the focus of this study hence sufficient data concerning this kind of waste was not collected.

Composition of waste

Waste composition in Accra is consistent with that of low income earning areas which tend to have over 60% organic waste composition. This is expected to change in the next 25 years to below 60%. Plastics form 10% and inert materials 11%. Paper, metals, glass and textiles together form about 14% of total waste generated.

With the high level of organic waste content, waste produced in Accra lends itself to composting, however, this is not a very vibrant sector. It was mentioned in an interview that there are challenges with marketing compost due to high competition from inorganic fertilizers. Appendix F gives a full breakdown of waste composition.

Results for Objective 2 - Challenges facing waste management

This section is informed by finding from structured interviews with four officers of three waste management companies operating in the Accra Metropolitan Area. The problems they identified are summarised below:

One major challenge facing all waste management companies interviewed is the poor law enforcement regarding waste management. According to a report by Anku (2000), there are many laws regarding waste management. They include:

- Local Government Act, 1990 (Act 462) – Section 28 deals with establishing metropolitan assemblies. Section 43 gives power to enforce functions of assemblies.
- Environmental Assessment Regulations, 1999 (LI 1652) – This act details environmental impact assessment, public hearing procedure, and states undertakings for which Environmental Impact Assessment is mandatory, including waste treatment and disposal under regulation 3
- Criminal Code, 1960 (Act 29) – Sections 296 and 297 of Chapter 8 describe offences of nuisance through throwing rubbish in streets and in front of premises
- Water Resources Commission Act, 1996 (Act 522) - Section 24 deals with pollution of water bodies.

The general perception across all waste management companies interviewed was the dearth of enforcement of the existing laws and policies. This lack of enforcement is exacerbated by few courts, prolonged proceedings and outmoded laws which are not severe enough to be punitive. One operator complained about how legal punishments for offences are so insignificant as to be inexistent.

These legal challenged allow informal operators to continue to undercut franchised operators while households with capacity to pay choose to employ the services of informal operators. There are quite a number of customers who fail to pay on time which has necessitated the creation legal departments by waste management companies to handle litigation issues that the company faces.

Another theme that emerged is the low infrastructural development in the form of poor road network and poor addressing systems to locate and service households within some areas. These lead to uncollected waste in some cases, while increasing operating costs through extensive repairs on capital equipment. Another implication of the poor roads is that even for some homes which pay for house to house collection, households have to carry their waste in bins to the roadside for collection.

Once waste is collected, waste management companies are faced with the challenge of transporting waste over long distances to insufficient landfill sites. Long distances between collection points and disposal points increases operating costs and the time taken in serving designated areas. There have also been cases of unenthused youth in landfill areas who temporary close landfill sites. These culminate in high costs and longer periods servicing the households in their zones.

The general attitude of littering, poor disposal habits in unauthorized places have been attributed to poor education of the people of Accra. People simply do not know about the benefits of waste segregation, or that it is an option. There is a lot more education that needs to be done, continually, to instil the culture of separation into Accra's populace.

In the opinion of some of the respondents, it is believed that the government of Ghana has failed to prioritize waste, leading to low investment in the sector. This is

aggravated by the low technical expertise in the field of waste management and the financial challenges that arise due to company's inability to regulate prices in the short term when input prices change.

In light of these challenges, the performance of Accra in waste management is compared to the international median for lower-middle income cities around the world. These findings are discussed below.

ISWM benchmark

The ISWM tool in diagram 2 below shows the comparison of Accra to the international median for lower-middle income regions. While Accra performs strongly in financial sustainability (44%) and institutional coherence (67.2%), there is a lot more that can be done to increase collection coverage of 73%, controlled disposal of 70%, user and provider inclusivity (50% and 33% respectively) as well as recycling rates of 10% which are lagging behind the international median for lower-middle income regions.

Accra performed generally well in comparison to other lower-middle income earning regions. Figures show that users are highly involved in waste management through their metropolitan assembly. It also indicates strong institutional coherence, in that there is a highly unified body which singly oversees waste management in the region. The franchise deal also appears to be creating a strong collection coverage to reduce the amount of waste that goes uncollected daily. Figures on recycling are however an underestimation, given the unregulated nature of the recycling industry, it is almost impossible to quantify the true recycling rate.

