UNIVERSITY OF CAPE COAST

A SOCIOLOGICAL STUDY ON SOLID WASTE MANAGEMENT PRACTICES IN THE BIRIM NORTH DISTRICT, GHANA

BY

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DECLARATION

Candidate's Declaration

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

Candidate's Name: Samuel Antwi

Signature:..... Date.....

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Name: Dr. William Boateng

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ABSTRACT

This work looks at solid waste management practices in the Birim North District, Ghana. The study used political economists' perspectives in provision and management of public service to analyse waste disposal practices in the study communities. The aim was to explore factors responsible for indiscriminate dumping and burning of domestic waste in the Birim North District and suggest solutions to address the problem.

Methodologically, the qualitative approach was used to select 87 participants to participate in the study. Sampling methods used were purposive, convenient and accidental sampling. Interview, focus group discussion and personal observation were the tools used to collect data. Themes formed from the data collected in respect to the research objectives informed the analysis.

The study revealed that waste is dumped and burnt indiscriminately in the study communities and factors responsible for it are that distance between homes and waste dumps is far, waste materials and equipment are inadequate, waste education campaigns are not effective and inadequate funds have also prevented the District Assembly from regular transportation of the skip containers when the containers were full with waste. Hence the thesis recommended that, the Assembly should provide more waste bins to the communities if possible for every ten houses should have one mobile waste bin in each community to help reduce indiscriminate household waste disposal practices. Also, the Assembly should embark on effective waste education campaign to help reduce indiscriminate waste disposal practices.

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DEDICATION

I dedicate this thesis to my supervisors who took great time to direct and guide me through the entire period of working on this thesis.

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ACRONYMS

AMA	Accra Metropolitan Assembly
CBOs	Community-Based Organizations
DCE	District Chief Executive
EPA	Environmental Protection Authority
ERP	Economic Recovery Programme
FCS	Focus Community Strategies
GERAD	Groupe D' Etude de Recherchet D' AU Developpement
IGF	Internally Generated Funds
KNCPC	Kenya National Cleaner Production Centre
LPG	Liquefied Petroleum Gas
MLGRD	Ministry of Local Government and Rural Development
NGOs	Non-Governmental Organizations
NESSAP	National Environmental Sanitation Strategy and Action Plan
OECD	Organization for Economic Cooperation Development
PPP	Public Private Partnership
SAP	Structural Adjustment Programme
TAMA	Tamale Metropolitan Assembly
UN	United Nations
UNEP	United Nations Environment Programmes
UNICEF	United Nations Children's Fund
USA	United States of America
WSP	Water and Sanitation Programme

CHAPTER ONE

INTRODUCTION

Background to the study

Waste has become a global challenge due to increase in its generation, risk it poses to the environment, human life and cost of its management. United Nations Environment Programmes (UNEP, 2009) estimated global waste generation in 2006 at 2.02 billion tonnes representing seven percent increase of all global waste generated in 2003, 2004, and 2005. Currently, an estimated 11.2 billion tonnes of solid waste is collected yearly (UNEP, 2014). This colossal increase in waste generation is due to modernization of the global economy (UNEP, 2014). If this figure is anything to go by, then it is five times the figure the same organization presented about eight to nine years ago and because experts put waste generation rate above collection rate waste generated globally can be projected above this figure.

In terms of regional distribution, the Organization for Economic Co-operation and Development (OECD) estimated that industrialized countries generate between 500 to 750 kilograms of solid waste annually per person. For instance, Denmark and United States of America (USA) generate 520 to 730 kilograms of solid waste respectively per person per annum (OECD, 1997 cited in Taylor & Allen, 2006). Asia produces an estimated 760,000 tonnes of municipal solid waste daily (World Bank, 1999). Sub-Saharan African countries generate approximately 62 million tonnes of waste per year (World Bank, 2012). Comparisons of the above-mentioned figures without recourse to

differences in time even make Africa the lowest waste generator among the other continents and one of the reasons responsible for this phenomenon could be attributed to the continent's [Africa] low resource consumption even though many of the raw materials are extracted from the continent.

In Ghana, the five major cities (Accra, Kumasi, Takoradi, Tamale and Tema) produce about 3,200 tonnes of solid waste per day (Ministry of Local Government and Rural Development, Environmental Health and Sanitation Directorate, 2010) and other 105 urban towns generate about 5,000 tonnes of waste daily. Accra with estimated population of 3,900,000 produces about 2,000 tonnes of solid waste per day (Annepu & Themelis, 2013). Approximately, 75 percent of this waste is collected and disposed of at the Achimota dumpsite while 25 percent is left uncollected (Annepu & Themelis, 2013). A study conducted by Puopiel (2010) in Tamale Metropolitan Area (TAMA) revealed that daily waste generation in the metropolis amounted to 810 tonnes of which 216 tonnes is collected and 594 tonnes is left uncollected. Once waste is a function of urbanization, population increase and economic activities waste generation in Ghana is likely to increase because population in cities in Ghana is increasing and also more and more communities are rapidly becoming urbanized.

Globally, the cost of waste management is having a huge toll on public purses. For instance, city authorities spend some 205.4 billion dollars annually on waste management (World Bank, 2012). This figure is likely to increase to about 375.5 billion dollars in the next decade (World Bank, 2012). Asian countries generate about 760,000 tonnes of waste daily and spend about 25

billion dollars yearly to manage it (World Bank, 1999). By the year 2025 the amount of money spent on waste management in Asia would have exceeded 50 billion dollars because by that time daily waste production in the region would have reached over 1.8 billion tonnes (World Bank, 1999). Locally, the Accra Metropolitan Assembly (AMA) spent about 82 percent of its 2008 annual budget on waste management and in 2013 waste management cost it some 3.45 million dollars (Annepu & Themelis, 2013). Also, in 2009 the Tamale Metropolitan Assembly (TAMA) spent 42.8 percent of its total revenue on waste management (Puopiel, 2010).

One would have expected that with these investments in waste management the waste menace would be drastically reduced if not eliminated and cities in Ghana should have been cleaner for other urban areas and villages to emulate their examples to minimize the negative effect of waste. However, the reality is that filth has engulfed Ghana, especially poor and densely populated areas and one of the consequences is the June 2014 cholera outbreak in the country which killed 110 people out of the 12,622 cases recorded (the Ghana Health Service, Disease Surveillance Department, 2014).

Once waste management has proven to be a herculean task in the country in spite of efforts to contain it, identification of some traditional waste management practices may assist in our efforts to address the situation. In many traditional Ghanaian societies, especially places without electricity, bedrooms are not swept in the night and even if they are swept the waste is not disposed of till morning because it is believed that one may sweep his or her valuable or expensive personal belongings in addition to the waste. Also, in

many communities compounds are cleaned at dawn mostly by women because it is a cultural norm that household waste should be cleared before day breaks to avoid any embarrassment to the family if an unexpected visitor were to call at the house in the morning.

A study conducted by Rahman (2009) at villages in Mymensingh in the Brahmaputra Basin, Bangladesh revealed that the villagers recycle cow dung, vegetable refuse, wet straws and green grasses as compost to increase crop yield. Also, ashes were used as manure to improve soil fertility and to control pests and diseases. In Ghana, many rural communities use communal labour to clear waste, desilt streams and dig pits to serve as landfills and public latrines. In towns and cities residents and corporate organizations organize clean up exercises on ad hoc basis to desilt choked or clogged gutters and clear waste. The social interaction and network formed at these gatherings could be harnessed in the fight against indiscriminate waste disposal practices in the country but unfortunately not much benefit has been realized from this practice. For instance, in Atlanta, USA, a formalized community group, Focus Community Strategies (FCS) formed in the late 1970s has become a focal point members rally around to clear waste and plant trees to beautify the city on community work days (Sheppard, 2012). Many people in Atlanta refer to this practice as "Green my hood" (Sheppard, 2012).

In the case of Vietnam, representatives of various women's groups at Minh Khai village in 1999 formed their own local waste management association to collect refuse, dead animals, sweep streets and remove tree branches to improve the quality of their environment. Heads of the various

women's groupings registered their members to participate and get their waste collected by local "dust-cart-pushers" for a fee which is paid twice a year (Richardson, 2003). Community meetings are used to address issues such as itinerary of collection, free riding and payment (Richardson, 2003).

On the other hand, some traditional and religious beliefs can be a stumbling block to waste management. For instance, in some Ghanaian communities some people refuse the use of public latrines for fear of losing their psychic powers and or being bewitched or possessed by bad spirits (WaterAid, 2009). This kind of belief can partly explain why an estimated 4.8 million Ghanaians openly defecate (Water Sanitation Programme (WSP), 2012; Addai, 2014). Hence no wonder cholera and other waste related diseases have taken some bread winners in some families and have left some children orphans.

Whereas many of the findings of waste and environmental research in Ghana are concentrated on poor waste management practices and the health complications of waste on poor neighbourhoods very little or nothing is said about effects of waste on social relations within and between poor communities and nearby affluent neighbourhood. For example, if one left his or her waste to decompose in a typical Ghanaian "compound house", the foul scent emitted from it (waste) inconveniences not only the owner who has refused to dispose of it for whatever reason but his or her neighbours. Also, if one dumps or burns waste indiscriminately it inconveniences neighbours. However, not much is said about how these actions affect social relations among residents of poor communities. For instance, does it cause quarrels?,

does it result in labeling or names calling? And how do co-tenants and the community relate to offenders if such actions are repetitive as Adepoju and Salimonu (2010) in their study in Osun State, Nigeria described those who dump waste indiscriminately as "dirty individuals" and Kenya National Cleaner Production Centre (KNCPC) (2006, p. 8) referred to residents of Nairobi as a "throw away society" who do not appreciate "clean and safe environment"?.

Poor waste management practices have negative impact on the environment and public purse (World Bank, 2012). They also affect human life and may be a recipe for social unrest (Moore, 2006; Mazinyo, 2009). On the basis of these observations our environment should be made cleaner to reduce the negative impact of waste. However, the reality is that not only has filth engulfed urban areas in many parts of the developing world but its management has become an albatross on the neck of city authorities (World Bank, 1999; Ramos, Vicentini & Ortega, 2012; World Bank, 2012).

Problem statement

Sight of uncollected waste overflowing large containers at central communal waste collection points waiting to be transported to landfills or dumpsite is very common in poor urban neighbourhoods (Kwame, 2010; Freduah, 2014). Not only do flies buzz around these wastes but also an overpowering stench emanates from them causing inconveniences to residents and passers-by. Dumping of waste indiscriminately into storm and sewage drains, open spaces and uncontrolled burning are also common practices in many parts of Ghana (Alhassan, Gabby, Arguello & Boakye-Boaten, 2010;

Kwame, 2010; Puopiel, 2010; Annepu & Themelis, 2013). A study conducted by Spencer (2012) at Prampram, a peri-urban area of the Accra Metropolitan Area revealed that 61 percent of the residents openly defecate when nature calls and 50 percent were not happy about the sanitation situation of their homes. Much of the literature reviewed points to these facts and it seems findings of most environmental studies in Ghana talk about the same facts (Wienaah, 2007; Fredua, 2014; Yintii, Anim-Gyampo & Braimah, 2014)

Residents' inability to pay for user fees of door to door waste collection services, poor services provided by the organizations responsible for waste management and inadequate funding and delay in payment by the Assemblies to private waste contractors are some of the factors responsible for indiscriminate waste burning and dumping in many parts of urban Ghana (Puopiel, 2010; Annepu & Themelis, 2013).

One of the factors that has compounded the situation is the distance between central communal containers and some homes. Alhassan et al (2010) estimated the distance between some homes and central containers in the Accra Metropolis at 450-500 meters. However, the maximum limit set by AMA is 150 meters (Alhassan et al, 2010). Thus it is a common practice for some residents to walk long distances before accessing a nearby central communal container.

In spite of numerous recommendations made by many Ghanaian environmental researchers such as Wienaah (2007) and Gambrah (2013) to reduce indiscriminate dumping the situation is increasing and a real solution seems to be eluding Ghanaians. For example, a recent visit to some

communities in the Birim North District revealed that waste is dumped and burned indiscriminately. Hence it is of no surprise that waste related diseases are rising in the District as the table culled from the District Health Directorate shows.

Table 1: Waste related diseases recorded in Birim North District between 2009 and 2011

Diseases	2009	2010	2011
Malaria	21,677	15,552	17,586
Tuberculosis	22	41	56
Diarrhoea	124	911	1,462
Intestinal Worm	210	533	1,148

Source: Birim North District Assembly's Budget (2012).

The above-mentioned factors responsible for poor solid waste management practices in some parts of Ghana may or may not hold for the same situation in the Birim North District. Therefore, the study seeks to explore factors responsible for poor domestic solid waste management practices in the Birim North District and suggest solutions to address the problem.

General objective

The main objective of the study is to explore factors accounting for poor domestic solid waste management practices in the Birim North District and suggest ways to resolve them.

Specific objectives

1. To identify traditional waste management practices in the study area.

2. To identify people in charge of domestic waste management practices in study area.
3. To assess residents' involvement in the Assembly's waste management formulation and implementation policies.
4. To explore effects of indiscriminate waste dumping and burning practices on social relations in the study area.

Research questions

1. What are the traditional waste management practices in the study area?
2. Who are the people in charge of domestic waste management practices in the study area?
3. Does the District Assembly involve residents in its waste management formulation and implementation policies?
4. How does indiscriminate waste dumping or burning practices affect social relations in the study area?

Significance of the study

The immigration into Birim North District especially the mining area since international firms started gold exploration in the area in 1997 and the activities of the local small-scale miners has resulted in population increase (especially in the mining communities). The mining communities in the District are fast becoming urbanized in terms of infrastructural development and the lifestyle of the indigenes. For instance, some international banks such as Ecobank and Barclays Bank and some rural banks have opened branches in New Abirem and Akim Afosu. Hotels of all kinds (some with facilities such as

heliport, golf course and swimming pool) are operating in the area. Pubs, supermarkets and restaurants have also sprung up.

As many experts in waste management such as Taylor and Allen (2006) have opined waste is a function of population expansion, urbanization, lifestyle choices and economic activities which [waste] affect the environment, human life and local government budget negatively. Thus it is no surprise that a recent visit to some of the communities in the District revealed that waste is dumped and burnt indiscriminately, especially in the communities affected by the mining activities. Hence the need to identify reasons responsible for such actions in the face of increasing population, booming mining activities and urbanization to arrive at recommendations to minimize its effects.

Also, the study will add to existing knowledge in the area of waste management which will assist other researchers working on waste related issues and policy makers who aim to rid our communities of filth.

Organization of the study

This study is divided into five chapters. Chapter One comprises background to the study, problem statement, objectives of the study, the questions the study seeks to answer and significance of the study. Chapter Two contains the literature review, theoretical and conceptual frameworks of the study. Chapter Three covers sampling frame and techniques, instrument for data collection and challenges of the study. Manual sorting and verbatim quotations of the research participants were used to analyse data collected in chapter Four and chapter Five consists of findings, conclusions, summary, recommendations and suggestions for further studies.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter consists of definition of key concepts and review of related literature on the study such as stakeholders' involvement in waste management practices and blueprint that guides waste management policies in Ghana. The chapter also covers the theoretical and conceptual framework of the study.

Definition of key concepts

Waste

Waste can be defined as any material which is of no use to the possessor or the owner and as such must be discarded. It can also be referred to as a by-product of human activity (Kreith, 1994 in Ackah, Carboo & Gyamfi, 2012). However, these definitions must not be taken in toto as someone's waste may be useful to another person and a by-product of some production processes maybe raw material for another manufacturer. For example, human excreta can be processed to produce gas. Thus there are scavengers who sort out waste to remove materials which may be reused or recycled to serve a useful purpose.

Waste can be grouped as solid, liquid or gas. Solid waste can be described as any discarded substance that one can hold, feel and touch. For example, scrap metals, e-waste, papers and leftover food items. Liquid wastes

are in water forms. For example, oil spillage and gaseous waste is mostly in vapour forms. Examples are gases emitted by plants, vehicle engines, and smoke from burning materials (Taylor & Allen, 2006). Whether solid, liquid or gas, waste is generated at domestic or industrial settings and it can be harmful to humans and the environment.

Waste can be classified in relation to its origin, for example, building and construction waste, institution and industrial waste, commercial and domestic waste. The classification can be based on its content, for instance, scrap metals, electronics, plastic, papers, glass and organic materials. Waste can also be classified according to its risk factors, for example, toxic or non-toxic, inflammable or flammable and radioactive wastes.

Tehobanogluos, Thiesen and Vigil (1993) categorized waste based on its origin and risk factor and came out with examples such as house waste, municipal waste (office waste, restaurant waste and street sweeping), commercial waste, non-industrial waste, hazardous (toxic) industrial waste, construction and demolition waste, health care waste, human and animal waste and incinerator waste.