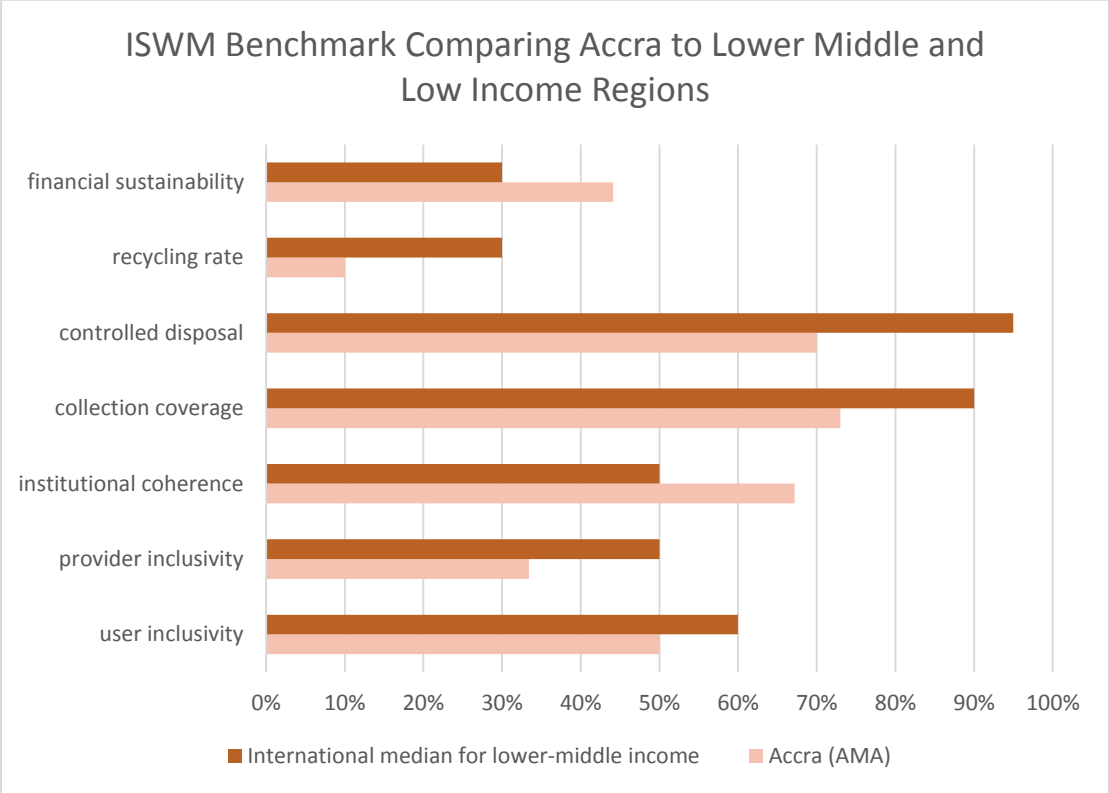


Figure 2: ISWM Benchmark Comparing Accra to Lower Middle Income regions

Results for Objective 3 – Opportunities for Social Enterprises to Improve Waste Management in Accra

This section will present a summary of findings from social entrepreneurs interviewed as well as stakeholders who worked closely with social enterprises. It will then discuss the findings in relation to how waste is managed as well as the problems facing waste management companies, thus attempting to identify opportunities where social enterprises have strengths that can be leveraged to capitalize on to improve waste management in the Accra metropolis.

Findings from Social Enterprises and Supporting Organizations

The population of social entrepreneurs in Ghana is still unknown. Given this challenge, a sample of five social entrepreneurs were contacted to fill self-administered questionnaire. A focus group discussion was also held with officers of Songhai LLP who recently conducted a study on social enterprises in Ghana. The findings are presented below:

The sampled social entrepreneurs have been in the field for over 5 years. In setting up their social enterprises, they considered mainly the existence of a need in society, but also factored in the skills they had to solve the identified problems.

Registration – Although non-profit organizations are ideally supposed to register as company limited by guarantee, it was found that social enterprises are registering as limited liability companies. The reason emerging from the focus group discussion is that for companies limited by guarantee, there must be a guarantor whose monetary contribution will be fallen on in the event that the company winds up. The monies put forward are not meant to be spent on operations. Given the fact that funding has been cited as a major challenge facing social enterprises, it can be assumed that all the funds available will go a long way to helping create social value. Registering as a company limited by guarantee lock up the social value of that money. This means that there is a third party whose contribution is needed to set up and who has to bare liability, making it an unattractive option for true social enterprises.

The focus group discussion further stressed that the laws regarding the company limited by guarantee are not very encouraging to social entrepreneurs. This is because, the company limited by guarantee is not allowed to make a profit, since it is a punishable offence by law. The business type is therefore suitable for NGOs, but limits

the self-sustainability of a social enterprise which is a profit generating venture, although it does not redistribute the generated profit.

Advantages **–** When asked about advantages of operating a social enterprise, respondents indicated their ability to directly solve social needs through community impact while providing employment through legal businesses. The business model enables them to achieve their goals in a financially stable way.

Challenges – There are quite a number of challenges that the sampled social entrepreneurs face. They can be categorized into financial, human resource, technological as well as emotional challenges. The available human resource is seen by some entrepreneurs to lack the skills required. Financial institutions are also unwilling to support start-up entrepreneurs, a phenomenon worsened by high cost of operating enterprises. One interesting challenge is the presence of some consumers who need the good provided but cannot afford it. This is interesting because, ideally, social enterprises are supposed to satisfy market failures, one of which is the existence of a market without purchasing power. Some entrepreneurs felt a lack of appreciation of the work they do to create social value. Technological challenges are in the form of unavailability of digital applications and technology which are customizable to the local context at affordable prices.

Barriers to starting a social enterprise - Despite the several challenges facing social enterprises, the greatest barrier to entering business from the respondents' perspective is personal insecurities and commitments. Another entrepreneur considered the sustainability of the project and the funding available. Project sustainability is a major challenge faced by social enterprises. An insight from the focus group discussion is that many social entrepreneurs are young people who leave their first or second job to start

up a company. Although funding is usually high on the list of challenges, many entrepreneurs do not have a plan of action and fail to think about making their business self-sustaining, in which case funding should not be a problem. Indeed it is important that the process of self-sustenance be thought through before implementation.

There are efforts being made by the British Council to build skills and help shape lasting ideas for social enterprises to enable them achieve self-sustainability in their drive to create positive social value.

Sources of funding – The interviewed social enterprises raised their funds from personal savings, borrowings, donor funding and competitions. Donor funding is available, but usually not in form of cash, but rather materials and training. Due to the low level of interaction with social enterprises through the questionnaire, further probing could not be done to estimate the quantum of funding available to them.

Volunteering – Findings from social entrepreneurs and focus group discussion show that there is a volunteering culture in Accra. Many high schools rely on monetary and technical support from alumni and old student associations. The national cleaning day also involves citizen volunteering. Volunteering for businesses is however undeveloped in comparison to more developed countries like the USA. Social entrepreneurs believe that volunteering in Accra is something that people will be willing to do, but are uninformed. This is consistent with findings by the British Council (2015).

The number of volunteers engaged per year varied significantly from 2 to 25 people. In cases where few were engaged, the reason was that volunteers lacked the desired skills and there was little time to train them.

Opportunities in waste management – All respondents believe there are opportunities for social enterprises to help improve waste management in Accra. These opportunities

are seen to exist primarily in waste collection, recycling and treatment. Waste separation was also seen to hold some opportunities for social enterprises. Some of the opportunities identified were partnering with bigger firms where best practices could be developed in waste management: upcycling in addition to traditional recycling, reduction and reuse. Materials can also be recycled into renewable energy. Firms could partner with like-minded bigger companies in Europe, especially Germany where they are well developed with best practices in renewable energy.

Interaction with organizations with insights on social enterprises however reveals that since there is no policy framework for social enterprises and there are many challenges that social enterprises face in Ghana.

There are many opportunities for training and skill acquisition since many social enterprises are young and lacking not in passion but experience. One challenge is that they are typically people who are just out of their first or second job and have little experience. They therefore do not always have the experience to fully think through their model for self-sustainability.

Despite this, there is work being done by the British Council as well as Barcamp to help build skills of entrepreneurs. Barcamp is "an ad-hoc unconference born from the desire for people to share and learn in an open environment. It is an intense event with discussions and interaction from attendees" (The Rules of Barcamp, 2009). The British Council is also in talks with government of Ghana to create a policy framework to enable social enterprises to function.