The blueprint guiding waste policy in Ghana was drafted in 1999 by the Ministry of Local Government and Rural Development (MLGRD) and revised in 2010. The main tenets are the following:

a) Collection and sanitary disposal of waste, including solid waste, liquid waste, excreta, industrial waste, health care waste and other hazardous waste

b) Storm water drainage

c) Cleansing of thoroughfares, markets and other public spaces

d) Control of pests and vectors of disease

e) Food hygiene

f) Environmental sanitation education

g) Inspection and enforcement of sanitary regulations

h) Disposal of the dead

i) Control of rearing and straying animals

However, for the purpose of this study the focus of the discussion will be limited to solid waste generated at domestic setting (households' solid waste).

Waste management

Waste management generally depends on the nature of waste involved and the source it originates (Traylor & Allen, 2006). Construction waste is usually buried on construction sites (Taylor & Allen, 2006) and organic domestic waste is used to feed farm animals or process to produce manure (Rahman, 2009). Domestic solid waste which is the focus of this study is generally disposed of at the communal secondary collection points (Anschutz, 1996). Municipal solid waste management involves reduction, collection and transportation of waste to landfill or incinerating centre for disposal (Taylor & Allen, 2006; Medina, 2010; Puopiel, 2010).

Waste reduction involves separation, reuse or recycle (Taylor and Allen, 2006; Rahman, 2009). Separation can be done at source or centre for

disposal (Environmental & Public Health Organization, Nepal, WaterAid in Nepal & End Water Poverty Nepal, 2008).

Waste disposal

Waste disposal is one of the components of waste management. Some other aspects of waste management are collection, transportation, composting, segregation, reduction, reuse and recycling (Taylor & Allen, 2006). Waste disposal may or may not be the final life span of a discarded item since some disposables are retrieved for reuse or recycle others are not (Ackah et al, 2012). Waste disposal at national level mostly ends at sanitary or engineering landfill sites and incineration machines. According to Medina (2010, p.9-10) "incineration is the burning of waste under control conditions usually carried out in an enclosed structure and sanitary landfill is a facility designed specifically for final waste disposal that minimizes risks to the environment and humans".

Domestic solid waste which is the focus of the study is disposed of at either approved or unapproved locations (Yintii et al, 2014). Approved locations are communal dumpsites or secondary collection points where skips or metallic containers are located for households to depose of their waste for onward transportation to sanitary landfills. Unapproved locations are dumping at road sides, bushes, undeveloped land, gutters, storm drains, people's backyards, and open burning. These are practices many waste researchers such as Puopiel (2010) and Annepu and Themelis (2013) describe as indiscriminate waste disposal or poor solid waste management practices which is also the interest of this study. Factors responsible for indiscriminate waste disposal

practices are many some of which are irregular collection of waste at the secondary collection point or the communal skip containers due to logistical constraints, poor road networks and delay or non-payment of the services rendered by the private waste collectors on the part of the municipal authorities (Adepogu & Salimonu, 2010; Puopiel, 2010; Annepu & Themelis, 2013). Other factors include willingness to pay, level of households' income, distance between residences and secondary collection points (Adepogu & Salimonu, 2010; Yintii et al, 2014).

If factors espoused by Adepogu and Salimonu (2010), Puopiel (2010), Annepu and Themelis (2013) and Yintii et al (2014) are anything to go by, then indiscriminate household waste disposal practices are economic and political problem. For instance, if government has money provision of logistical support such as vehicles, tricycles, skips trucks and containers and other equipment to aid efficient waste management practices will be easily provided. Also, road networks will be improved to make every household accessible and payment of private waste collectors will be regular to ensure an efficient waste collection system. Also, financial constraints in most times could be stumbling block preventing government from embarking on regular public education campaign on sound environmental management practices to re-socialize residents on the need for cleanliness. On the other hand if households' level of income improves, residents can pay and demand quality waste collection service (door to door collection) to reduce frustration they go through in trekking long distance to dispose of their waste which compels some of them to dump waste indiscriminately.

Stakeholders' involvement in waste management practices

Waste generation is inevitable because it comes as a result of the need to meet our daily requirements of living (Garg, 2006) and that makes its management a recurrent activity requiring various stakeholders on board (Anschutz, 1996). Waste management starts at source and the source can be domestic, industrial, hospital and construction site. However, all these sources feed into the national waste management system. Waste management at national level involves many stakeholders some of which are city authorities, provincial or central government, non-governmental organizations (NGOs), community-based organizations (CBOs), private formal and informal waste collectors, households and donor agencies (Van de Kludert & Anschiitz, 2000). The roles these stakeholders play in ensuring clean environment may be direct such as collection, transportation, treatment, recycling and disposal while others play supportive roles such as education and funding to enhance efficient service delivery (Institutional Arrangement for Solid Waste Management, Pakistan, 2010).

International governmental and non-governmental organizations

International governmental and non-governmental organizations (NGOs) provide assistance to developing countries to achieve sound environmental management practices. In some cases they are responsible for formation, training and resourcing of local environmental NGOs. These local NGOs educate their communities on waste complications and the need to live in clean environment. Oxfam and Cooperative Housing Foundation have such organizations in N'Djamena in Chad and Abidjan in Cote d' Ivoire

respectively (Anschutz, 1996). The United Nations Children's Emergency Fund (UNICEF) provides assistance to the Karachi Administration Women's Welfare Society (KAWWS), a group of housewives in waste management in Karachi, Pakistan (Snel & Ali, 1999). NGOs provide invaluable services to informal waste workers, for example, they help them to educate their children formally, they [NGOs] assist them [informal waste workers] to form associations to serve as a tool to improve their working conditions and many a time provide them with basic health needs (Gotame, 2012). Advanced Locality Management, a local NGO in India helps participating communities to formulate and implement sound environmental management practices that reflect local needs and capabilities and by so doing the communities involved are responsible for their own waste management practices (Gotame, 2012). International governmental and non-governmental organizations also fund environmental research in developing countries to help get the needed information to plan, implement and evaluate waste policies that make use of available local resources to reduce cost and to ensure sustainable environmental management practices. However, activities of some NGOs in waste management are sometimes flawed with financial malfeasance. For example, in some cases money meant for waste management ends up in private pockets or pays high salaries of staff, buys expensive cars and pays bills of air-conditioners. Thus the money does not reach the designated community to effect the change it was intended. Also, the activities of some waste NGOs end at experts' conferences, workshops and discussions with or without invitation of the local people to the discussion table.

Local government

Local and central governments play significant role in waste management practices (Wienaah, 2007; Eugene & Busch, 2011; World Bank, 2012). They receive aids from the donor agencies to formulate, implement and evaluate good waste management practices and they draft sound environmental policies to ensure good environmental governance. Local government waste management services in most cases are free and cover the poorest in society (Practical Action Nepal, 2008; Oberlin, 2012; Annepu & Themelis, 2013). Thus without local government the poorest of the poor living in densely populated areas will not receive any sanitation services (Annepu & Themelis, 2013). However, local governments in developing countries are gradually failing to collect heaps of waste cities and urban dwellers generate due to population expansion, urbanization and changing nature of waste produced (Nyakaana, 1997; Moore, 2006; Adepogu & Salimonu, 2010; WSP, 2011; Ramos et al, 2012; World Bank, 2012). The problem is well pronounced in poor urban communities which have poor road networks making some households inaccessible to waste trucks and what has compounded the situation is residents' inability to afford the services of informal waste collectors using pushcarts (Oberlin, 2012; Annepu & Themelis, 2013).

Moreover, hitherto when waste management was in the hands of communities, waste did not pose any threat to the environment and human life (Gotame, 2012). For example, rural communities use indigenous knowledge to reduce, reuse and recycle their own waste (Rahman, 2009). The starting point of waste management related problems in small cultures maybe attributed to

when society starts evolving and moving on an upward trajectory to gentrification and waste management responsibility placed on local government (Gotame, 2012). One of the problems associated with the taking over of waste management by local government is that some people no longer feel the need or obligation to clean their environment and expect government to clean it from revenues realized from their taxes (Gotame, 2012). A study conducted by Aprilia, Tezuka and Spaargeren (2012) in Jakarta, Indonesia revealed that 47 percent agreed that waste management is shared responsibility between government and the people while 49 percent also believed that waste management is the sole responsibility of government. One of the inferences one could draw from this tied percentage finding is that the perception of the public as whose responsibility waste management lies (whether residents or government) is not clear. Thus there is confusion as to who cleans municipal waste. Therefore, the need for vigorous public re-orientation or socialization on waste management practices to get all hands on deck to address the situation.

Environmental health officers

Environmental Health Officers, popularly known in Ghana as "tankas" are government agents who move from community to community to enforce sound environmental management practices at the household level. They act as "social fact" that constrains people to comply with sanitation by-laws of the local government in Ghana because of the fines they impose on households if they fail to adhere to good sanitation practices. Their [Environmental Health Officers] presence alone exerts some influence on people which forces

residents to comply with good sanitation practices (Mariwah, 2012). However, their influence is waning due to their insignificant number in ratio to the population. Currently, there are 5,000 sanitary inspectors for a population of over 25 million and they are poorly resourced in terms of retraining and logistical support making them virtually invisible and ineffective (B. Ashalley, Assistant Chief Environmental Health Officer, Ga West Municipal Assembly, personal communication, November 14, 2014).

Formal waste contractors

Formal waste contractors help local governments to collect city and urban waste (Annepu & Themelis, 2013). Their services have been described by Poupiel (2010) and Ahsan and Zaman (2014) as effective and efficient as it involves door to door regular collection of waste. However, because their efficient service is characterized by "pay as we collect" (profit motive) it is limited to the gentries and the middle class living in well planned residential areas marginalizing the poor who do not have the political influence and economic power to demand good service but need it most (Spencer, 2012). For example, the services they provide at poor urban areas are inefficient as waste is left uncollected for weeks because government has failed or delayed in payment of services rendered previously (Kwame, 2010; Annepu & Themelis, 2013). As Kendie (1999 in Mariwah, 2012, p.296) put it, due to financial difficulties "the metropolitan authorities handle the rich less badly than the poor".

Informal waste collectors

Informal waste collectors use basic equipment such as pushcarts, wheelbarrows, tricycles to ply their trade (Oberlin, 2012). They fill the blank left by the government and formal private waste collectors as they can access the inaccessible areas with their basic equipment to reach and service the marginalized in society (urban poor). Characteristically, their status in society is low, most of them are poor and marginalized people who depend on waste picking or scavenging for survival (Muhammad & Manu, 2013). According to Rapten (1998) cited in Mazinyo (2009) they are poorly educated, disorganized and labeled in developing countries as "rats", "ants" "vultures" and "walking garbage". Despite these tags and social stigmatization, waste picking employs about two percent of the urban poor in Asia (Madina, 2000 in Muhammad & Manu, 2013). In Nepal the low caste, Kuchikars (cleaners) are minority group responsible for waste picking jobs even though hitherto that was not the case (Gotame, 2012). Waste management was the responsibility of all Nepalese before a former Prime Minister, Chandra Shamsher created "SafaiAdda" (sanitary office) and allocated waste collecting work to the low caste (Gotame, 2012). This action by the Prime Minister changed people's perception about waste. Thus people whose cast is not low do not feel any obligation toward clean environment because they consider waste management as other people's job (Gotame, 2012). Pokhrel and Viaraghavan (2005) also noted that designating waste management to a certain group has not only changed the habit of some people but has also stopped some people from cleaning their own wastes. In India, informal waste picking business in some communities reflects specific local needs and demand and put food on the table for colossal

number of the urban poor working in this sector. But the conditions of service of workers in this sector are poor (Sarkar, 2003). This is because most of them are poverty ridden immigrants from rural areas without formal education (75 percent illiterates) and as such they are exploited as a result of their vulnerable background (Sakar, 2003). As Gan (2012, p. 116) put it "The abundant availability of poor people ensures that society's dirty work is done cheaply".

In terms of gender, 76 percent of informal waste pickers in India are males, few women and young girls work as waste pickers (Sakar, 2003). This is because most of the workers (52 percent) are Muslims and Muslim families do not allow their females to work outside the family (Sarkar, 2003). Also, waste picking is the fourth largest occupation for street children in India as 24 percent of children engage in it (Sarkar, 2003). According to Muhammad and Manu (2013) few women who engage in scavenging mostly retrieve items that are not heavy which required less energy for their retrieval and cash value from the sales of these items is meager. Also, items retrieved by women are plastics, textile sand cooking utensils of which they use personally in most cases. However, in Hochiminh city women move from house to house to purchase solid waste for sale to men who also resell it to recycling firms through other middlemen (Menhra et al, 1996 in Muller & Scheinberg, 1997). In Hochiminh's case even though women are involved in the waste business they are at the bottom of the "scrap dealing" work chain which requires much energy (trekking long distance in search for scraps) and the risk involved is high. Also, in Abidjan, Cote d' Ivoire waste picking is in the hands of poor and low educated immigrant women who make living and support their families through income they generate from waste extracted on the streets and

dumpsites (Brechbuhl, 2011). Women in waste picking face so many discriminations some of which are if a woman waste picker wants to upgrade her business to micro enterprise (purchase equipment, chemicals and employ labour to expand her business) she faces real problems such as lack of access to credit facilities and family support (Muller & Scheinberg, 1998). Women who brave the storm to set up micro waste enterprises work in the area requiring less technical knowledge and capital investment (Muller & Scheinberg, 1998). In most cases such women belong to the upper class and they receive support from NGOs (Muller & Scheinberg, 1998). The impressions the above literature on informal waste pickers create are that waste pickers are extremely poor, they come from minority ethnic groups, they lack skills to be engaged in the formal sector of the economy and as a result of that they are in waste picking not by will but by their inability to secure "white colour jobs" making people look down on them. Moreover, the situation of women in waste picking business is more deplorable than men. They are worse off in relation to men because of the discriminations they face in the course of their work.

Community-based organizations

Community involvement or participation in waste management can be seen in various forms. It could be contribution of cash, labour or ideas in provision of proper waste management practices of a place. The highest form of community participation is its involvement in decision-making on provision of public service and its day-to-day administration (Anschutz, 1996). Anschutz (1996: p.5) defines community management as "a situation in which

a community takes the responsibility for, obtains authority over and carries out control on operation … and maintenance of a service benefiting its members". Hence community management does not only involve consultation of the various interest groups within a community but also provision of adequate information to empower all groupings to make informed choices during decision-making process of issues that affect their life.

Community or public participation in waste management is sometimes seen in the area of Community-based organizations (CBOs) involvement in waste management with or without a helping hand from municipal authority and international organizations. CBOs can be described as an association of residents of local neighbourhoods who are in concert to fight for the interest of their community regardless of ethnic, political and religious affiliation. In terms of waste management practices, CBOs perform communal labour or clean up exercises to rid filth from their community (Sheppard, 2012). CBOs also engage the services of private waste collectors to collect waste from members' homes or communal collection (transfer) points to stop waste from stockpiling in the community (Anschutz, 1996; Ali & Snel, 1999; Garg, 2006; Squires, 2006). Poor road networks in poor densely populated areas in developing countries make it difficult for waste trucks to access these communities and most of the time waste in these areas is not collected by municipal waste trucks. The advent of CBOs has helped reduced this problem. This is because CBOs engage services of "push carters" to reach people living in remote areas which are not accessible by municipal waste trucks in the city making their operations inclusive of the marginalized in society (the poor) (Oberlin, 2012).

Participation of community members in waste management practices such as source segregation, composting, payment of waste collection fees and the use of traditional and opinion leaders to enforce compliance if a community member violates municipal bye-laws on sound environmental management practices is another dimension of community waste management. For instance, women's groups at Minh Khai village, Vietnam use community meetings to check free riding and plan waste collection itinerary so that members know when and where to place their waste for collection and the amount to be paid (Richardson, 2003). A study conducted by Oberlin (2012) on the use of CBOs in solid waste management at Kinondoni, Da es Salaam in Tanzania revealed that influence of the traditional and local opinion leaders is used to enforce agreements pertaining to payment of services rendered by pushcarts informal waste collectors if a household defaults in payment. The study further revealed that activities of the CBOs run smoothly in the area where the local leaders are active in the management of community-based solid waste management. On the basis of this, Oberlin (2012) concluded that this is so because the people respect and obey the opinion of their leaders.

Velasquez, Yashiro, Yoshimura and Ono (2005) and Squires (2006) trace community participation in waste management to the aftermath of the United Nations (UN) conventions on environment such as UN conference on Human Environment in Stockholm in 1972 and Chapter 21 of Agenda 21 of UN conference in Rio de Janeiro in 1992. Principle 10 of the 1992 Rio de Janeiro Conference stipulates that: "*Environmental issues are best handled with the participation of all concerned citizens, on a relevant level. On a national basis, each individual should have appropriate access to information*

concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States should facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy should be provided."

Thus the declaration has made it imperative for governmental institutions responsible for environmental management to include the public in their quest to ensure sustainable environmental management practices. This is so because the benefits that will be accrued to society if all members of a community participate in environmental management are enormous. According to Furedy (1989) "self-help-effort" has proven to be successful in provision of social and public health facilities such as schools, latrines and solid waste transfer depot in small communities. Community participation in solid waste management ensures that decisions taken reflect local needs and conditions, members' priority and capacities are fully utilised and as such effective and efficient service delivery is guaranteed (Anschutz, 1996). As Gotame (2012, p.4) puts it "Community participation is considered important because it is believed that the involvement of the community in an activity like waste management helps them decide about their life and the issues that affect their daily life. It is also believed that community participation gives efficiency and effectiveness to the work. It helps them decide their priorities".

CBOs in waste management enforces social obligation on members on the need to clean their environment and abide by good sanitation practices collectively (Snel & Ali, 1999; Oberlin, 2012) and by so doing, it gives

community members a sense of responsibility toward their surroundings. Public participation in waste management also ensures that the poorest in society are not excluded from waste management services to live in filth and it creates employment for many, especially the poor (Squires, 2006). According to Anschutz (1996) waste generation and management are recurrent events and to keep waste management running requires that public participate in its segregation, storage in specific bins and bringing it to an agreed point to be transported to disposal or recycling sites. Without public involvement in these activities, it will be difficult to execute waste management plans successfully.

On the other hand, English (1996) criticised public participation process for fuelling conflicts between agencies and public adding that participation consumes time unduly. According to Gotame (2012) participation without contextual analysis of socio-political and economic background of all beneficiaries of a social policy leads to marginalization of the weak and poor. Hence participation without proper examination of power differentiations and relations of a particular community disenfranchises those it meant to empower and serve (Cook & Kothari, 2001). On the basis of the above problems associated with community involvement or participation in a social policy there should be a need based approach in waste management planning and practices in order to ensure that all segments of the people within a community receive adequate information to make their own choices of the waste management practices offered by the municipality. Failure to do this may lead to a situation where the poor are unable to pay for waste management services as a result of demands on their income by food, cloth, education, shelter and energy (Snel & Ali, 1999; Gotame, 2012). Thus they

may not consider charges on waste collection as part of their priority expenditure and burn or dump waste indiscriminately. A personal observation of one of the problems associated with community participation in waste management practices in Ghana is that after clean up exercises the waste cleared is left on the spot where it was cleared only to be spilt over or scattered by wind or running water.

Most of the literature reviewed present communities' involvement in waste management as a recent phenomenon which arises as a result of local governments' inability to deal with current astronomical increase in waste generation and its unsustainable management budget due to population increase, gentrification and urbanisation (Anschutz, 1996; Snel & Ali, 1999; Garg, 2006; Squires, 2006; Mariwah, 2012). For instance, the AMA spent about 82 percent of its 2008 revenue on waste management (Annepu & Themelis, 2013) and the TAMA in 2009 spent about 42 percent of all its revenue collected on waste management (Poupiel, 2010). World Bank (1999) has estimated that waste management will cost Asia some $50 billion or more by 2025 and Moore (2006, p.1) also noted that development of modern technology to deal with waste menace has resulted "to a multi-billion dollar waste management equipment and service market.... though garbage problem persist". Therefore, community involvement in waste management will help alleviate the burden on municipal budgets due to increasing nature of waste production and cost of its management to stop the dangers it poses to mankind (Anschutz, 1996).

However, community involvement in waste management is not a recent phenomenon (Rahman, 2009). Its abandonment came along with some

of the attributes of modernization and social gentrification. Some of the attributes are high mass consumption and lifestyle choices (the use of deodorants and insect repellants, purchasing of home appliances and the change over to plastic packaging at the expense of leafs), class systems created by division of labour as a result of one's inability to build a career in the formal sector due to lack of formal education and socio-cultural marginalization of minority groups (Sakar, 2003; KNCPC, 2006). Hence the recent advocate for it does not make it a new phenomenon it was the practice of the yesteryears (Gotame, 2012). For instance, people living on the Ganges and Brahmaputra plains in Asia had and are practicing waste recycling using traditional knowledge (Rahman, 2009). Ashes and faeces are being processed for agricultural purposes (Rahman, 2009). According to Gotame (2012) waste management practices were the responsibility of all the people in Kathmandu, the capital town of Nepal some years back until one of their former Prime Ministers, Chandra Shamsher set up some sorts of sanitary office and placed "Kuchikars" (low castes people) in charge to collect and dispose of people's waste. Waste did not threaten the health of the residents and its management also did not punch a hole in the municipal budget when all households were managing their own waste (Gotame, 2012). The problems of waste came along with the taking over of its management by the local government which made some people felt they are no longer responsible for its managements (Gotame, 2012). Hence one could attribute one of the causes of waste management problem of Kathmandu and for that matter small communities in the global south who are gradually experiencing urbanization, gentrification and population expansion to the taking over of waste management from the people

by municipal authorities and the subsequent feeling of apathy associated with its [waste] handling.

Households

How domestic waste is handled is important in planning national waste policy because when the same waste gets out of the house it becomes public waste. Individuals living in households are not homogeneous, there is power differentiation and relation which correspond to division of labour in reference to age and sex in homes and that affect waste definitions and management. At household level waste is managed by women, house helps (domestic servants) and children in most cultures in developing countries (Muller & Scheinberg, 1998; World Bank, 1999; Gani, Chiroma & Gana, 2012; Scheinberg et al, 1999 in Muhammad & Manu, 2013). Mothers sweep the house, gather the rubbish and the children carry it to waste disposal sites. Males who manage waste at homes are either single or married men who are not living with their families (Yintii et al, 2014). The reasons assign to this division of labour could be social, political, economic, religious and class relations. Culturally, home keeping activities such as cooking, cleaning and care giving services which generate waste are the responsibility of women as far as the institution of marriage is concerned. Mothers are expected to socialize their daughters in that fashion which makes women waste handlers at domestic level (Yintii et al, 2014). Women shop organic items and are more concerned about energy efficiency (giz, 2011). The traditional home maker roles of women draw women closer to the environment (Gani et al, 2012). Also, women have strong sense of civic responsibility and as such it is not surprising that women are

first to notice any negative environmental conditions and they do not sit down and watch but adopt measures to address such conditions (Gani et al, 2012). In most homes in certain cultures waste is considered dirty and handling it debases one's status and since men are assigned with high status in relation to women who are ascribed with low status, men refuse to handle waste because they consider it demeaning to their position in society (International Consortium GTZ-ERM-GKW, 2006). This belief or practice makes waste handling the domain of women (International Consortium GTZ-ERM-GKW, 2006).

However, if a household waste has economic value it becomes men's waste and touching such waste does not reduce their high rank in society (Scheinberg, Muller & Tasheva, 1999). For example, items such as metal, wire or cables, old plugs, paper and pieces of wood if they are no longer in use become men's waste (Scheinberg et al, 1999) because they have high resale value while bio-wastes are considered women waste. So it is not always true that women decide what waste is and must be dispensed of in the household (Scheinberg et al, 1999). Waste that has no economic value and must be discarded is associated with women (International Consortium GTZ-ERM-GKW, 2006; Gani et al, 2012; Yintii et al, 2014) while items that attract economic value are men's waste. On the other hand this means the differences in definition of waste between males and females is not necessary gender based as claimed by authors such as Muller and Scheinberg (1998) but sometimes economic. The crux of the matter is that if household waste has resale value it belongs to the men because men want to control and dominate

women economically and that makes men deny women access to household economic resources even if it is waste.

Also, in the same vein if waste is in the household its handling is considered demeaning by men (International Consortium GTZ-ERM-GKW, 2006) but should it pass on into the public waste streams (town and city waste) it becomes a source of gainful employment for men and they (men) even deny women access to such employment. For example, "In some cities women form the majority of workers in informal services to collect human excreta, but when a municipal department decides to place the excreta collection workers on the municipal payroll, it may turn out that 70 percent of these employees are men" (Muller, n.d., p.2). The percentage of men in the municipal waste service is higher than that of women even though women are known to be more concerned about environment and health issues than men (giz, 2011, Gani et al, 2012; Asi, Busch, Nkengla, 2013). The few women who are fortunate to work with municipal waste services have proved to be reliable even though they work under harsh conditions (Muller & Scheinberg, 1998). Also, such women do not handle the technical aspects of the waste jobs (driving of waste trucks and bulldozers) but walk long miles to sweep streets with their babies strapped to their back (Muller & Scheinberg, 1998). On some occasions they are assaulted when cleaning public places and although their work is the dirtiest they are the least paid (Muller & Scheinberg, 1998).

Residents' involvement in public waste management formulation and implementation policies

Waste policy provides the necessary socio-political guidelines and the legal framework as to how waste and by extension environment should be managed sustainably. It does not only specify clearly what is expected of each identified stakeholder (role playing) in the management of waste but also ensures sound environmental governance. It is against this background that UNEP has conventions such as the Montevideo Programme on Environmental Law 1981, Basel Convention in 1989 and others governing waste management in member states and guidelines for transborder waste trade between developed and developing countries so that advanced countries do not take undue advantage of developing countries. A law bordering on waste importation into Ghana is captured in 6.1 of the 1999 Environmental Policy. Details of the Policy will be discussed in the proceeding paragraphs.

Laws guiding waste management policies in Ghana are enshrined in the Criminal Code of 1960 (Act 29), the Local Government Act 462 of 1993, the Environmental Protection Act (1994) Act 490, the Environmental Assessment Regulations 1999 (LI 1652), the Environmental and Sanitation Policy of 1999 among others (Sanitation Country Profile, Ghana). Some of the institutions responsible for smooth implementation of these environmental management frameworks are Environmental Protection Agency (EPA), Ministry of Health and the Ministry of Local Government and Rural Development. However, the focus of this section is limited to the Environmental and Sanitation Policy of 1999 formulated by MLGRD.

In Ghana, much is not done on the gap between waste policies and waste management or better still its implementation. Few researchers who have ventured into this area limit their attentions to roles expected of the institutions responsible for waste management as enshrined in the waste management policies. Also, their interests cover areas such as whether these institutions are performing their roles effectively, challenges associated with the implementation of the policies and collaborative efforts among the various institutions in waste management (Boamoah, 2011; Mariwah, 2012). Hence there is less information concerning households' involvement in decision making of waste policy. Even the 1999 Environmental and Sanitation Policy revised in 2010 did not explicitly talk about the need to seek and incorporate the concerns of the household into formulation and implementation of the waste management plans of the Assemblies, however, the responsibilities of individuals are spelt out clearly in the policy. For example, the responsibilities of communities and individuals or households are captured in 4.0 – 4.2.2 of the Policy. Section 4.2.1 (a) states *"Every community shall establish community environmental sanitation norms in line with National sanitation policy"* and (b) *"Every community shall undertake community sanitation and hygiene education to create awareness of environmental sanitation issues"*.

These statements implicitly seek to solicit the views of communities and individuals into the broad national waste planning strategy. However, once the document does not spell out how households should participate in decision-making process of waste management plans of the Assemblies, it makes the document adopts a top-down approach of solving this social problem. Top-down approach which has characterized many of the

development interventions has been criticized because of its emphasis on the experts' knowledge in unraveling social issues and it has also been blamed for the failure of many development projects due to neglect of the concerns of the local people whom the intervention is meant to serve (Chambers, 1983).

Thus it is of no surprise that the local government is failing to grapple with the waste menace in Ghana due to inadequate consultation of the local people (bottom-up-approach). Even though the document gives room for considering the feelings of the local residents when the assemblies want to construct landfill sites. This is found on ANNEX 2 (1.4.1 c) which states "*Sites should be acquired by lease or purchase, with agreement on rehabilitation measures to be taken when the site is full. Due attention must be paid to the feelings of the local residents (in addition to chiefs and landowners) when acquiring sites".* Some of the questions that agitate curious minds on this issue are how the Assemblies would consider the feelings of the local residents?, is it by consultation or by the assumptions of the waste experts of the Assemblies? and how would they (would-be-affected community) give informed consent if they do not have an idea of how they will be affected socially, physically and psychologically as a result of the dumpsite?. For example, landfill sites and communal waste centres generate leatchate which contaminates underground water, methane (CH4) and dioxin gases which cause fire outbreak and breed rats, mice and flies. These rodents and insects transmit diseases and the odour emanating from dumpsite causes public nuisance (Taylor & Allen, 2006; Environment Protection Authority (EPA), 2010).

Hypothetically, if local residents are privy to these and other relevant information they can raise issues such as my house is closer to the dumpsites, dumpsites produce strong odour, could this affect my social interaction?, would the odour inconvenient my visitors?, would it embarrass me if my visitors cannot stand the stench emanating from the site?, how would I be protected from the rats, mice and the diseased carrying rodents and other risks associated with dumpsites? (EPA, 2010). Dumpsite is associated with heavy traffic (Nyakaana, 1997) driving through traffic is inconvenient and may stress road users, can this affect my social interactions? If residents are not given adequate information on how they would be affected by the sitting of landfills in their area, how will they give their full consent? Hence this may partially explain why when the ugly side of the dumpsite rears its head in the affected communities residents respond with social disorders such as demonstrations. Therefore, it is no wonder that communities who were close to the defunct dumpsite in Accra (Oblogo & McCarthy Hills) vented their spleen on the authority.

Community involvement in the decision-making process of waste management plans helps stakeholders to identify any perceived or actual gender issues that may arise during implementation so that appropriate measures can be adopted to address them (EPA, 2010). For instance, an agriculture extension service which involved the use of the biodegradable waste as manure to improve crop yield resulted in increasing women's burden (International Consortium GTZ-ERM-GKW, 2006). This is because the policy reduced the use of dry cow dung as fuel for cooking by women in the household making them walk so many miles with its attendant risks in search

of firewood (International Consortium GTZ-ERM-GKW, 2006). On the other hand when women were allowed to use cow dung as fuel it resulted to low cropped yield (International Consortium GTZ-ERM-GKW, 2006). In another related development, conflict arises in a community where women use organic waste to improve crop yield and men also need the same waste to feed domestic animals. Both scenarios will require incorporation of technique and expertise of gender mainstreaming into waste management policy and by so doing power relations in terms of who has access and control over waste if it becomes a household resource will be properly analyzed to resolve these conflicts and potentially marginalization issues.

In most countries national waste policies incorporate technology (equipment and materials) that will be needed to manage waste in cost efficient fashion. In Ghana, equipment and materials requirement to manage waste efficiently captured in 10.3 of the 1999 national waste policy is not gender sensitive. However, this is not peculiar to Ghana. Procurement and acquisition of waste management materials in most parts of the world is not gender sensitive. A study conducted by Snel and Ali (1999) in India revealed that women are involved in waste management at all levels in India but the weight of the equipment such as brooms, shovel and wheelbarrows they use to do their work are heavy which require a lot of physical strength to carry. This issue can also be addressed if gender mainstreaming is infused into the procurement of waste management equipment and materials.

Traditional waste management practices

Not much is written on traditional waste management, the little literature the researcher could lay hands on reveal that most of the traditional waste management practices border on the 3Rs – reduce, reuse, and recycling (Rahman, 2009). Due to this waste is not known to some cultures (Muller & Scheinberg, 1998). Organic waste is processed as compost in some traditional cultures of the people living along the Gange River in India, Pakistan and other parts of Asia to improve crop yield and ashes are used for so many purposes including treatment of diseases (ticks) of domestic animals (Rahman, 2009). Leftover food items such as peels of cassava, plantain and yam are used to feed domestic animals (Muller & Scheinberg, 1998).

Effects of waste on social interactions

Effects of waste on social disorder are mostly related to problems of poor management of landfill sites and indiscriminate waste disposal practices as a result of the inability of the municipal authorities to manage waste efficiently (Moore, 2006; Mazinyo, 2009; WSP, 2011). The social disorder is between residents who are suffering from environmental injustice on one hand and municipal authorities whose responsibility is to clear waste on the other hand. The social disorder takes a form of demonstration and venting of spleen on authorities by aggrieved residents to register their disapproval of poor sanitation and its attendant effects on their health. Moore (2006) reported a case of a local pressure group in Oaxaca, Mexico who demonstrated against authorities over fire outbreaks which started at a nearby dumpsite and spread

to homes destroying properties. Mazinyo (2009) spoke about another fire outbreak sparked by gases at landfill site which gutted disadvantaged communities in poor neglected blacks' residence in South Africa. WSP (2011) talked about sanitation right movements in India and Brazil. Locally, demonstrations by communities suffering environmental injustice against government are common but these social unrests are yet to produce any tangible result as local assemblies are reeling under increasing waste generation due to population explosion, gentrification, urbanization and insufficient revenue to manage it making residents' agitations fall on death ears (Annepu & Themelis, 213).