Social enterprise opportunities

The findings reported above are indicative of the potential of social enterprises to grow to become a contributor to social value creation in Ghana. There are however

many barriers that social enterprises and social entrepreneurs have to overcome in order to create a widespread just equilibrium described by Martin and Osberg (2007). The beauty of social enterprise is their ability to function with few resources and their high level of innovation using the tools and people available. There are growing opportunities for social enterprises to collaborate with private sector to complement strengths resulting in a hybrid value chain (Drayton & Budinich, 2010).

There are evidently gaps in the waste management chain in Accra, gaps which the government, private sector and the informal sector have been unable to solve. The findings from the ISWM benchmark show key areas necessary for sustainable waste management where Accra is lacking. On close observation, it can be deduced that the existence of a large informal sector has a role to play. Social enterprises are capable of including the informal sector as was the case in the Payatas Environmental Development Programme in Quezon City. This programme included informal sector micro-enterprises in solid waste management (Vincentian Missionaries, 1998). This could increase the recycling and collection coverage, as well as user and provider inclusivity. The organization and inclusion of the informal sector could also improve the lot of waste pickers by improving their working conditions and eliminating any instance of child labour (Vincentian Missionaries, 1998).

Considering the high organic waste content in Accra, composting needs to be considered as a major means of diverting the waste that ends up in landfills and dumpsites in Accra. With knowledge of the difficulty in selling organic fertilizers made from compost given the high market demand for inorganic fertilizers, additional effort needs to be put into marketing organic compost. Government support in the form of subsidies can also help create an industry for one of Accra's least used resource: organic component of solid waste. Indeed about 1950 metric tonnes of organic solid waste is

produced daily. Its exploitation could hold opportunities to create jobs and boost agricultural yield if processed into compost.

Interestingly, Jekora Ventures, a waste management company, is involved in education of its clients on waste separation and its benefits. They have partnered with recycling companies and corporate clients to increase recycling rates by matching corporate waste generators with recycling companies. This is a very commendable program which holds potential for developing a waste segregation attitude in citizens. This model could be taken up by social enterprises who can partner with waste companies and informal sector to create hybrid value chains to educate users, while managing their waste as proposed by Drayton and Budinich (2010).

CHAPTER 5: CONCLUSION

Conclusions and Recommendations

Accra the capital city of Ghana generates an estimated 3,000 metric tonnes of waste per day, of which only 70% is collected. Of all the households within the metropolitan area, only 63% pay for waste. The informal sector plays a significant role in waste collection. However with the focus being collect and dump, there are still many areas in which waste is poorly managed. Using the Integrated Sustainable Waste Management benchmark, Accra performs quite strongly in comparison with the median of lower middle income earning cities round the world.

The close inspection of literature and findings from the ISWM benchmark shows that there are many opportunities for social enterprises to improve waste management in Accra. The biggest opportunity is the ability to get people to sustainably start waste separation at source. This feat alone will have a ripple effect that will revolutionize waste management in Accra. Yet still, there are more opportunities in the recycling of waste produced to extract its economic and social benefits.

The existence of a vibrant yet unregulated informal sector is yet another huge opportunity that social enterprises around the world have used to create jobs. Social enterprises can make informal actors work in a safer, more equitable condition. There are opportunities to offer training, to organize them into a supporting structure and plug them into the public zoning system. There are also opportunities for recycling and household education on the merits of waste separation.

One important contribution to social enterprise activity is volunteering. Consistent with findings by the British Council (2015), the social entrepreneurs contacted believed that people would be willing to volunteer for causes but were generally unaware. This means that with the

right amount of awareness generation, there could be a potentially large pool of citizen volunteers who could help further the cause of social enterprises in creating positive social impact, while generating profit at the same time.

Despite all of these opportunities, social enterprise still has no dedicated policy framework or legal structure which favours them and their activities within the Ghanaian context. This hampers their ability to effect change on a scale large enough to create a dent in the existing unjust equilibrium.

It is recommended that government formulate policy sooner than later to recognize social enterprises as has been done in United States legislation. This will afford social enterprises tax breaks while they make profits to reinvest in their firms.

Despite the great expectations that some may have for social enterprises, it appears that most of them have strong passion but do not always have the technical skills and planning to carry out their value creation activities. It is recommended that more training sessions as are being done by the British council be replicated to ensure the strong rise and continuance of the social sector in Ghana. Indeed a country with many problems is one which has many potential solutions.

With extensive literature on the impactful role of the informal sector on waste management and social enterprise as a model of business which is known to utilize available skill, it is recommended that government be open to the idea of involving the informal sector to build capacity in order to make more effective use of the resource which is waste.

References

Accra Metropolitan Assembly. (2011). *Performance Audit Report of the Auditor-General on Solid Waste Management.*

Alhassan, A. R., Gabbay, O., Arguello, J. E., & Boakye-Boaten, N. A. (2010). *Report to the Accra Metropolitan Assembly on Solid Waste Composition in Aryee Diki electoral area, Ayawaso Central Submetro, Accra New Town.* Millenium Cities Initiative.

Allesch, A., & Brunner, P. H. (2014). Assessment methods for solid waste management: A literature review. *Waste Management & Research* , 461-473.

Amoah, T. S., & Kosoe, A. E. (2014). Solid Waste Management in Urban Areas of Ghana: Issues and Experiences from Wa. *Journal of Environment Pollution and Human Health, 2*(5), 110-117.

Anheier, H. K. (2014). *Nonprofit Organizations: Theory, management, policy* (2nd ed.). London: Routledge.

Anku, S. E. (2000). *Solid Waste Management In Ghana.* United Nations.

Annepu, R., & Themelis, N. J. (2013). *Analysis of Waste Management in Accra, Ghana and Recommendations for further Improvements.* Columbia University, Earth Engineering Center.

Armah, S. E. (2009). Investigating the Influence of Political Stability on the Aid-Growth Relationship in Sub-Saharan Africa: A Panel Data Approach. *Journal of Economic Development, Management, IT, Finance and Marketing*, 35-56.

Arnsberger, P., Ludlum, M., Margaret, R., & Stanton, M. (2008). A History of the tax-exempt Sector: An SOI Perspective. *Statistics of Income Bulletin*, pp. 105-135.