In most of the literature reviewed effects of poor waste management on society are concentrated on public health issues not much is said about how waste affects social interactions. The reason could be that the background of the authors the researcher reviewed are science and public health biased with few being geographers and it looks as if sociologists rarely attempt this area.

Issues identified in the above discussions are that waste management at national or domestic level is linked with issues of class, economics as well as politics. For instance, at domestic setting waste cleaning is considered a menial job and people with low status handle it. In many cultures, men rarely handle waste because their status in society is higher than that of women. But if household waste becomes an economic resource it becomes men's property and access to it is limited to only men. At national level men dominate in waste handling because it serves as employment opportunity even though waste handling is considered a menial job. Ironically those who handle waste

live in poor urban neighbourhoods where filth is scattered indiscriminately because residents do not have economic and political power to get their waste collected.

As society grows population increases and technology advances some of the consequences of these are increased in waste production and changing nature of waste from organic to inorganic. However, these alone are not responsible for waste menace such as poor quality of waste collection service and health related problems associated with waste. Other factors aiding the phenomenon are marginalization of the poor in the planning of waste management policies, one's inability to build a career in the formal sector to join the elite and the middle class to fight for their interest and the failure of the poor to forge ahead to fight for their interests due to their low level of formal education and less leisure time to sit and reflect on the dilapidated environment in which they live as a result of poverty. Political issues are largely connected to the weakening of the traditional system by the local government system in particular reference to waste management. Even though waste management runs smoothly if traditional leaders are involved because people obey and respect their views (Oberlin, 2012). Hence the basis of the theoretical framework of the study is political economy perspective.

Theoretical framework

This study adopts political economy perspectives to assess how urban waste is managed by the forces of economic and political interest, especially demonstrating how political decisions and economic influences affect poor

environmental governance and who suffers from political decision deficiency in reference to waste management. According to Moncrieffe and Luttrell (2005, p. 3) "Political economy uses methods from economics, sociology and political science to understand how a country or a specific programme is managed and performed…". Political economists study "the laws of the social production and distribution of material wealth at the various stages of development of human society" (Lawrence & Wishart, 1957, p.1). Explicit in the former definition is how the perspectives of the various disciplines under the social sciences are used individually and collectively to assess the impact of a specific programme on the interest of the people the programme was meant for or how a country has fared by the actions of her leaders. What one could deduce from the latter definition are the views expressed by policy think-tanks oriented toward either right or left wing on the governance continuum and the emerging middle moderates on how economic and political decisions should be used to produce and distribute national resources. Hence political and economic considerations and interest affect social decision making (Drazen, 2000). For example, a social decision maker is faced with the dilemma of satisfying heterogeneous interest groupings in society when making social policies that affect groups differently (Drazen, 2000). The dilemma can be more severe if the resources to meet the different demands are limited. In particular reference to this study, views of some political economists will be discussed briefly before empirical evidence of the theory to specific social policy and waste management are discussed.

Protagonists of the right wing political economists believe in private ownership of the means and the mode of production. Thus they see producers

as rationalized entrepreneurs who efficiently satisfy their customers while making profit and as such would institute policies that will prevent their business from collapsing. Unlike state decision makers whose decisions do not affect them personally and as such may pay little attention to their inefficient decisions. Some classical market oriented political economists such as Adam Smith (1723 - 1790) believed that state management should border on two major philosophies which are "how to generate income for the people and how to supply revenue for the state" (Butler, 2011, p.47). As to how to achieve this, Smith recommended competition among private entrepreneurs to ensure effective use of resources and efficient satisfaction of consumers. Thus to him human beings are rational and optimal maximisers and the interplay of demand and supply forces (invisible hands) could correct the imbalance of the market. In this way the businesses of inefficient and greedy producers would collapse if they over priced their produce making consumers enjoy cheap prices in the market. Smith and Emile Durkheim believed that specialization or division of labour ensure labour efficiency and productivity even though both warned against extreme form of division of labour as it may lead to boredom and apathy on the part of the workers.

Right wing political economists preach liberation of national economy. This idea became one of the key panaceas for addressing sick economies of developing countries which were suffering from debt crisis in the 1980s. During that time policies of the Bretton Woods Institutes popular among them Economic Recovery Programe (ERP), Structural Adjustment Programme (SAP) and their surrogates such as economic and trade liberation and public sector workers retrenchment were pushed down the throat of the developing

world. In Ghana, they (ERP & SAP) led to removal of subsidies on agricultural inputs, divestiture of state enterprises, "cash and carry" in the health sector and cost sharing in the education sector. Recently, it has led to deregulation in the petroleum sector.

Some policy options of right wing political economists are sometimes contradictory. For instance, a study conducted by Wiese (2013) on privatization of health care financing of 23 OECD countries revealed that government pushes health care cost to individuals when states are experiencing economic crises such as debt crises, job crises and annual economic recession or meltdown. One may find it odd that a government will opt for private sector financing or better still will push health care cost down the throat of poor citizens in the face of growing unemployment. Even though job crisis may dwindle government revenue in terms of taxation forcing individuals to cough up money for their health needs when they are not employed may be deemed inhuman and contradictory. This is because the question one may ask is where should they raise the money from? Thus it is no surprise that such policy reforms in Greece, Spain, France and Italy have been met with fierce public protests for the past four and so years. Hence the need to find policy alternative to address problems associated with right wing political and economic policies. Therefore, the left wing political economists emerge to offer alternative policy options to the right wing policies.

Left wing political economists are of the notion that economic system effects changes in the political and the social systems. Many social researchers refer to them as conflicts theorists. Chief among them is Karl Marx (1818 - 1883). Marx theorized that as society evolves from primitive through slavery,

feudal to capitalism so does production for only subsistence change to production for mass consumption and international markets. These changes also trigger unequal social status. Thus society moved from egalitarian to a class society. The class system so created as a result of social evolution polarized society into haves and haves not. The haves are the powerful economic class who owns and controls the means and mode of production. Because of their economic power, they [the haves] also influence the super structure. The haves not are those who do not own the means of production and must sell their labour in order not to die of hunger. Marx referred to the haves as bourgeoisies and the haves not as proletariat.

The social relations that develop in the capitalists' system are exploitative and cash nexus according Marx. It is exploitative because the bourgeoisies appropriate the surplus produce of the proletariat and it is cash nexus because relation is based only on productivity so the worker who could not exchange his or her labour power for more produce gets little reward in return and the one who cannot sell his or her labour receives nothing. The social relations of production reflect the patterns of distribution of economic produce and that also disadvantages the haves not. Hence those who cannot exchange their labour for more cash have limited access to social services because the capitalists system commercializes social services. According to Marx the only way to overcome the exploitation by the bourgeoisies is through workers' revolution. This revolution to Marx will destroy private ownership of the means of production enabling workers to take control of the productive forces which will result in equitable distribution of societal economic resources. Thus a decision maker with Marxist background would prefer to

socialize public services. For instance, funds to finance public services will be charged on state coffers and not on individuals' pockets. Hypothetically, if the public service or the social service is waste management central or local government will provide free waste management materials and equipment such as dustbins for households and tricycles, skip trucks and containers for the communities, pay labour and any other expenses on waste management.

On the other hand a social decision maker with market orientation would opt for private waste management. In this way individuals will pay for their own waste management and the state will provide the enabling playing field such as legal framework to make the contractual agreement between the private waste management providers and individuals beneficial for both. The notion held by many market oriented decision makers is that because market policy is subject to competition by many private service providers consumers will not be short-charged but will get value for their money [efficient service]. However, Buera, Monge-naranjo and Primiceri (2008) have noted that policy makers choose this option (market) if its benefit outweighs its political cost.

State control of the economy has been criticized. Many market economists see it as inefficient use of resources and an avenue for corrupt state officials to amass wealth at the expense of the masses. According to Gwartney, Holcombe and Lawson (1998, p.168) expansion of government expenditure to other areas outside core government functions (judiciary and security) has negative implications on the national economy. They theorise that such practice leads to increase taxation, excess government borrowing and "rent seeking" or "wealth transfers" to government cronies. In the same vein the use of private enterprise as the engine of growth in provision of certain

vital social services leads to marginalization of the poor. It is against this background that public private partnership has emerged to address the problems associated with the policies of market and state.

Public private partnership (PPP) is a contractual agreement between government and private sector of which the private sector party is partially or solely responsible for the construction, provision and or operation of specific public infrastructure and social services to the people (National Policy on Public Private Partnerships, Ghana, 2011). It is a mid-range political philosophy and constitutes blending of market and state principles in solving or delivering public infrastructural and social services. Hence PPP comprises the ideological positions of market and state (Ansah, 2015). According to Ansah (2015) the crux of the matter is how does the state ensure that her citizens are not disadvantaged if private sector participates in provision and management of vital public and social services? Also, how does the state ensures that the services provided are beneficial to the state and the public whilst at the same time the rational objective [profit] of the private provider is not comprised (Ansah, 2015)?

PPP became popular in the mid 90s and aims to improve efficiency, share or transfer risks associated with construction and provision of social services between government and private sector (Bastin, 2003). Also, it emerged to make the financial resources and expertise of private sector readily accessible to government and reduce constraints in funding public services. Some of the modalities in PPP are - (a) a private sector may build a public project, operate it and after its cost has been defrayed, government takes possession of the project (b) a joint venture between government and private

sector in delivery of public service (c) a state may contract private sector to build and or operate public service (d) state subsidies public services or public part payments of social services and (f) full payment of public services rendered by private sectors.

Relevance of the theory to the study

Efficient waste management service will largely depend on prudent choice of the three key political ideological thinking [market, state and PPP regimes] that have characterized provision and management of public services. Hence political economy theory is applicable to the study. Politically, MLGRD is responsible for waste management at national level whilst Local Assemblies clean cities, towns and villages. Thus Birim North District Assembly is responsible for waste management services at the study communities.

Commercialization of waste management by the Assembly may guarantee efficiency but at a cost to residents. Since many residents are not skilled and cannot access the few opportunities the mining activities offer, commercialization of waste management will only benefit the rich few who can afford to pay and that indiscriminate waste disposal practices maybe rampant. This is because many of the residents cannot pay for the services private waste collectors offer.

Secondly, the Assembly can fund all expenditure on waste management. In this way the rich and the poor residents will benefits. However, the likely consequence of this option will be that both the rich and the poor may dispose of their waste indiscriminately. Indiscriminate waste disposal practices may arise because financial constraints may prevent the

Assembly from providing adequate waste materials and equipment to residents. Also, transportation of waste from the secondary collection points to landfill site will delay unnecessarily. This is because the banes of many districts in Ghana are poor performance of the internally generated fund (IGF) and the delay and inadequacy of the District Assemblies Common Fund of which Birim North District may not be exception.

Any structural decision deficiencies that may occur in the implementation of market or state ideological stance on waste management service may have negative effect on the residents which may also compel them [residents] to dump and burn waste indiscriminately. If this happens the District Assembly maybe compelled to consider the interplay of market and state [PPP]. Public Private Partnership regime in waste management can be seen in many forms some of which are sub-contracting of the transportation of waste from the secondary waste collection points to landfill sites to private waste collectors, concentration of waste management of the poor by the Assemblies and permission of formal and informal private waste collectors to engage in door to door waste collection service to residents who can afford.

Permission of the formal and informal private waste collectors in waste management may lift some financial burden from the Assembly but this alone may not be enough since the poor in the study area may outnumber the rich who can afford the services of private waste collectors. Also, if the Assembly finds it difficult to pay private waste collectors for transportation of waste from secondary waste collection points to landfill site as has been the bane of many districts in Ghana, indiscriminate waste disposal practices may arise in the study communities. This is because residents may feel reluctant to carry

their waste to secondary waste collection points if transportation of the waste delay unnecessarily due to non-payment of the private waste collectors and may resort to indiscriminate waste disposal practices. Other problems that many arise in the implementation of PPP are lack of supervision of the private waste collectors and inflation of contract sums. Thus implementation of the PPP principles in waste management may also be problematic.

Commercialization, socialization [state management] and private sector participation in waste management may have their own structural merits and demerits depending on the income levels of the residents of the study communities. Hence any data collected which is relevant to the theory will be discussed.

Conceptual framework

The conceptual framework of the study is based on the issues identified in the literature review as factors responsible for indiscriminate waste disposal practices and issues identified in the theoretical perspective [political economy] on the ideological orientations [market, state or PPP] of social decision makers. According to the literature reviewed causes of the indiscriminate waste disposal practices are economic and political. Key factors identified in economic issues were government inability to construct good road networks to make every household accessible so that waste collection itinerary can be planned without difficulty, delay or non-payment of private waste contractors, inadequate waste equipment and materials (skip dumps, waste trucks, tricycles and bulldozers) and inadequate resources to embark on efficient public waste education campaigns on sound environmental

management practices (Kwame, 2010; Puopiel; 2010; Annepu & Themelis, 2013; Freduah, 2014; Yintii et al, 2014) . Also, residents' inability to pay and demand for quality service is another economic factor that leads to poor waste disposal practices (Puopiel, 2010; Spencer, 2012). Political factors that affect waste management could also be linked with the economic factors. This is because waste management is a public service and failure on the part of government to provide the necessary funding and the right strategy to deal with it [waste management] may lead to indiscriminate waste disposal practices (Annepu & Themelis, 2013). For instance, the taking over of waste management from the people by the local government in Nepal and subsequent poor consultation of residents in planning waste management strategies have resulted in the feeling of apathy thus residents dump and burn waste indiscriminately (Pokhrel & Viaraghavan, 2005; Gotame, 2012). Other factors fueling indiscriminate waste disposal practices are population growth, modernization and gentrification. Here the problems lie in the areas of pressure on land (leading to inadequate space for dumpsites), mass consumption and lifestyle choices [the use of deodorants and insects sprays] (KNCPC, 2006; Taylor & Allen, 2006).

On the other hand waste management is a public service and the ideological orientation of the social decision maker may trigger efficient waste management practices or otherwise. Left wing political economists believe in state provision and management of public service in order to make the poor a beneficiary of certain vital social service. Some social scientists such as Gwartney et al, (1998) consider government intervention in management of public services as inefficient and an avenue for "rent seeking". Right wing

political economists preach privatization of public service to ensure efficiency. Commercialization of public service sometimes denies the poor access to social services. Thus mid-range political philosophy emerged to merge the strategies of the two opposing policy alternatives in provision and management of public service. Using the views of the three political economists' approaches on one hand and the factors identified in the literature as the reasons for poor waste disposal practices on another hand, the conceptual framework of the study can be presented graphically in the diagram on page 52.