Arrow, K. J. (1963). Uncertainty and the Welfare Economics of Medical Care. *The American Economic Review*, 941-973.

Asamoah, R. (2014, December 6). *Declaration Of Clean-Up Exercise.* Retrieved October 3, 2015, from Daily Guide Web site: http://www.dailyguideghana.com/declaration-of-clean-up-exercise/

Asomani-Boateng, R. (2015). Local Networks: Commodity Queens and the Management of Organic Solid Waste in Indigenous Open-Air Markets in Accra, Ghana. *Journal of Planning Education and Research*, 1-13.

Barazzetta, S. (2015). *Plastic Waste Management in Africa: Lessons From Social Enterprises.* ACRA-CSS.

Blakstad, O. (2008, June). *Research Designs*. Retrieved from Explorable.com: https://explorable.com/research-designs

Bondzi-Simpson, P. E. (2014). *Company Law in Ghana.* Accra: Avant Associates Ltd.

Bornstein, D., & Davis, S. (2010). *Social Entrepreneurship: What everyone needs to know.* New York: Oxford University Press.

British Council. (2015). *Social Enterprise Landscape in Ghana.*

Dees, G. J. (2001). *The Meaning of Social Entrepreneurship.* Retrieved from http://netscope.com/pdf/Social%20Entrepreneur.pdf

Dees, G. J., Emerson, J., & Economy, P. (2001). *Enterprising Nonprofits: A toolkit for social entrepreneurs.* New York: John Wiley & Sons Inc.

Devarajan, S. (2014, April 22). *Why should Governments Spend on Sanitation?* Retrieved from World Bank News Page: http://blogs.worldbank.org/futuredevelopment/why-should-governments-spend-sanitation

Dhingra, A. (2015). A conversation with the Social Entrepreneur & Founder of Bali Recycling. (O. Pouillon, Interviewer) Retrieved OCtober 8, 2015, from http://www.asiaiix.com/a-conversation-with-the-social-entrepreneur-founder-of-bali-recycling/

Drayton, B., & Budinich, V. (2010). *A New Alliance for Global Change.* Retrieved from Havard Business Review: https://hbr.org/2010/09/a-new-alliance-for-global-change/ar/1

Drucker, P. F. (1985). *Innovation and Entrepreneurship: Practices and Principles.* Harper & Row, Publishers, Inc.

Fredén, J. (2015, September 24). *The Swedish Recycling Revolution*. Retrieved from https://sweden.se/nature/the-swedish-recycling-revolution/

Ghana Statistical Service. (2014). *2010 POPULATION AND HOUSING CENSUS.*

Hall, P. D. (2005). Historial Perspectives on Nonprofit Organizations in the United States. In R. D. Herman, *The Jossey-Bass Handbook of Nonprofit Leadership and Management* (pp. 3-38). Wiley.

Hansmann, H. (1987). Economic Theories of Nonprofit Organization. *The nonprofit sector: A research handbook*, 27-42.

Hoornweg, D., & Bhada-Tata, P. (2012). *What A Waste: A Global Review of Solid Waste Management.* Washington DC: World Bank.

International Franchise Association. (n.d.). *Intro to Franchising* . Retrieved from http://www.franchise.org/what-is-a-franchise

Kazeem, Y. (2015). *Lagos recycling start-up, Wecyclers, wins backing from Steve Case Foundation*. Retrieved from Quartz Africa: http://qz.com/469862/lagos-recycling-start-up-wecyclers-wins-55000-from-steve-case-foundation/

Leadbeater, C. (2007). *Social enterprise and social innovation: Strategies for the next ten years* . Cabinet Office.

Livingston, E. A. (2008). A Bright Line Points Toward Legal Compromise: IRS Condoned Lobbying Activities for Religious Entities and Non-profits. *Rutgers Journal of Law and Religion*.

Luckert, K. (n.d.). *Nonprofit Organizations (Definition and Examples).* Retrieved from Learning to Give: http://www.learningtogive.org/resources/nonprofit-organizations-definition-and-examples

Luke, B., & Chu, V. (2013). Social enterprise versus social entrepreneurship: An examination of the 'why' and 'how' in pursuing social change. *International Small Business Journal*, 764-784.

Martin, R. L., & Osberg, S. (2007). Social Entrepreneurship: The Case for Definition . *Stanford Social Innovation Review*.

Mesias, V. D. (2009). *Solid Waste Management as a Social Enterprise: A Community-based 3R Approaches in Bago City.* Bago: Office of the City Mayor: Bago, Philippines.

Modak, P. (2011). *Waste: Investing in energy and resource efficiency.* United Nations Environment Programme.

Oteng-Ababio, M. (2011). Missing links in solid waste management in the Greater Accra Metropolitan Area in Ghana. *GeoJournal, 76*(5), 551-560.

Owusu-Koranteng, D. (2015, June 17). *Never again; A clarion call to end the floods in Accra.* Retrieved October 3, 2015, from Graphic Online Web site: http://graphic.com.gh/features/opinion/44775-never-again-a-clarion-call-to-end-the-floods-in-accra.html

Roberts, B. D. (n.d.). *Plastic Waste Management in Africa.* Retrieved from http://sfaa.net/podcast/files/5514/5650/8311/Roberts_Slides_-_International_Perspectives....pdf

Rreuse. (2016). Retrieved from rreuse: http://www.rreuse.org/

Salamon, L. M. (1999). *America's Nonprofit Sector: A Primer.* New York: The Foundation Centre.

Sarantakos, S. (2005). *Social Research.* New York: Palgrave Macmillan.

Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy.* New York: Routledge.

Senior, K. (2010, March). In the market for proper sanitation. *Bulletin of the World Health Organization, 88*(3), 161-204. Retrieved Octobebr 24, 2015, from http://www.who.int/bulletin/volumes/88/3/10-020310/en/

Shuttleworth, M. (2008, September 26). *Descriptive Research Design*. Retrieved from Explorable.com: https://explorable.com/descriptive-research-design

Sim, N. M., Wilson, D. C., Velis, C. C., & Smith, S. R. (2013). Waste management and recycling in the former Soviet Union: The City of Bishkek, Kyrgyz Republic (Kyrgyzstan). *Waste Management & Research*, 106-125.

Smith-Asante, E. (2013, May 2). *Accra has seen improvement in access to toilets – AMA*. Retrieved from Ghana Business News Web site : https://www.ghanabusinessnews.com/2013/05/02/accra-has-seen-improvement-in-access-to-toilets-ama/

Steinerowski, A. A., & Steinerowska-Streb, I. (2012). Can social enterprise contribute to creating sustainable rural communities? Using the lens of structuration theory to analyse the emergence of rural social enterprise. *Local Economy*, 167-182.

The Bali Recycling Company. (2015). *About Us: The Bali Recycling Company*. Retrieved from The Bali Recycling Company: http://www.balirecycling.com/

The Rules of Barcamp. (2009). Retrieved from Barcamp: http://barcamp.org/w/page/405173/TheRulesOfBarCamp

Tilaye, M., & Pieter van Dijk, M. (2014). Private sector participation in solid waste collection in Addis Ababa (Ethiopia) by involving micro-enterprises. *Waste Management & Research*, 79-87.

Titmuss, R. M. (1970). The Gift Relationship: From Human Blood to Social Policy. *Medical Care, 11*, 261-263. Retrieved September 19, 2015, from http://www.jstor.org/stable/3762883

Tobore, I. E. (2012). *Solid Waste Management in Nigeria.* D-Waste.

Trémolet, S. (2012). Sanitation Markets: Using economics to improve the delivery of services along the sanitation value chain.

Trochim, W. M. (2009). *Research Methods.* New Delhi: biztantra.

UN Water. (2008). Retrieved from http://www.unwater.org/wwd08/docs/10Things.pdf

UNICEF. (2014). *Cholera outbreak in the West and Central Africa: Regional Update, 2014 - WEEK 52.* Retrieved October 3, 2015, from http://www.unicef.org/cholera/files/Cholera_regional_update_W52_2014_West_and_Central_Africa.pdf

United Nations. (n.d.). *Sustainable development knowledge platform*. Retrieved from United Nations Web site: https://sustainabledevelopment.un.org/topics

Velis, C. A., Wilson, D. C., Rocca, O., Smith, S. R., Mavropoulos, A., & Cheeseman, C. R. (2012). Analytical framework for integrating informal recycling sector in waste and resource management systems in developing countries. *Waste Management & Research*, 43-66.

Velleman, Y., & Slaymaker, T. (2011). *The sanitation problem: What can and should the health sector do?* WaterAid.

Vincentian Missionaries. (1998). The Payatas Environmental Development Programme: micro-enterprise promotion and involvement in solid waste management in Quezon City. *Environment and Urbaniztion*, 55-67.

Water, Sanitation & Hygiene. (2015). Retrieved from Bill & Melinda Gates Foundation: http://www.gatesfoundation.org/What-We-Do/Global-Development/Water-Sanitation-and-Hygiene

WHO. (2015). *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment.* Retrieved from http://www.unicef.org/publications/files/Progress_on_Sanitation_and_Drinking_Water_2015_Update_.pdf

Wilson, D. C. (2013). *Benchmark Indicators for Integrated and Sustainable Waste Management (ISWM).* Vienna.

Wolk, A. M. (2007). *Social Entrepreneurship and Government: A New Breed of Entrepreneurs Developing Solutions to Social Problems.* Cambridge MA: Root Cause.

Appendix

Appendix A – MGDs and SDGs

The 8 Millennium Development Goals

MDG 1 Eradicate extreme poverty and hunger	MDG 2 Achieve universal primary education	MDG 3 Promote gender equality and empower women	MDG 4 Reduce child mortality
MDG 5 Improve maternal health	MDG 6 Combat HIV/AIDS, malaria and other diseases	MDG 7 Ensure environmental sustainability	MDG 8 Global partnership for development

SOCIAL ENTERPRISES OPPORTUNITIES

The 17 Sustainable Development Goals

SDG 1 No poverty	SDG 2 Zero hunger	SDG 3 Good health and well-being	SDG 4 Quality education
SDG 5 Gender equality	SDG 6 Clean water and sanitation	SDG 7 Affordable and clean energy	SDG 8 Decent work and economic growth
SDG 9 Industry, innovation and infrastructure	SDG 10 Reduce inequalities	SGD 11 Sustainable cities and communities	SDG 12 Responsible consumption and production
SDG 13 Climate action	SDG 14 Life below water	SDG 15 Life on land	SDG 16 Peace, justice and strong industries
SDG 17 Partnership for the goals			

Appendix B - ISWM benchmark components

ISWM benchmark components

Indicator	Driver	Category	Description
Waste collection coverage	Public health	Collection	Quantitative percentage of population who have access to a reliable waste collection service
Controlled disposal	Environmental	Disposal	Quantitative percentage of the total waste destined for disposal in either a state-of-the-art, engineered or 'controlled' treatment or disposal site.
Recycling rate	Resource management	3 'R's': reduce, reuse, recycle	Quantitative percentage of total waste generated which is recycled (includes both dry material and organics recycling)
Degree of user inclusivity		User inclusivity	Composite assessment on a set of 5 qualitative criteria posed as questions (see Table B.1 of Appendix B), allowing a 'yes' for present and a 'no' for absent. Represents the degree to which users or potential users of the solid waste services (i.e. households, businesses and other waste generators) are included in the planning, policy formation, implementation and evaluation of those services

Indicator	Driver	Category	Description
Degree of provider inclusivity		Provider inclusivity	Composite assessment on a set of 6 qualitative criteria (see Table B.2 of Appendix B). Represents the degree to which economic niches in service delivery and recycling are open and accessible by non-municipal service providers from the formal private, community or 'informal' sectors
Financial sustainability		Population using and paying for collection	Quantitative percentage of total households both using and paying for waste collection services. This is just one of many possible quantitative financial indicators and needs to be interpreted alongside those other data
Institutional coherence		Sound institutions and proactive policies	Composite assessment on a set of 6 qualitative criteria (see Table B.3 of Appendix B). Assesses the policy framework; the degree of municipal control; and the 'coherence' of solid waste management controls within one responsible department of the municipality

Source: Sim, Wilson, Velis, & Smith, 2013

The table below shows the responses of the Accra Metropolitan Assembly (AMA) and the Ministry of Local Government (MLG) to the various questions used in analysing waste management in Accra using the ISWM benchmark.