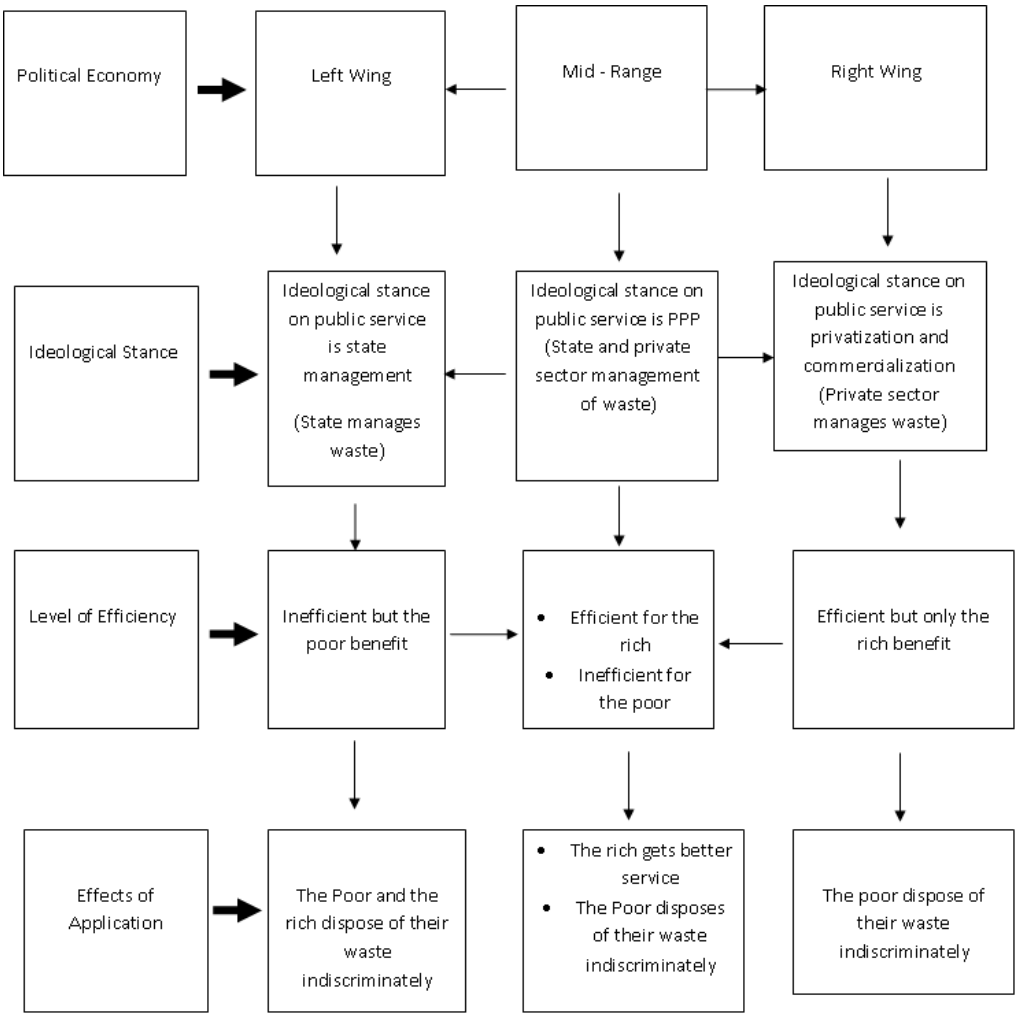


Figure 1: Framework for political ideological thinking on waste management

Source: Derived from factors identified in the literature as the reasons for poor waste management practices (Puopiel, 2010; Annepu & Themelis, 2013) and how political and economic considerations affect public policy (Drazen, 2000; Bastin, 2003; Buera et al, 2008).

[See relevance of the theory on pages 47 – 49 and conceptual framework on pages 49 -51 for details]

CHAPTER THREE

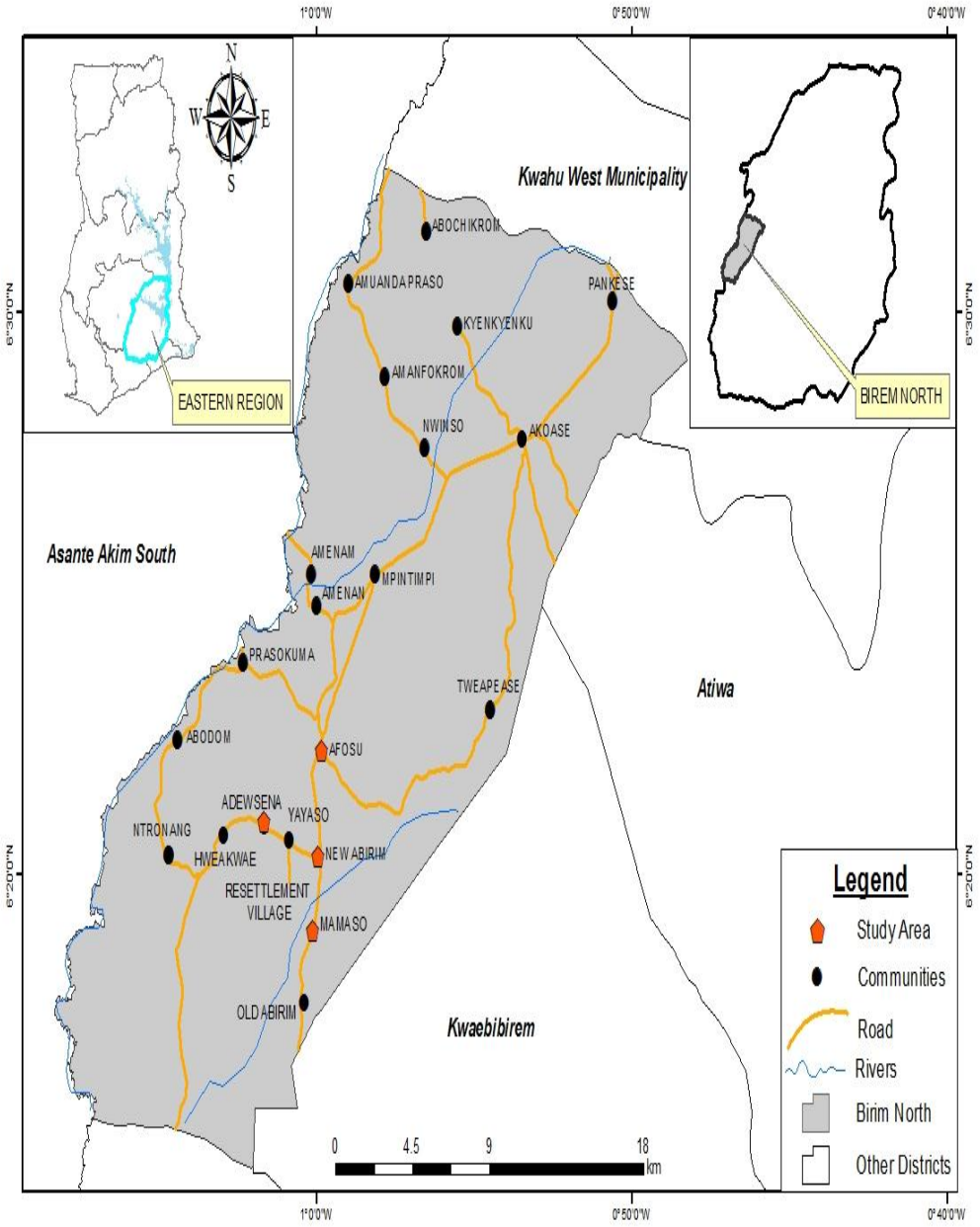
METHODOLOGY

Introduction

This chapter contains a brief description of the study area, study design, target population, sample frame and size, sources of data, instruments for data collection, data processing and analysis techniques and the challenges of the study.

Study area

The study seeks to explore factors responsible for poor domestic solid waste management practices in the Birim North District. Geographically, Birim North District is bordered by four districts. These are Kwahu North, Atiwa, Asente Akim North and Kwaebibirem Districts in the Eastern Region (see figure two on page 54 for details). New Abirem is the District capital. Mining activities have attracted immigration of people and businesses into the area. And as many waste researchers such as Taylor and Allen (2006) have opined, waste is a function of population increase, therefore, it is likely that communities in the District mostly affected by the mining activities may have waste related problems. On the basis of this the study was delimited to communities in which Newmont Akyem Mines is operating. These communities are New Abirem, Akim Afosu, Mamanso and Adawsena. See figure two on page 54 for details. Readers should note that Yayaso had been relocated making Adawsena closer to the mines than Yayaso.



Source: Department of Geography and Regional Planning, University of Cape Coast, Cape Coast.

Figure 2: Map of Birim North District showing study communities

In terms of vegetation these areas are forested areas. Climatically, these areas are semi-equatorial with two rainy seasons. The first begins at the end of March till July and the second starts in mid-August till the end of October. The average annual rainfall is 1,750mm with the highest reaching

2,000mm. Dry season begins in November and ends in February while temperatures vary between 25^{oc} and 28^{oc} with moderate humidity.

According to the 2010 Housing and Population Census, population of New Abirem is 6,123 and that of Akim Afosu, Mamanso and Adawsena are 6,165; 3,434; 1,815 respectively (Ghana Statistical Service, 2012). Judging by the recent census figures, Akim Afosu and New Abirem have reached urban status. Even though Mamaso and Adawsena have not reached urban status in terms of demographic criterion but these areas are gradually becoming urbanised as a result of mining activities. Most of the social infrastructure and government administrative units are concentrated at Akim Afosu and New Abirem resulting in rural-urban migration (Groupe D'Etude de Recherche et D'Appui AU Developpement (GERAD), 2008) but the major cause of population expansion in these two communities is mining (Birim North District Assembly Composite Budget, 2013).

Urbanization and population explosion have put pressure on land in these areas and as a result cash crops such as oil palm, citrus, kola and food stuff are making way for accommodation of all kinds. This situation is gradually gentrifying the affected communities. It is likely that the population expansion will increase waste generation in the study areas as there is correlation between waste production and population increase and the pressure on land may also affect sitting of landfill sites. Therefore, it is of no surprise that indiscriminate waste disposal has become a common practice even in the whole district and one of the factors worsening the situation is that "most households do not have garbage cans" (GERAD, 2008, p. 38).

A personal observation of one of the problems associated with pressure on land is that the traditional system of waste dumping where communal labour is used to dig pits to serve as communal dumpsites has ceased to be a waste management practice and more so residential accommodation has taken over land that was formerly declared community dumpsites. For instance, plates one and two on page 57 are one of the communities' dumpsites which has been redeveloped to be used as residential area. These plates were shot by the author at Zongo, a Muslim community at Akim Afosu.

The District Assembly has acquired a common dumpsite for all the communities within the District at Old Abirem, a small community after Mamanso on the New Abirem – Kade road to help address the arbitrarily waste disposal practices in the area (Birim North District Assembly Composite Budget, 2012). However, this has not stopped indiscriminate dumping and burning of waste in the area. Also, the Assembly is promoting door to door waste collection service as part of its Public Private Partnership on waste management but this plan is likely to face some challenges due to minimal household's expenditure on waste management as compare to others such as education, food and health care (GARED, 2008; Birim North District Assembly Composite Budget, 2012). Hence charges on waste management do not form part of the priority areas of households' expenditure and that may also affect "willingness to pay" which is one of the vital ingredients in door to door waste collection service (Adepoju & Salimonu, 2010).

Plate1: Back view of old dumpsite redeveloped as residential area at Akim Afosu

Plate 2: Front view of old dumpsite redeveloped as residential area at Akim Afosu

Study design

This study is a descriptive study but it does not end at what is happening but also extends to why it is happening. Hence the study seeks to describe poor solid waste management practices in the Birim North District. Descriptive approach is chosen because proper and thorough description of a situation leads to why it is happening and once the causes are known solutions become easy to find. The study adopted qualitative approach to describe the issue it investigated. Hence data collection and analysis were largely qualitative.

Selected communities

The researcher purposively selected New Abirem, Akim Afosu, Mamanso and Adawsena as the selected communities because these areas are experiencing urbanization in recent times as a result of immigration [population increase] and culture of the immigrants. The cause of the immigration is attributed to discovery of gold and its mining in these areas (Birim North District Assembly Composite Budget, 2013).

The mining activities have led to flourishing of small-scale businesses as tradesmen and artisans of all kinds are operating in these areas. Some international banks such as Eco-bank and Barclays Bank and some rural banks have opened branches at New Abirem. Hotels of all kinds (some with facilities such as heliport, golf course and swimming pool) are operating in the mining communities. Also, pubs, super markets and restaurants have also sprung up in these communities. Since increase in waste generation is a function of population increase and daily activities of humans (Garg, 2006; Taylor &

Allen, 2006) waste generation in the mining communities is likely to increase. And because household expenditure on waste management in Birim North District is minimal (GARED, 2008) indiscriminate waste dumping and burning in these communities is likely to be rampant. Also, pressure on land as a result of population increase has affected sitting of communities' dumpsites (see plates one & two on page 57 for details) and this may affect waste management practices in these areas.

Target Population

The target population of the study and why they were selected to participate in the study are presented in the matrix below.

Table 2: Target population and the justification for selecting particular respondents

Target Population	Justification for their selection to participate in the study
Chief of each community selected	Chiefs were selected to participate in the study because traditionally they are in charge of the management of the environment in which their subjects live.
Assembly men/women of the selected communities (the selected communities have three Assembly women and one Assembly man)	The Assembly men/women were included in the study because it is assumed that many residents have reported their frustration in terms of

Table 2 continues

Target Population	Justification for their selection to participate in the study
	poor waste management practices to them and more so they are opinion leaders in their respective communities.
The officials of the District Assembly selected to participate in the study were the District Chief Executive (DCE), the District Coordinating Director, District Planning Officer and head of the District Environmental Health Unit. However, the DCE was not available so the Presiding Member of the District was used to replace the DCE and the District Coordinating Director also referred the researcher to his deputy	These officials from the District Assembly were selected because they are in charge of the Assembly waste management strategies.
Women above the ages of 18 years and above (focus group discussions participants)	Women above the ages of 18 years were selected to participate in the study because from the literature reviewed women are in charge of

Table 2 continues

Target Population	Justification for their selection to participate in the study
	household waste management practices (the focus of the study) and it is assumed that most girls start sweeping and cleaning the house around the ages of nine and ten so by 18 years and above they might have gathered enough experience to speak to the issue under study. This not to say that men in Ghanaian society do not generate or clean waste but women are culturally responsible for this task in our homes hence their selection to participate in the study.
The most elderly Male of the household of the women of 18 years and above	Male were also selected to participate in the study because traditionally males are the heads of most families in the study communities and are considered as the bread winners hence in case of any cost involving waste disposal practices such as

Table 2 continues

Target Population	Justification for their selection to participate in the study
	buying of the dustbins and payment of waste collection they [males] maybe the ones who will bear these cost.
Parents	Children form majority of the people who carry waste to the skip sites in the study communities, however, one of the key recommendations of the participants was the need to bar children from carrying waste to dumpsites because children dump waste indiscriminately when they are tired of trekking long distance. Even though participants have prescribed this recommendation but the situation on the ground proves otherwise as the researcher observed from the study communities that children are the main people who carry waste to dumpsite. On the basis of this the author arbitrarily followed three

Table 2 continues

Target Population	Justification for their selection to participate in the study
	children from each selected community to interact with their parents because it is unethical to speak to children without the consent of their parents and more so the children were sent by their parents so it is appropriate to speak to the parents rather than the children.

For the purpose of this study parent means a man or woman or married couple who has/have taken custody of a child/children and is/are responsible for the upkeep or maintenance of the child/children. The said child may or may not be his/her or their biological child/children.

Sources of data

Source of data was largely primary. Secondary sources were books, journals, articles on waste and other related topics, some publications of the Assembly and other vital documents such as census statistics. Primary sources were personal observation of general environmental situation of the study communities, face to face interview with Chiefs of the selected communities, the Presiding Member of the Assembly, Deputy District Coordinator, District

Planning Officer, head of the Environmental Health Unit, Assembly man and women of the selected communities. Focus group discussions were held with women of 18 years and above of the selected communities. Also, views of 12 males and 12 were sought.

Sampling procedure for selecting Chiefs, Assembly men/women, officials of the Assembly, parents and elderly males

The sampling technique for selecting Chiefs, Assembly men/women, officials of the Assembly, parents and elderly males from the households of the females above the ages of 18 years are captured in the table three on page 64.

Table 3: Sample type, sampling techniques and justification

Target population	Sampling type/ method	Sampling techniques	Justification
Chief of each selected community	Purposive	Chiefs of the study communities were easy to identify by the virtue of their positions as heads of the traditionally	Purposive sampling was use to select the Chiefs because chiefs are the custodians of the land and they are traditionally responsible for

Table 3 continues

Target population	Sampling type/ method	Sampling techniques	Justification
		leaders. The researcher was directed by residents to the Chiefs' palaces to interview them.	the management of the environment in which their subject live and more so it is assumed that chiefs are knowledgeable in traditional waste management practices.
Assembly men/women.	Purposive	In each study community a resident directed the researcher to the house of the Assembly men/women	Purposive sampling was used because it was assumed that they are knowledgeable in waste management matters as they

Table 3 continues

Target population	Sampling method	type/	Sampling techniques	Justification
				attend the District Assembly meetings and one of the matters they deliberate on is waste management in their respective communities and that of their colleagues from the other communities. Also, it was assumed that residents may have reported their frustrations in terms of poor waste management

Table 3 continues

Target population	Sampling method	type/	Sampling techniques	Justification
				practices by other residents and or the Assembly to them and as such they are competent to speak on waste related matters.
The District Chief Executive Officer, the District Coordinating Director, the District Planning Officer and the head of the District Environmental Health Unit (the Presiding	Purposive		The researcher walked to the District Assembly office to interact with these officials.	Purposive sampling was used because they are in charge of the formulation and implementation of the Assembly waste management strategies and as such they constitute major

Table 3 continues

Target population	Sampling type/ method	Sampling techniques	Justification
Member and Deputy Coordinator replaced the DCE and the District Coordinator).			stakeholders in the communities waste management practices because when household waste is disposed of it becomes public or municipal waste.
Elderly male from the household of the females above the ages of 18 years (focus group discussion participants). Details of how focus group participants were	Convenience	After selecting a participant from the household of the women above the ages of 18 years and above (focus group discussion participants) this category of respondents	Convenience sampling was chosen because after interacting with the selected participant of the focus group discussion rapport developed between the

Table 3 continues

Target population	Sampling type/ method	Sampling techniques	Justification
selected can be found on page 72 - 76.		became easily accessible to the researcher. The two criteria considered were their age and their geographically location and on the bases of these the most elderly male in the household of the focus group participants was selected if he refuses to participate in the study the next elderly male was selected. The	researcher and the males in the household and this made it convenient to select the most elderly male in the household to participate in the study.