	user inclusivity	provider inclusivity	institutional coherence	collection coverage	controlled disposal	recycling rate	financial sustainability
Accra (AMA)	50%	33%	67.20%	73%	70%	10%	44%
Accra (MLG)	40%	67%	58.40%	73%	70%	2%	44%
International median for lower-middle income	60%	50%	50%	90%	95%	30%	30%

Source: Field data

It is observed that there are discrepancies between the answers given by the two government bodies. A further breakdown of the various instruments is given below

Table B.1 - Qualitative assessment of user inclusivity

Qualitative assessment of user inclusivity	AMA response		MLG response	
Question	Answer	Rating	Answer	Rating
1. Are there any laws at national or local level that require consultation and participation with stakeholders outside the bureaucratic structures?	no	0%	yes	20%
2. Are there any procedures in place in which citizens participate in the siting of landfills or incinerators?	yes	20%	yes	20%
3. Is customer satisfaction of the waste management services at the municipal level measured?	yes	20%	no	0%
4. Are there any feedback mechanisms between service users and service providers?	yes/no	10%	no	0%
5. Are there any citizen committees in place that address waste management issues?	no	0%	no	0%
Overall rating		50%		40%
Qualitative assessment				

Table B.2 - Qualitative assessment of provider inclusivity

Qualitative assessment of provider inclusivity	AMA response		MLG response	
Question	Answer	Rating	Answer	Rating
1. Are there any laws at national or local level that encourage public–private participation (PPP), private sector participation (PSP) or the involvement of community-based organizations (CBOs) in municipal SWM	no	0%	no	0.0%
2. Are there any platforms or organizations that represent the private waste sector? (Formal or informal)	yes	17%	yes	16.7%
3. Is there evidence of formal occupational recognition of the informal sector active in waste management practices or recycling?	no	0%	yes	16.7%
4. Is there evidence of protection of informal-sector rights to operate in waste management?	no	0%	yes	16.7%
5. Are there any legal or institutional barriers for PSP in waste management?	no	0%	yes/no	8.3%
6. Are there institutional or legal incentives for PPP in waste management?	yes	17%	yes/no	8.3%
Overall rating		33%		66.7%
Qualitative assessment				

Table B.3 - Qualitative assessment of institutional coherence

Qualitative assessment of institutional coherence	AMA response		MLG response	
Question	Answer	Rating	Answer	Rating
1. Are there any sustained policy commitments to sustainable solid waste management?	yes	16.7%	yes	16.7%
2. Is there a clear and transparent policy framework for the planning and implementation of waste management practices?	yes	16.7%	yes	16.7%
3. Are authorities allowed to retain the revenues collected from municipal fines and charges or to levy direct charges for services?	no	0.0%	yes/no	8.3%
4. Are the out-sourced municipal waste collection services defined, supervised and controlled by municipalities?	yes	16.7%	yes	16.7%
5. To what degree is the solid waste budget directly controlled by one responsible department?	high	8.8%	low	0.0%
6. To what degree does this department have management control?	mediu m	8.3%	low	0.0%
Overall rating		67.2%		58.4%
Qualitative assessment				

Discussion of discrepancies

There are discrepancies between the ratings for Accra as stated by the Ministry of Local Government and Rural development as against the ratings for Accra by the AMA. The figures for the AMA were selected over those of the MLG. This is because the MLG official was unavailable when the research was being carried out. The questionnaires were therefore self-administered and thus there may have been some misunderstanding of the various questions. The AMA deals directly with waste management companies and is believed to be closer to the waste management function. These two factors informed the decision to select the AMA response over that of the Ministry of Local Government.

Collection coverage and Controlled disposal

The figures for collection coverage and controlled disposal were provided by the Waste Management Division of the Accra Metropolitan Assembly

Financial sustainability

Financial sustainability is the product of households who use and pay for collection services. Roughly all households which use waste collection services pay for these service hence a figure of 49% is obtained (70% of 63% = 44%)

Recycling rate

Organization	Quantity of material recycled per month in metric tonnes	Materials recycled	Proportion of waste generated in Accra	Total quantity of recycled material from Accra
ACARP	15000	Plastics and organic material	50%	7500
Bel Aqua	200	Plastics (water sachet/HM)	50%	100
City Waste Management	37.5	Plastics	100%	37.5
Skyplast	150	Plastics (HDPE, LDPE, PET), rubber	100%	150
2 Informal recyclers	50	Plastics (HDPE, LDPE, PET)	100%	50

Source: Field data

Total waste produced daily in Accra	3000
Estimated portion of waste recycled	313.5
Recycling rate	10%

Source: Field data

The research carried out using only 6 of 10 identified recycling companies yielded a 10% recycling rate. This is indicative of the potentially large recycling industry, given that this study did not measure the recycling of materials like metals and tyres.

A challenge faced was distinguishing waste recycled in Accra. The volume of waste generated in Accra was readily available, but the waste flow of waste made it difficult to quantify the exact volume coming from Accra.

It was assumed that all minor informal recycling companies in Accra only sourced waste produced in Accra. Formal companies outside Accra were assumed to source half of their waste from Accra.

Quantities of waste recycled were collected in either daily, weekly or monthly estimates from respondents. Figures were converted into monthly estimates to obtain a common period for addition. The sum was then converted to daily figures to find a daily recycling rate.

Appendix C – Social enterprise activity in waste management

Company	Place of operation	Start of operations	Legal form	Employees	Volumes collected/treated	Main activity
Zanrec	Zanzibar (Tanzania)	2011	Private limited liability	15	5 tonnes/month	Collection and resale of waste plastic and other recyclables
EcoPost	Nairobi (Kenya)	2009	Private limited liability	24	20 tonnes/month	Manufacturing and sale of fence posts made from waste plastic
WeCyclers	Lagos (Nigeria)	2012	Private limited liability	42	25 tonnes/month	Collection and resale of waste plastic and other recyclables
Proplast	Thies (Senegal)	2010	Private limited liability	15	50 tonnes/month	Processing and resale of waste plastic

Company	Place of operation	Start of operations	Legal form	Employees	Volumes collected/treated	Main activity
Taka Taka	Nairobi (Kenya)	2011	Private limited liability	60	150 tonnes/month	Fully integrated waste management service sales of recyclables Production and sale of compost

Source: Roberts, n.d.; Barazzetta, 2015

Appendix D – Allocation of waste management companies to sub metros

Zone/sub metro	Company
Okaikoi North	Yafuru Waste
Okaikoi South	J Stanley Owusu
Ayawaso East	ABC Waste
Ayawaso West	Zoomlion
Ayawaso Central	Zoomlion
Ablekuma Central	Zoomlion
Ablekuma North	Asadu Royal Waste
Ablekuma South	Liberty Waste Ltd
Osu Clottey	Jekora Ventures
Ashiedu Keteke	Meskworld

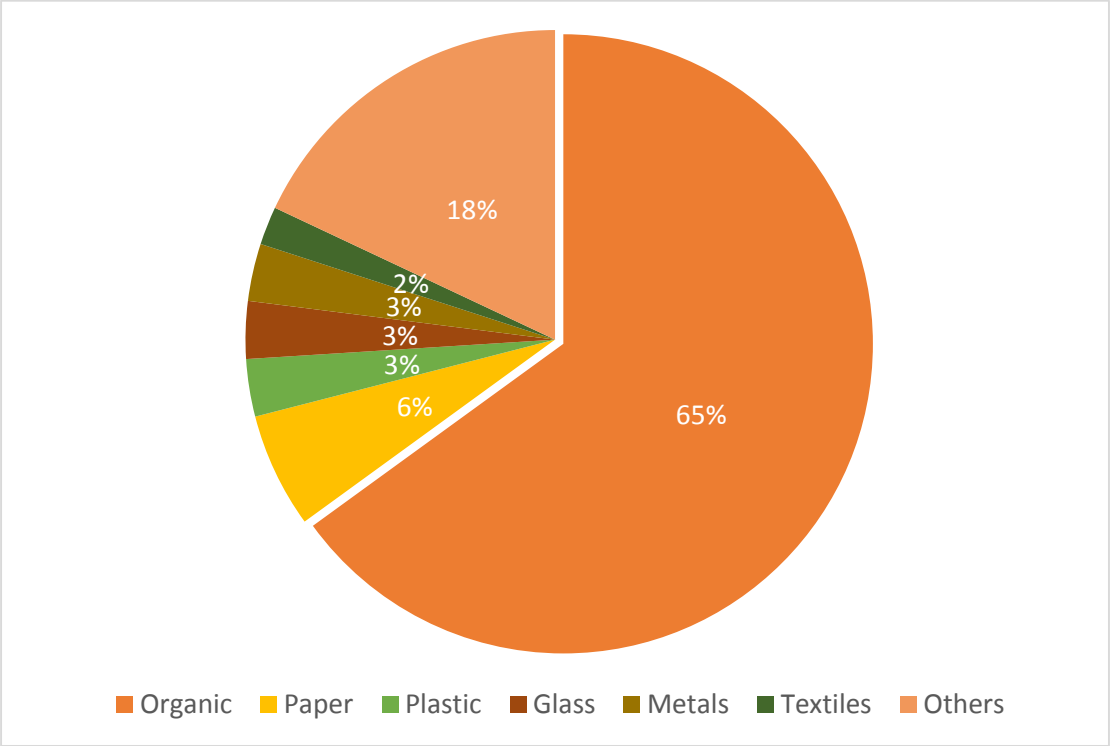
Appendix E – Company profiles

Company name	Start of operation	CEO	Mission	Vision
Zoomlion	2008	Mr. Joseph Siaw Agyepong	To be at the forefront of the environmental sanitation services industry, by the introduction and utilization of simple but modern technologies and methods of waste management at affordable and competitive rate	Champion of clean, green and healthy Communities
J Stanley Owusu	2001	J Stanley Owusu	Values: Our values are reflected in the way that we conduct our business and in the results that we consistently achieve for our clients. We believe that communities will benefit as we do the right thing for our clients.	

Company name	Start of operation	CEO	Mission	Vision
Asadu Royal Waste	2002	Edward Asadu	To be the most efficient collector and disposal of waste in Ghana. To play a vital role in solving the waste problems in Ghana.	To help in providing a clean environment for all Ghanaians. To help in improving waste management standards and trends regionally and nationally. To Promote Waste Management Technology in Ghana. To provide cost effective waste management system. To educate and promote sustainable environmental practices and options.

Company name	Start of operation	CEO	Mission	Vision
Jekora Ventures	2003	Ben Laryea	To deliver operationally efficient, cost effective and affordable services and products, through application of appropriate technology and innovation, to our cherished clients, by creating wealth through resource recovery and promoting a sustainable environment	To be the leading integrated waste management and resource recovery company Improving Ghana's environment and public health
ACARP Accra Compost and Recycling Company	2012	Dr. Richard Amponsah	To provide an effective integrated processing, management and recycling of solid and liquid waste, for economic and social good in an environmentally sustainable manner, thereby producing compost and other products for the Ghanaian and African economy.	To be the leading waste processing and recycling organization in Africa

Appendix F – Composition of waste in Accra



Source: Field data

Appendix G – Map of Accra

Source: (Ghana Statistical Service, 2014)

Appendix H – Data collection instruments

UN Habitat ISWM assessment

Subject – Official of Accra Metropolitan Assembly/ Ministry of Local Government

Qualitative assessment of user inclusivity

Question	Answer	Rating	comment
Are there any laws at national or local level that require consultation and participation with stakeholders outside the bureaucratic structures?			
Are there any procedures in place in which citizens participate in the siting of landfills or incinerators?			
Is customer satisfaction of the waste management services at the municipal level measured?			
Are there any feedback mechanisms between service users and service providers?			
Are there any citizen committees in place that address waste management issues?			
Overall rating			
Qualitative assessment			

The question for each criterion is first answered as ‘Yes’, ‘Yes/No’ or ‘No’; this is then translated into a numerical rating (20% for a ‘Yes’, 10% for a ‘Yes/No’ and 0% for a ‘No’), and the overall rating is then translated back into a qualitative assessment by summing the ratings: ‘high’ (> 71%), ‘medium/high’ (61–70%), ‘medium’ (35–60%) or ‘low’ (< 35%).