Table 3 continues

Target population Table 3 ..	Sampling type/ method	Sampling techniques	Justification
		geographic element bordered on where they stay in the community and in order to deal with issue of heterogeneity they were picked from the two ends and the middle of the study communities.	
Parents	Accidental	Initially this category of participants were not part of the study but they became relevant to the study	Accidental sampling was used because of the willingness on the part of the child to be followed and

Table 3 continues

Target population	Sampling type/ method	Sampling techniques	Justification
		because there was inconsistency in the one of the recommendations of the participants in respect to the use of children to carry waste to dumpsites. Procedure followed in selecting parents was that the researcher stood at the dumpsite every morning and evening to observe the people who carry waste to the sites. Key	willingness on the part of the parents to participate in the study were taken into consideration.

Table 3 continues

Target population	Sampling type/ method	Sampling techniques	Justification
		considerations observed before following the children were their ages, the size of child and the size of the load he or she was carrying.	

Sampling techniques for selecting females of 18 years and above

Procedures for selecting women of 18 years and above (focus group discussion participants) were the following. Even though many social researchers such as Lynch (2011) state that there is no need to set limit for participation when using non-probability sampling techniques in social research. For instance, Lynch (2011) proposed that the limit of participation in non-probability sampling should be tied to information needed and worthiness of the information collected on the field in particular reference to research questions and objectives. However, purposive sampling was used to select females of 18 years and above (participants of the focus group discussion) but

the author predetermined the number of people to participate in the focus group discussion in order to prepare adequately in terms of time and logistics (venue and chairs) needed to make the discussion successful. To determine the number of participants, figures captured by the Ghana Statistical Service in the 2010 Housing and Population Census were used. Table four shows population of the selected communities, its gender distribution and females of 18 years and above.

Table 4: Population of the selected communities, its gender distribution and females of 18 years and above

	Population			
Community	Total	Male	Female	Females of 18+ years
New Abirem	6,123	2,997	3,126	1,757
Akim Afosu	6,165	3,096	3,069	1,744
Mamaso	3,434	1,709	1,725	980
Adawsena	1,815	895	920	548

Source: Ghana Statistical Service (2012)

Sampling size determination for focus group discussion

Yamane's (1973) formula was adopted to set the limit for the number of participants to be selected from the selected communities. The Yamane formula is $n = \frac{N}{1+N(\alpha)^2}$ Where n= the desire sample size, N = sample frame or the target population and $\propto =$ the margin of error which was estimated at 0.14 with confidential level of 86 percent. If the total number of female population of 18 years and above is substituted into the above formula, mathematically the limit of participants for the focus group discussion would be calculated as

$n=5029/1+5029(0.14)^2=$ 51.01026 to the nearest decimal is 51. Therefore, limit for the participants to be selected from the selected communities is 51 persons.

Proportional selection of the participants of the focus group discussion

Statistical proportion was applied to determine the number of participants to be drawn from each selected community in order to ensure that all the selected communities were fairly represented. The proportional formula used to obtain the number of participants from each selected community was estimated as the number of female population of 18 years and above in a particular selected community divided by the target population or the sum of all females of 18 years and above in the study area (in this case 5029) multiplied by the total participants of the selected communities (that is 51). This is represented mathematically as $\frac{f}{tf} . \mathbf{n} = \mathbf{sp}$.Where *f* = female population of 18 years and above of a particular selected town, *tf*= entire target population (5029), n = number of people to be selected from the selected communities (in this case 51) and sp = selected participants. Table five on page 74 shows the number of females of 18 years and above and number of participants drawn from each selected community.

Table 5: Computation of the selected participants for the focus group discussion

Selected Towns	Females of 18+ years	Proportional Selection	Selected Participants
New Abirem	1,757	1757/5029(51)	17.8187 =18
Akim Afosu	1,744	1744/5029(51)	17.6863 = 18
Mamaso	980	980/5029(51)	9.93837=9
Adawsena	548	548/5029(51)	5.55747 =6

According to Elder (2009) in purposive sampling the areas to be included in the study maybe based on the researchers' judgment and on that note the author selected households from the middle, southern and the northern parts of the selected communities to address the problem of heterogeneity since at the outskirts of the community the houses are new. This division of the selected communities was based on the author's judgment. Depending on the nature of the community and the number of households of interest to the study, a house is selected at each section of the division (north, south and middle parts of the community) based on the occupants of the house. For example, the judgments used in selection were whether the house is "self-contained-house", family house or "compound house". For the purpose of this study "self-contained-house" houses a nuclear family, family house contains extended families and a "compound house" contains different families of different clans and tribes. In the case of the family house and the compound house the oldest household in terms of age among the various household in the house was selected and most elderly female above the age of

18 years was selected to participate in the discussion. Issue considered in the selection of the household and most elderly women above the ages of 18 years was the willingness of the household and the participant to participate in the study. This process was followed till the desired sample limit for each community was reached. After that dates and venues for the discussions were fixed, logistics provided and participants were informed of when and where the discussion would be held. A Senior High School leaver with good communication skills in both English and the local language was trained as note taker and the researcher was the moderator of the discussion. The researcher's mobile phone was also used to record the discussions electronically with the consent of the discussants. On the days of the discussions participants were briefed on the modalities of the discussions. For instance, participants were told that views express by each participant is valid and that they [participants] should not interrupt one another during discussions. They were also made to understand that the discussion is a school project and that participating in it would not attract any financial reward.

Total sampling size for the study

Total number of people who participated in the study is captured in table six on page 77.

Table 6: Target population and total number of participants

Target Population	Number
Chiefs	4
Assembly men/women	4
Officials of the assembly	4
Focus group discussants	51
Elderly males of the household of the focus group participants	12
Parents	12
Total	87

Instruments for data collection

Instruments for data collection were qualitative instruments such as focus group discussion, interview guide and personal observation. Focus group discussion is a data collection tool that is used to collect information from a group of six to 12 people who openly discuss a research questions by the aid of a skillful moderator. Focus group was used in this study because listening to others can help a participant to remember what she or he has heard, experienced, learnt and practiced in time past of the subject under investigation. [Readers can see details of as how focus group discussion was conducted on page 72 – 76].

Face to face interview was used because it helped the researcher to probe further and also offered the participants the opportunity to present

graphic details of the environmental situation in the study communities. Personal observation was used because it helped the researcher to observe the environmental situation of the study communities and that informed the framing and reframing of the interview guides or the questions. (See appendix A on page 152 for details of focus group discussion guide, appendix B on page 154 for details of interview guide and appendix C on page 157 for details of observation guide).

Data analysis

Responses of participants to the research questions were recorded in field notebook and on the memory of the author's mobile phone. The responses written in the field notebook were transcribed on A4 sheets before transferring them onto the computer. Also, statements taken from the field and recorded on mobile phone were transcribed onto the computer with the aid of a headphone. In order to form themes for specific questions same and similar responses to a particular question were flagged with specific colour to distinguish them from other responses to the same question. For example, to form theme for the question "What can be done to stop indiscriminate waste disposal practices? blue, red, yellow and green colours were used to differentiate the responses. For instance, red was used to mark the responses "If the District Assembly procures more skip containers to the communities" and blue was used to mark "If parents stop sending their children below 15 years to carry waste to dumpsite". The same process was used to group different responses for other research questions. Verbal quotations were used to back the analysis and also pictures taken from the field were used as

evidence to support it [analysis]. The analyses of this study were mostly qualitative.

Validity

To ensure validity or trustworthiness of the study the responses of the each category of participants were cross check with each other. For example, responses of the Chiefs, Assembly men/women, officials of the Assembly and focus group participants were cross check with each other. Secondly, the information collected with each data collection tool (interview, focus group discussion and personal observation) was not mutually exclusively. The responses from the interview were matched with the responses from the focus group discussion and results of the two instruments (interview and focus group discussion) were used to match the results of the personal observation to ensure trustworthiness of the responses given by participants. Also, some of the questions on the interview guides were rephrased in order to check the consistencies of the responses. And statements recorded electronically were played several times to correct any error made when transcribing them onto A4 sheets.

Challenges of the study

The participants of the focus group discussion in the New Abirem and Akim Afosu were scattered within the communities and finding venue for the group discussions was a bit difficult. But this challenge was resolved by explaining the importance of the study to participants. Also, it was difficult to meet the

DCE so the Presiding Member of the Assembly was used to replace the DCE. Again the District Coordinating Director referred the author to his deputy to answer questions the Coordinator was supposed to answer.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter covers the results and discussion of data collected from the study areas. It follows the pattern of the research objectives and questions of this study. The analysis was based on the information gathered from the field which includes responses from the research participants and the author's personal observation.

The Assembly waste management regime

The ideological stance of the Assembly's waste management regime is largely left wing since the cost of waste management is generally borne by the Assembly. The Assembly intends to move to the centre and share the cost of waste management with the residents. For instance, a pilot door to door waste collection service has started at a "gentry" suburb at New Abirem with the hope that it will be extended to other parts of the District if this pilot project becomes successful. This is because the cost of waste management is draining its [the Assembly] coffers. Excerpts of interview with two officials at the Assembly show that the Assembly is considering cost sharing (one of the elements of PPP in provision and management of public or social services) in its waste management strategy. [Readers can refer to conceptual framework on page 52 for details]

> *The cost of waste management has become a problem for the Assembly, we have started door to door waste collection service*

at a suburb of New Abirem. We are monitoring it to see how it goes and then we can take a decision to extend or not to extend it because some people can pay for quality service. (An official of the Assembly).

Residents who can afford must pay because waste management is collective responsibility. (Another official of the Assembly).

Traditional waste management practices

According to the participants of the study traditional waste management practices borders on 3Rs which are reduce, reuse and recycle. For instance, cocoa and kola husks were burnt and the ashes used as soda for local soap making (the soap produced is locally known as gyankisi or alata samina). Coconuts husks were used as fuel and shell of palm nuts were used as fuel by the local black and goldsmiths. Maize stalk was also used as fuel or dumped besides pit latrines and used as "ass-wipe" [toilet paper] after the seeds had been extracted from it. Maize leaves, palm and coconuts branches were processed to produce hats, door mats and other artifacts. Plantain, cocoyam and maize leaves were used to prepare and package food and drugs.

Other traditional waste management practices were the use of organic waste as manure to improve crop yield, ashes to control pest, insects and crop diseases. Soil from local waste dumps was used to nurse seedlings and waste from staple food such as cassava, plantain and cocoyam peels and chips were used to feed domestic animals or dried to be reused as food. This point was noted by two respondents who expressed the following observations.

> *In my house, we were using plantain and cassava peels to feed goats and sheep and some people were also coming to the house asking for waste of staple food to feed their animals so we hardly throw such wastes away. (A resident of Akim Afosu and a participant of focus group discussion).*
>
> *We barely throw organic waste away we dump it in our gardens to nurture our crops. (A resident of Adewsena and a participant of focus group discussion).*

These practices were similar to the traditional waste management practices of the villages in Mymensingh in the Brahamputra Basin, Bangladesh documented in the study conducted by Rahman (2009). According to Rahman (2009) people living in that geographic area recycle cow dung, vegetable refuse, wet straws and green grasses as compost and used ashes to control pest and diseases. It also confirms Muller, Scheinberg and Tashave's (1999) findings that leftover food items such as cassava, plantain and cocoyam peels have been used traditionally to feed domestic animals and that traditional waste management practices make waste unknown in some small tribal cultures.

Also, communal labour was used to clear and manage waste. For instance, communal labour was used to dig waste dumps, pit latrines, clean streets, weed streams paths and tidy community waste dumps. These practices can be likened to what is being practiced by the Focus Community Strategies (FCS), a formalized community group formed in the late 1970s in Atlanta, USA which has become a focal point members rallied around to clear

waste and plant trees to beautify Atlanta on community work days (Sheppard, 2012).

According to the Chiefs and most of the participants of the focus group discussions factors considered before community waste dumps were sited were location of streams which served as water for the community, routes which adjoined neighbour communities and foot paths leading to farms. For example, one of the Chiefs said that before they located community waste dump they considered channels of their drinking water sources to prevent contamination of their streams. Similar views of this kind were shared at the group discussions and the interview with others Chiefs.

Reasons assigned for these considerations were health and social related issues. Health related sentiments bordered on infectious diseases such as cholera and chicken pox that poor waste management practices could bring or result. Social related issues hinge on the embarrassment poor waste management practice could cause the community if a visitor from another community were to visit. This concern was summarized by one respondent who said that:

> *If a visitor from another community were to step on anything that emanates foul scent it could cause embarrassment to members of the community visited. (A resident of Mamanso and a participant of focus group discussion).*

It also emerged at the focus group discussions that waste separation was not a new phenomenon thus residents had burnt, buried and dumped waste openly depending on the nature of the waste. For example, dead

animals and contaminated or harmful waste were buried due to their health complications.

Almost all of the traditional waste management practices have been discontinued and some of the views expressed by participants in respect to the discontinuation of these waste management practices are reported as follows.

> *We can't continue with the traditional waste management practices because now the wastes we produce are not organic, they are plastics, you can't just bury them, dump them or burn them in an open. Also, initially land was not a problem now population has increased so is the volume of waste we create. Space to dump waste has become limited even spaces we initially earmarked for waste dumps have become residential areas. If you walk around you could see that this community is rapidly expanding. (One of the Chiefs).*
>
> *The way this and the nearby communities are expanding very soon it would be difficult to find land to be used as dumpsite. (One of the Assembly women).*

She added that:

> *People put up building [accommodation] every day. Land is becoming scarce which have made traditional way of dumping waste impracticable because nowadays communities relocate their dumpsite frequently. And even very soon the engineering dumpsite will have to be relocated.*

If these statements are juxtaposed with plates one and two on page 57 showing redevelopment of one of the places formerly used as waste dump at Zongo at Akim Afosu one could understand the views expressed by the Chief and the Assembly woman. Population is expanding, waste generation is increasing and land is becoming scarce to the extent that land formerly earmarked for waste dump has become a residential area and this situation cut across all the study communities.

Not only has land for communities' waste dump become difficult to find but also the practice of communal labour has reduced due to immigration. One of the sentiments expressed by a participant in respect to communal labour was that:

> *Some years back everybody in this community was a farmer. During Tuesdays and Fridays nobody goes to farm so it was easy to organize communal labour in the morning. Now this is no longer possible because the mining activities have attracted many businesses and formal organizations into this community. People working at the formal sector are many, they go to work even on Sundays and those who are not working with the formal sector also ply their trade every day like the formal sector workers and so communal labour which was initially helping us to fight waste is no longer possible. (One of the Chiefs).*

This is contrary to what Sheppard (2012) reported as the tradition of the "Atlantas" since 1970s in the USA. It also shows that the immigration into the area by the formal sector workers from urban centres is subtly causing chiefs of the area to gradually lose control of their people because of the culture

[working 24/7] of the immigrants. A personal observation in the study communities revealed that farming activities have reduced and individuals who even do not work at the formal sectors also ply their trade from Monday to Sunday. Thus the culture of the immigrants of working without setting a day aside for community work as was done previously when almost every community member was a farmer is gradually becoming a mirage especially at New Abirem and Akim Afosu. Hence working from Monday to Sunday which was alien to the locals has hampered the communal labour spirit of the indigenes and as a result of that no day is set aside for community work which hitherto was the norm or the tradition of the study communities.

The conclusion drawn from the responses of the participants and author's observation in relation to the discontinuation of almost all the traditional waste management practices were that globalization has incorporated the economy of the study communities into outside world and that has changed production for subsistence to production for mass consumption and international market. For example, palm oil produced in small quantities and consumed by the family or household has now assumed mass production status for international markets. Processing of palm nuts into palm oil does not involve mortar and pestles as was the practice years past but by electric machines. In short, production of palm oil has now been mechanized. Plates three and four on page 88 are examples of mechanized palm oil production. They were taken at Akim Afosu.

Plate 3: Mechanized palm oil production at Akim Afosu

Plate 4: Mechanized palm oil production at Akim Afosu

Implications of these on traditional waste management practices are that large acres of land have been used for palm plantations limiting space for both waste dumps and accommodation. Also, the volume of palm oil production has increased so is the waste it creates. (See plates five, six and seven on page 89 and 90 for details they were taken at New Abirem and Mamanso). Local black and goldsmiths have stopped using waste from palm

nuts as fuel because they depend mainly on electric and gas dependent machines nowadays and even if they were to use palm waste they cannot exhaust the waste of three local palm oil production centers generate in a week. This confirms the notion of some political economists of the Marxists' tradition that the consequences of mass production for international market are not limited only to exploitation of labour, timber and mineral resources in the developing countries but also extend to land grab and environmental degradation in these countries (Ake, 2008).

Plate 5: Palm nuts and oil palm waste

Plate 6: Palm kennels waste

Plate 7: Half burnt waste products of oil palm

On the other hand over dependence on the use of foreign products is also worsening the volume of waste in the study communities. Previously coconut and other husks were used as fuel a practice which reduced the volume of waste created. Now the main sources of fuel in the study communities are liquefied petroleum gas (LPG) and electric cookers. Maize

stalk (locally called brodua) has been replaced with toilet paper because *brodua* is considered as old fashion. So has the use of plastic brooms outpaced brooms made from palm and coconut branches based on the same perception [old fashion] (See plate eight on page 91 for illustration). Also, plastic packaging has replaced leaves as IRIN (2006 in Wiennah 2007) noted lifestyle choices and technological innovations are gradually changing traditional ways of food and drug packaging in Ghana. For instance, the use of leaves, glass, and metals as packaging has been replaced with plastics. According to Gambrah (2013) recently people have found plastic cheap, safe, hygienic and portable to serve and store drugs, food, water and other items a practice which was not common in Ghana in the 1980s and1990s.

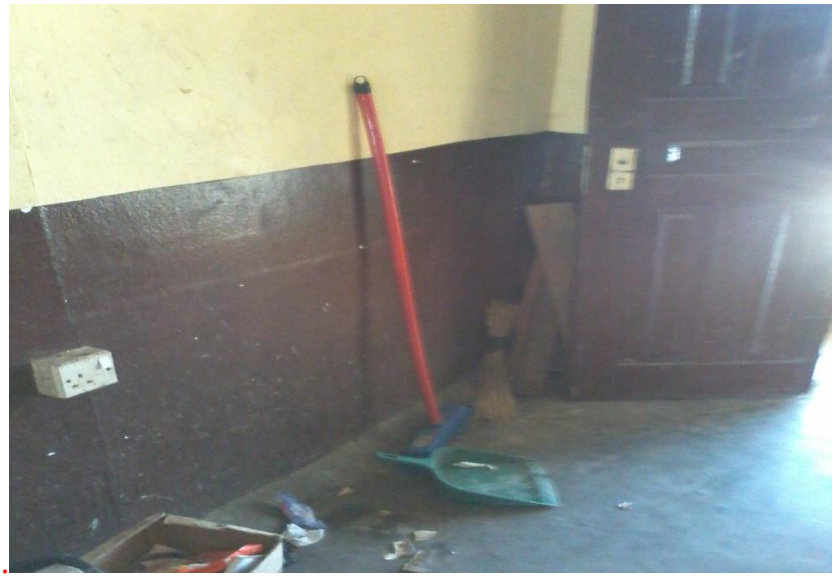


Plate 8: Plastic broom, plastic waste collector and a broom made from oil palm

Furthermore, it was observed that plastic disposables are used to serve food and drinks at social functions such as funerals, naming ceremonies, and other festivities. Due to their portability people have their meals and drinks in the plastics while walking and sometimes drop them indiscriminately after

use. It is easy to blame individuals for such actions as Poupiel (2010) and Freduah (2014) seem to suggest. According to them attitudes of individuals are partly responsible for poor solid waste management in their study areas (Tamale Metropolitan Area and Nima, Accra respectively). Views and experiences shared by some participants of the study also confirmed Poupiel (2010) and Freduah's (2014) claim that residents' attitudes toward environment were partly responsible for indiscriminate waste disposal practices. Examples of such views expressed by respondents are as follows.

> *Plastics could be carried by running water and air so one must be conscious of their actions and make it a point not to litter around because plastics littered around by some irresponsible individuals could create problems for another. (A resident of Abaase, New Abirem and a participant of focus group discussion).*

She added that she was a victim of such circumstance because when it rains the quantum of plastic disposables she found around her house were overwhelming.

Another respondent said that:

> *Sometimes you see people throwing rubbish around just like that if you want to correct them to do the right thing you hear some cheeky answers such as "is here your house?", "do you sleep here?" or "do you work with Zoomlion?" from the culprits. It is so annoying and insulting sometimes but you cannot just do anything to him or her. (A resident of Adawsena).*

These views were complimented by that of a resident of Akim Afosu who said that:

> *Many a time if I find some people littering plastics around, I approach them and ask why they are doing that, you will be shocked that somebody told me if he did not litter around Zoomlion would have nothing to do and someone even asked me "what is the importance of Zoomlion?".*

Many respondents of this study shared similar sentiments. On the face of these experiences of the research participants some of which have been narrated suggest that residents who indulge in such indiscriminate waste disposal practice have internalized such practice or it has become their habit or attitude. It is easy to blame residents' attitudes for such action as if they were born with it as many waste researchers such as Poupiel (2010) and Freduah (2014) have reported in their findings. However, a careful examination of historical antecedent of the nature of packaging and waste production in times past could help put such action in proper context. For instance, before 1980s leaves and paper were items used for packaging in Ghana (Gambra, 2013). Paper and leaves are biodegradable. Besides leaves could be eaten by domestic animals so dropping them indiscriminately may not have caused much environmental concerns. As Moore (2006) noted waste generation in Mexico had increased two fold for the past four decades and inorganic waste production has far exceeded organic waste making waste management in Mexico problematic. Also, questions that one may ask are has the Assembly provided enough dustbins for residents to drop portable plastic packages after empting their contents on the streets of the study communities? and have residents received

enough education on the menace of plastic to the environment? If these were and are not done then attributing residents' poor attitudes toward environment to indiscriminate waste disposal practice is poor judgment because those who indulge in such action are victims of circumstances.

The gradual discontinuation of the traditional waste management practices and low income level of most of the indigenes in the study communities may affect the Assembly's intention of moving the cost of its waste management regime from left (full cost payment) to the center (cost sharing). [Readers can refer to the conceptual framework on page 52 for graphic presentation]. This is because the area is becoming urbanized as the result of population increase and the culture of the immigrants but there are still elements of "ruralization" and poverty in the area. Hence the Assembly can allow the gentries and the middle class who can afford to manage their own waste whilst concentrating on that of the poor. This waste management regime is also likely to face some challenges because financial constraints may prevent the Assembly from managing waste efficiently as presented in the conceptual framework on page 52.

People who manage waste at homes in the study area

Participants of the study were unanimous in their opinion that traditionally women and young girls are responsible for cleaning homes. Males who manage waste in their homes are those who are single or married but not living with their partners, boy(s) who does/do not has/have girl(s) as sibling(s) and if the girl child in the house is too young to carry out domestic chores. Even with the last two domestic waste management practices boys

who fall victim of such circumstances are not supposed to carry rubbish to dumpsites at age 15 and above. Almost all of the participants of the focus group discussions who expressed their views on this issue were of the opinion that it is politically, socially and culturally improper to allow a male child who is beyond 15 years to carry waste to dumpsites even if the male child is willing to do so. Hence parents who allow their boys above 15 years to carry waste to skip containers receive innuendos from neighbours and community members either implicitly or explicitly because such act is considered demeaning to males above 15 years. For instance, one respondent said:

> *Males do not do that job* (referring to sweeping). *(A resident of Akim Afosu).*

Another respondent added:

> *I cannot allow my male child to carry waste on his head. (A resident of Mamanso).*

A respondent of Adawsena simply put it:

> *It is females' job* (referring to sweeping and gathering of rubbish).

This shows that the sexual division of labour in Ghanaian homes is not withering away any time soon because it is a socialization issue and also proves Muller and Scheinberg (1998), World Bank (1999), Gani et al (2012) and Schienberg et al (1999 cited in Muhammad and Manu, 2013) findings that at household level women and children manage waste in most cultures in developing countries. For instance, according to Yintii et al (2014) mothers sweep the house, gather the rubbish and children carry it to disposal sites. Males who manage waste at homes are those who are singles and married men

living without their families. Culturally, mothers are also expected to train their daughters on how to clean their homes (Yintii, 2014). It also confirms the assertion made by the International Consortium GTZ-ERM-GKW (2006) that in most homes in certain cultures waste is considered dirty and since its handling is demeaning and debases handler's status males are not allowed to handle it in some homes.

Fifteen participants of the focus group discussion were emphatic in their opinions that women are supposed to clean and carry rubbish from their homes to public waste dumps irrespective of the distance involved till they [women] are too old to do so or their children are old enough to carry out such domestic responsibility and that a woman who dumps waste indiscriminately is "a dirty and lazy woman". Another observation made during the discussion was that 16 participants of the focus group discussion used derogatory remarks about women whose homes are littered with rubbish especially in the morning and evening because in their opinions women were to clean their home twice a day. The following quotations carry some of the derogatory comments made about women by some of the respondents.

A woman who does not clean her home twice a day is a dirty woman. (A resident of Akim Afosu).

Every woman who refuses to sweep her home is not a good woman and she is lazy too.(A resident of Mamanso)

Women who were not properly trained in home managements by their mothers refuse to sweep twice a day. If a woman refuses to clean her house properly it means she is not coming from a good home. (A resident of New Abirem).

The conclusion drawn from the responses of the participant is that domestic waste management is a key factor in defining who a "good" woman is. For instance, if one visits a house and finds rubbish littered inside or outside the house women in the house are blamed for negligence of duty even though the house is occupied by males and females. Also, the labeling and perception of participants in particular reference to domestic waste management can be likened to Adepoju and Salimonu's (2010) description of residents of Osun State, Nigeria who litter waste indiscriminately as "dirty individuals" and KNCPC (2006, p.8) description of Nairobi residents as "throw away society" who do not appreciate "clean and safe environment".

Residents' involvement in the Assembly waste management plans

According to the four officials of the District Assembly, the Assembly uses information vans and general meetings with the Assembly men/women and Unit Committees to send information concerning its waste management policies to the communities it serves. Feedback is received through meetings with Assembly men/women and Unit Committee leaders. Three of Assembly members of the communities confirmed the claims of the officials of the Assembly. However, one Assembly woman revealed that in most cases she was not afforded the opportunity to relay information to members of her community. The following is an excerpt from the interview conducted with her.

> *I have not gotten the opportunity to relay the information gathered from the Assembly to my community because any time I want to organize a public forum I'm frustrated by some of the*

elders of this community who think that I would use such occasion to incite the people to demand accountability of how community funds are spent.

Three out of the four Chiefs were precise in their responses that the Assembly did not involve them in planning and implementing of its waste management strategies. For instance, one of the Chiefs said that ideally the Assembly woman of the community was supposed to brief him after attending the Assembly's meetings but she hardly does that and that she doesn't tell him what transpires at their meetings adding that most of the time he is kept in the dark on the Assembly's plans.

Another Chief also said that the Assembly thought he demands so much from it in terms of provision of social amenities and other services that may benefit his community and that had made it difficult for him to seek the audience of the Assembly because of the pressure he mounts on it [the Assembly] for support for improvement of social services for his people. He added:

My opinion is not sought when the Assembly is planning its waste management strategies.

The last Chief in this response category simply said:

The Assembly does not seek my opinion when mapping their waste management strategies.

The Chief who did not give a precise response in relation to his involvement in the formulation and implementation of the Assembly waste management strategy was hoping that the Assembly would cement the floor of where his community skip container has been sited. Below was the view he

maintained in response to the question of his involvement in the formulation and implementation of the Assembly waste management plan.

I have met the DCE, he has promised to cement the floor of where the skip container has been sited. (The said Chief).

The conclusion drawn from the response was that maybe giving a precise answer on the matter could prevent the Assembly from fulfilling its promise [cementing the floor of the community's skip container site].

Views expressed by the participants of the focus group discussion also point to the fact that residents are not consulted in the formulation of the Assembly waste management policy. Many of the participants were of the view that if the Assembly has any message for them it would be passed through their leaders. This means the Assembly could adopt a two-step information flow model or theory to effectively communicate its waste management strategies to the residents. Some of the participants of the group discussion also responded that their views have never been sought by the Assembly and that they were looking forward to the day a forum on waste management would be organized by the Assembly so that they could articulate their opinions or vent their frustrations on the issue.

The conclusion drawn from these responses is that there is a communication gap between the Assembly and the communities it serves and it comes as a result of the Assembly's over reliance on the Unit Committee members and the Assembly men/women as the channels of communication between it [the Assembly] and the communities. As one of the officials of the Assembly put it:

> *You know the Assembly cannot deal with all the members of the communities so we speak to them through their opinion leaders. We meet committees' members and the Assembly men and women so we get the feelings and needs of the people from them and it is expected that they tell their communities what transpired in our meetings.*

This and similar views were expressed by the officials of the Assembly. This proved that the Assembly is over relying on the Assembly men/women to send information and collect feedback on its waste management formulation and implementation policy or strategy. Hence the assumption of the Assembly is that the Assembly men/women are conveying information of their meetings to the people but that is not the case. The author of this study does not claim to be a media expert but the best one could describe this communication plan is "arm chaired communication plan". And if the Assembly is relying on the information gathered at its meetings as source of data for planning its waste management strategies, then it was not surprising to see waste dumped and burned indiscriminately at all the study communities [See plates nine to 16 on page 101 – 102 taken on the field for illustrations]. This is because one cannot sit in the comfort of his or her office and depend on information gathered from 40 Assembly men/women and 29 Unit Committee members who may be partisan in their presentations as the true reflection of 89 communities and 78,907 people. Hence any blame game of indiscriminate waste disposal practices on the residents of the communities is misplaced.

Plate 9: Indiscriminate waste dumping at Adawsena

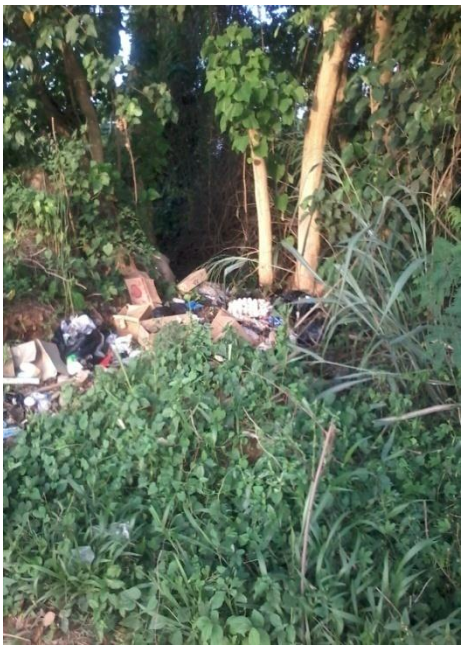


Plate 10: Haphazard waste dumping at Mamaso

Plate 11: Open waste burning at Akim Afosu

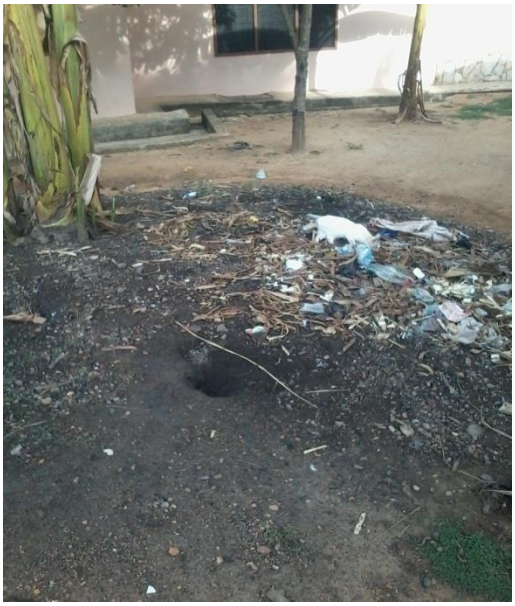


Plate 12: Backyard waste burning at New Abirem

Plate13: Open waste dump at New Abirem

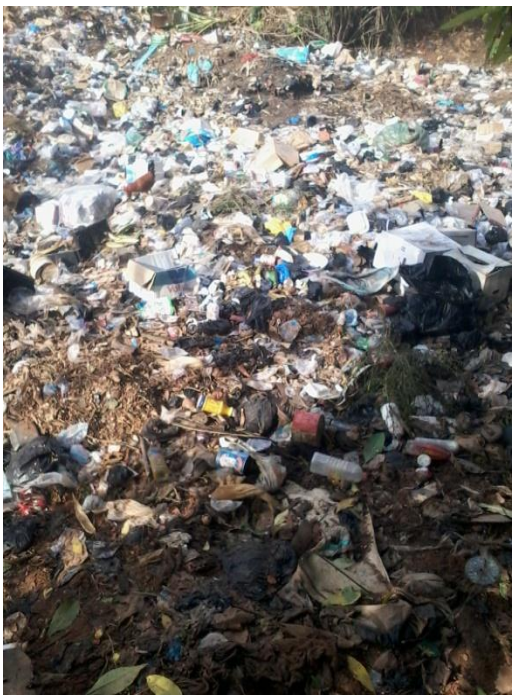


Plate 14: Open waste dump at New Abirem

Plate 15: Messy plastic dumping at Mamaso

Plate 16: Messy plastic dumping at Adewsena

Also, driving mobile van through communities and making announcement on loud speakers fitted on the roof of the van does not amount to communication. It can be described as "talking" because communication

involves a two-way process (sender and receiver). The receiver of the message must be able to decode the message and send feedback to the sender. By so doing the sender can clear any misinformation and communication bearer on the part of the receiver. Hence the Assembly's waste communication is ineffective since residents are not getting the message let alone act on it. It amounts to the old magic bullet or hypodermic needle theory of the press of which effects of media message on audience were seen as direct and as such effect of mass media was likened to reaction of physician's prescription or injection on a patient. Media experts discovered that the effect of media message on audience is not direct and as such these theories were discarded because of their inherent flaws.