Qualitative assessment of provider inclusivity

Question	Answer	Rating	comment
Are there any laws at national or local level that encourage public–private participation (PPP), private sector participation (PSP) or the involvement of community-based organisations (CBOs) in municipal SWM			
Are there any platforms or organisations that represent the private waste sector? (Formal or informal)			
Is there evidence of formal occupational recognition of the informal sector active in waste management practices or recycling?			
Is there evidence of protection of informal-sector rights to operate in waste management?			
Are there any legal or institutional barriers for PSP in waste management?			
Are there institutional or legal incentives for PPP in waste management?			
Overall rating			
Qualitative assessment			

The question for each criterion is first answered as ‘Yes’, ‘Yes/No’ or ‘No’; this is then translated into a numerical rating (16.7% for a ‘Yes’ where there are six criteria, 8.3% for a ‘Yes/No’ and 0% for a ‘No’), and the overall rating is then translated back into a qualitative assessment: ‘high’ (>70%), ‘medium/high’ (61–70%), ‘medium’ (35–60%) or low (< 35%).

Qualitative assessment of sound institutions and proactive policies ('institutional coherence') in Accra.

Question	Answer	Rating	comment
Are there any sustained policy commitments to sustainable solid waste management?			
Is there a clear and transparent policy framework for the planning and implementation of waste management practices?			
Are authorities allowed to retain the revenues collected from municipal fines and charges or to levy direct charges for services?			
Are the out-sourced municipal waste collection services defined, supervised and controlled by municipalities?			
To what degree is the solid waste budget directly controlled by one responsible department?			
To what degree does this department have management control?			
Overall rating			
Qualitative assessment			

The question for each criterion is first answered as 'Yes', 'Yes/No' or 'No'; this is then translated into a numerical rating (16.7% for a 'Yes' where there are six criteria, 8.3% for a 'Yes/No' and 0% for a 'No'. Questions regarding degree will be reported as high, medium or low), and the overall rating is then translated back into a qualitative assessment: 'high' (>70%), 'medium/high' (61–70%), 'medium' (35–60%) or low (< 35%)

AMA/MLG

How much waste is produced daily in Accra in tonnes?

_____

How is waste disposed? ☐ Dumping ☐ Landfilling ☐ Recycling ☐ Reuse ☐ Other

_____

How many landfill sites are there in Accra? _____

What is their capacity? _____

What is the lifespan of the existing landfill sites? _____

Are there any plans for expansion of landfill sites? Yes/No

What type of treatment is done at land fill sites? _____

Is there any available information on historical composition and trends in waste delivery and production? _____

What are some challenges facing waste management in Accra? _____

Waste management companies

Do you collect any information on the composition of waste? Yes/No

If there is, what is waste composed of? _____

What are the proportions? _____

Please provide a summary of

Areas covered - _____

Amount of waste collected - _____

How frequently does your company collect rubbish?

☐ Daily ☐ Weekly ☐Bi-weekly ☐ monthly ☐other

How frequently do you collect rubbish from skips?

☐ Daily ☐ Weekly ☐Bi-weekly ☐ monthly ☐other

Are there any hindrances to your collection activities? _____

How would you rank your freedom of decision on how to operate?

☐ Very free ☐ relatively free ☐ not free

Do you see public sector as an enabler? Yes/No Please explain

How do your clients pay for your services? _____

Do all your clients pay? Yes/No

If you answered no to the last question, what percentage of them pay?

Do people pay on time? Yes/No

How can your services be aided by government and households? _____

Social enterprises

How long have you been in the field of social entrepreneurship?

☐ Less than 1 year ☐ between 1 and 5 years ☐ Over 5 years

What are the main challenges faced as a social enterprise in Accra?

_____

In your opinion, what is the greatest barrier to entering an industry as a social entrepreneur? _____

What are your main sources of funding? Tick all that apply and rank them based on volume ☐Ploughed back profit ___ ☐ borrowing from 3rd parties ___

☐ Donor funding ___ ☐ other ___

How available are sources of donor funding?

☐ Easily available ☐ sufficiently available ☐ relatively unavailable ☐ Unavailable

Do you want to expand on your answer above? _____

What are the main advantages of operating a social enterprise in Accra?

_____

What is your perception of willingness of people to volunteer regularly for a cause?

☐Willing ☐ willing but uninformed ☐ slightly interested ☐ Unwilling ☐ No idea

What are the key factors you consider before entering a line of business?

☐ Existence of a need ☐ internal capabilities ☐Both ☐ Other_____

Do you believe that there are opportunities for social entrepreneurs in waste management in Ghana? Yes/No. Please explain

Recycling companies

How much waste do you recycle daily/weekly/monthly/annually? _____

What are your chief sources of recyclable material?

☐ Self-collection ☐ Individual collectors ☐ Aggregators

☐ Other ☐ Waste companies ☐ Kindly state other sources and rank

What are your outputs in terms of materials? _____

What incentive do you give to resource providers? _____

What materials do you collect to recycle? _____

☐ Organic waste	☐ Paper	☐ Metals
☐ Plastics	☐Electrical components	☐ Textiles
☐ Glass	☐ Biohazardous waste	☐ Other

Informal sector collectors and aggregators

Are there any networks of collectors and waste pickers on dumpsites? Yes/No

What categories is waste grouped into?

_____

What materials do you collect to recycle?

☐ Organic waste ☐ Paper ☐ Metals ☐ Plastics ☐Electrical components ☐ Textiles ☐ Glass ☐ Biohazardous waste ☐ Other

How do you collect waste?

☐ House to house ☐ Scavenging ☐ Dumpsites ☐ Other

Where do you deposit waste collected?

_____

What is the estimated amount of waste collected daily/weekly/monthly?

_____

Describe your typical collection processes.

_____

_____

Interview with secretary of the Borla Taxi Association

Stakeholder segment - Informal sector waste collectors

How many drivers are in the association?

How old is this organization?

Which areas do your drivers operate?

Where do your operators dump waste they collect?

Is this union recognized by the government?

What are the requirements to join the union?

Are there rubbish collection carts that are not under the association?

Will the other cart drivers join the union?

Are there any plans for expansion of your services?

Focus group discussion with officers of Songhai Advisory LLP

Stakeholder segment – Social Enterprise (SE)

Q: What is the nature of your work with Social Enterprises (SE)?

Q: Which sectors do you see SEs gravitate towards?

Q: Are SEs looking for problems to solve or are they using their skills to solve problems that they see?

Q: Are there any benefits of being an SE?

Q: What are some of the greatest challenges they face?

Q: What are their main sources of funding?

Q: What are your insights on volunteerism in Ghana?

Q: Are there any areas that SEs should explore more? Which?

Q: Are there any SEs which can contribute to this research?