The conclusion drawn from the Assembly's communication strategies in reference to its waste management is that the Assembly waste management plan or strategy is a top-down approach residents participation is very minimal but this does not come as a surprise because even the national waste management strategies captured in the 1999 Environmental and Sanitation Policy revised in 2010 is a top-down approach. This document [1999, 2010 National Environmental and Sanitation Policy of Ghana] which is one of the key policy frameworks guiding waste management practices and sound environmental governance in Ghana does not clearly spell out how households should participate in decision-making process of waste management plans of the Assemblies so it does not come as a shock that residents in the study communities are not active in the Assembly's waste management plans. And this could partly explain why indiscriminate waste disposal practices are rife in the study area (see plates nine to 16 on page 101 – 102 for graphical

presentation). This is contrary to the UN Conventions on Human Settlement, specifically Principle 10 of the 1992 (p. 2) Rio de Janeiro Conference which obliged member countries to solicit direct views of their citizens in their environmental management policies and also make information on environmental management readily accessible to them [citizens] to ensure their full participation in the environmental decision-making process. Extract of Principle 10 states "Environmental issues are best handled with the participation of all concerned citizens, on a relevant level. On a national basis, each individual should have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes". It is also in contrast with Furedy's (1989) finding that community participation helps make management of social and public facilities successful and Anschutz's (1996) conclusion that waste generation and management are recurrent activities and that without residents or public participation it is difficult to execute waste management strategies successfully. As Gotame (2012, p.4) asserted "Community participation is considered important because it is believed that the involvement of the community in an activity like waste management helps them decide about their life and the issues that affect their daily life… It helps them decide their priorities". Therefore, the revised 2010 National Environmental and Sanitation Policy needs thorough revision if Ghana is serious about her quest to lessen indiscriminate waste disposal practices in her urban areas.

Also, the marginalization of the residents in terms of decision-making process in the formulation and implementation of the Assembly waste

management policy is tantamount to political exclusion. The likely implication of this may be that the Assembly movement toward the center [PPP] in term of extension of door to door waste collection service into other parts of the District to lesson or share cost of waste management may not be successful. This is because residents are not involved in the Assembly's waste management decision-making processes. Hence some residents may resort to indiscriminate waste disposal practices if they are made to bear the cost of their waste management as indicated in the conceptual framework on page 52.

Where participants of the focus group discussion dump waste and reasons assigned for such practices

Waste disposal is one of the key elements in waste management practices. The success of the waste management depends on proper waste disposal practices [dumping and burning of waste at approve sites under hygienic condition]. It is against this background that on the benevolence of the Newmont Mining Company, the 89 communities in the Birem North District have received an engineered landfill site at Old Abirem as the company's social responsibility. To some extent the landfill site is helping the study communities but there is much to be done. This is because majority of the residents still face serious challenges as to where and how to dispose of their domestic waste. For instance, personal observation and responses from the participants of the focus group discussions revealed that those whose homes are not close to the communities' central waste collection points or skip containers dumped, buried and burnt waste at the back of their homes. The

following quotations are some of the responses given by respondents in relation to this issue.

> *I have dug a hole at the back of my house and that is where I dispose of my rubbish. (A resident of Akim Afosu)*[Example of such holes can be found on page 106]

Another respondent said:

> *As for me, I separate plastic from the other rubbish and when this is done, I throw the organic into my garden. It helps my crops grow and burns the plastic at the back of my house. (A resident of New Abirem).*

A respondent at Adawsena added:

> *I burry waste that emanates foul scent and dispose of the rest at the back of my house, where I stay that is what everybody does because we do not have a place to dump our waste.*

Plate 17: Pit waste dump at Akim Afosu

Plate 18: Pit waste dump at Mamaso

Three participants of the focus group discussion [two are residents of New Abirem and one stays at Akim Afosu] pay one Ghana Cedi (GHC1) to

the Zoomlion workers who sweep streets in the morning to get their waste transported to the skip container sites. Only one participant of the focus group discussions had taken advantage of the door to door waste collection service at New Abirem. [Readers should note that door to door waste collection service is available at a suburb of New Abirem only]. Only few participants of the focus group discussions carry their waste to the community's central waste collection points and these people happen to be those staying very close to the skip collection points. These findings substantiate Poupiel (2010) and Yintii et al (2014) assertion that residents dump and burn waste indiscriminately if the distance between their house and the secondary waste collection point is far. According to Puopiel (2010) 79.2 percent of his participants walked over 10 minutes before they could access skip sites and as a result of the frustration they faced in trekking this distance 57.9 percent out of the 79.2 percent burnt, buried and dumped waste at their backyard. Alhassan et al (2010) estimated that distance between some residents of the AMA and skip site ranges between 450-500 meters even though the maximum distance between skip sites and residents should be 150 meters and as a result of that indiscriminate waste burning and dumping has become a common practice in the AMA.

An enquiry into the residents who pay one Ghana Cedi to get their waste transported to the skip containers by the workers of the Zoomlion Ghana Limited revealed that some few residents who can afford to pay one Ghana Cedis a day also carry their waste to the road side every morning for it to be transported to the central waste collection points. Tricycles are used for such transportation. According to residents who engage in such disposal practice and the workers of Zoomlion, it is an unofficial agreement between them and

any residents who can afford is free to join. On the face of it one can accuse them of using official hours and other resources for private gain but on contrary they are reducing indiscriminate waste dumping and burning in the area no matter how bad their intention could be described. This action also substantiates the assertion of the mid-range political economists that private sector participation in running of public service such as waste management could help address some of the problems associated with waste management practices. This also demonstrates that a broad consultation of the views of residents into the Assembly waste management policy may help it [Assembly] to fashion a need-base-approach policy in terms of financing the cost of its waste management service in reference to the income of the residents. And by so doing the Assembly can check the viability of its intended movement toward centre (PPP) in terms of funding its management service.

The door to door waste collection service operates at New Abirem only and it is limited to the upper and middle class because they can afford such service. However, it did not come as shock as many waste researchers such as Annepu and Themelis (2013) and Ahsan and Zaman (2014) have reported that such waste management practices are a typical culture of the gentries. Residents who have subscribed to this service pay Twenty Ghana Cedis (GHC2O) a month which is far cheaper than what residents who carry their waste to road sides for onward transportation to central waste collection points pay. But when a question that relates to payment of waste collection service was posed to 12 males selected from the households of the focus group discussants the following were their answers. Six of them were of the view

that they would pay if they have regular jobs or if their businesses were doing well. The following responses are extracts from the data.

> *I would pay if my business is doing well. (A residents of Akim Afosu).* He buys and sells kola nuts.
>
> *Sometimes it is difficult for me to have one Ghana Cedi in my pocket. (A resident of Mamanso).*

He continued:

> *Sometimes my children go to school on empty stomach so paying now will be difficult but should I get a permanent job with regular income, yes I will pay because sometimes I pity my son walking such a long distance carrying rubbish on his head to the container [central collection point] before he comes back and prepare for school.*

He added*:*

> *I don't like it but I don't know what to do too.*

The said resident is not skilled and described the nature of his job in Akan language as "Paantia". He mentioned some of the activities involved in it as mixing mortar and helping people in their farms locally called "by day". He is a small scale farmer too. Similar sentiments were expressed by the other four.

Four out of the 12 males selected from the household of the focus group discussants were of the view that they cannot pay for something which is of no use and interest to them. One interviewee could not understand how he stood to benefit from paying for his waste to be disposed of. He said that he cannot pay for something which is of no use to him and must be discarded. *(A resident of Adawsena).*

Another interviewee said:

> *I am paying for water bills, electricity bills, school fees and feeding my children at the same time. Now I should pay for the waste I am throwing away, no I don't have such money. (A resident of New Abirem).*

Meaning he would not pay to get his waste collected. The other two participants in this response category expressed similar sentiments. The remaining two males responded that they would pay if the waste collection service would be efficient.

This is contrary to Puopiel's (2010) finding that a whopping 76.5 percent of respondents living in low class area of the TAMA with an average monthly income of Two Hundred and Sixty Ghana Cedis (GHC 260) were prepared and willing to pay for door to door waste collection service. Furthermore, it is also in contrast with Adepoju and Salimonu's (2010, p.7) discovery that a colossal 87.5 percent of their respondents in Osun State, Nigeria were willing to pay for an improved waste collection service at "less than five percent of their monthly income" but confirmed GARED's (2008) findings that cost of waste management services did not form part of the most priority areas of households' expenditure of the residents of Birim North District. According to GARED (2008) households' expenditure on waste at Birim North District is very minimal as compared to education, food and health care. Also, it emphasized Snel and Ali (1999) and Gotame's (2012) conclusion that due to high demands on household income by food, cloth, education, rent and energy the poor find it difficult to consider charges on waste collection as part of their priority expenditure and burn or dump waste

indiscriminately. Hence without local government free waste collection service the poor in society would not get their waste collected (Practical Action Nepal, 2008; Oberlin, 2012; Annepu & Themelis, 2013). It also proved the argument of the left wing political economists that commercialization of public services disfranchises and marginalizes the poor. It limits their access to social services that would help improve their living conditions. As Kwame (2010) and Freduah (2014) noted, sight of uncollected waste and its health hazards and negative social implications are common in poor urban neighbourholds. Kendie (1999 cited in Mariwah, 2012, p. 296) also observed that due to financial difficulties the rich are given priority over the poor in the local government waste service. As Spencer (2012, p.2) also put it "Politically, the issue of sanitation coverage is complex because often the people who need access the most are also the most impoverished and disenfranchised, with the least amount of political capital and persuasive power".

On the issue of the males participants who see no benefits in paying for the disposal of their waste conclusion drawn from their statements is that their responses were born either out of frustration of their poor financial situation or their inadequate information on the harmful effects of poor domestic waste management practices. If the latter is the case, then it emphasizes the conclusion that the Assembly's waste management education campaign is ad hoc and ineffective and needs more efforts to let its [Assembly] communities understand why they should pay for waste management services otherwise the Assembly's aim of extending door to door waste collection service to other parts of the District will fail. Also, in reference to the conceptual framework financial constraint is making full funding of waste management by the

Assembly impossible and it looks as if privatization or commercialization is not the answered either. The Assembly intended movement toward center (PPP) also requires strategic analysis of the sources of funding of the District and the level of income of the residents and their [residents] preferred choice of waste management to make the cost sharing on waste management attainable.

Reasons why people dump and burn waste indiscriminately

Views expressed by participants in reference to the above were much similar than different. According to 51 participants of the focus group discussions, four Chiefs, the Assembly man and three Assembly women, four officers of the Assembly and the 12 males distance between residences and the secondary waste collection points or skip site is the major reason compelling many residents to dump, burry and burn waste indiscriminately. They were unanimous in their opinion that skip containers were not enough for the size of their communities. For instance, New Abirem has three skip containers, four are allocated to Akim Afosu and Mamanso and Adawsena has one each. What has compounded the problem is where to site these skip containers. This is because housing units of these areas have been built without recourse to proper town planning procedures, therefore, streets to allow easy vehicular movement are virtually not in existence rendering most homes inaccessible to waste trucks. This view was supported by all of the Chiefs who lamented that their towns were old and for that matter the way and manner some of the houses have been built make movement of waste or skip trucks virtually impossible. The Assembly man and women, four officers of the Assembly

and the 51 participants of the focus group discussions also expressed this sentiment.

Also, irregular collection of waste from the secondary waste collection points by the Assembly has resulted to waste over flowing skip containers. Problems emanating from the uncollected waste are that people dump waste besides the skips and the stench coming out of the uncollected waste inconvenient not only people staying close to them but their visitors. Hence the owners of the land where the skip containers are located who also stay closer to the containers have prevented the Assembly from using their land for such purposes. On the basis of this all the three skip containers allocated to New Abirem are located at one particular spot (see plate 19 on page 114 for illustration). In the case of Akim Afosu, the problem has resulted to citing of two skip containers at one spot and the other two at another spot (see plates 20 & 21 on page 115 for details). At Adawsena, residents who stay closer to the skip container complained bitterly about the inconvenience the scattered rubbish and over powering stench emanating from the uncollected waste cause them and their visitors. One respondent whose house is closer to the skip container at Adawsena expressed this sentiment.

> *Most of the time it is difficult to breath fresh air when I am in my house sometimes it is difficult to eat.*

She continued:

> *It embarrasses me when my visitors walk through scattered rubbish.*

The situation is not different at Mamanso as the participants of the group discussion narrated that initially the skip container was sited at the middle of

the community so that it could be accessible to many residents but the owner of the land where the skip container was initially located prevented the Assembly from using the land for such purposes after some residents littered rubbish on the land when transportation of skip container delayed. On the basis of that the skip container had been relocated to the outskirt of the community. Participants of the group discussion at Mamaso view the relocation as a measure that had compounded indiscriminate waste disposal practices in the community because distance between the new location and many residences is far.

Plate 19: Skip container site at New Abirem

Plate 20: Skip container site at New Road, Akim Afosu

Plate 21: Skip container site at Zongo, Akim Afosu

Plate 22: Skip container site at Adawsena

A personal observation of the area in respect to distance between most residents and the location of the skip containers revealed that it is practically impossible for most residents to walk a distance of 30 to 60 minutes before they could access secondary waste collection points (skip containers). The situation at New Abirem and Akim Afosu is such that even some residents could walk more than an hour before they could access the nearby skip container. This problem could partly why indiscriminate waste disposal practices are rife in the study areas (see plates nine to 16 and plate 22 on pages 101- 102 & 116 for graphic details). Such poor waste disposal practices can be likened to Kwame (2010), Puopiel (2010), Annepu and Themelis (2013) and Yintii et al (2014) findings that indiscriminate waste disposal has become a common practice in urban Ghana due to poor road networks and distance between people's homes and the secondary waste collection points.

All the four officials at the Assembly expressed the view that the District Assembly could not transport skip containers regularly when they are filled with waste because the Common Fund is not only inadequate but it also

delays unduly, performance of IGF is poor and the skip truck also breaks down frequently. This buttress Nyakaana (1997), WSP (2011), Ramos et al (2012) and World Bank (2012) findings that local governments in developing countries are gradually failing to collect heaps of waste cities and urban dwellers generate and it supports Annepu and Themelis (2013) and Yintii et al (2014) conclusions that inadequate and delay in releasing of the Assembly's Common Fund have rendered the Assemblies ineffective in their efforts to address indiscriminate waste disposal practices. This partly authenticates the notion of the right wing political economists that state involvements in the provision of some social services are often botched with excuses and inefficient service delivery. Also, it has confirmed the conceptual framework that full funding of the cost of waste management by government may likely trigger indiscriminate waste disposal practices. Because central or local governments alone cannot efficiently fund waste management due to the huge cost involved (World Bank, 1999, 2012). Thus the Assembly's intended movement toward the center (PPP) on the funding of waste management is a step in a right direction.

Identities of the people who dump waste indiscriminately

Majority of the 51 focus group discussants labeled women who dump and burn waste arbitrarily as "lazy and dirty women". Views held by some of them were women who litter waste arbitrarily did not receive proper upbringing from their mothers because traditionally a woman is supposed to handle waste hygienically due to its [waste] negative health complications to her family and neighbours. Single men were also identified as people who

litter waste indiscriminately but surprisingly participants did not describe them [single men] with disparaging remarks even though their actions were considered to be harmful to the well being of all. For instance, some of the participants of the focus group discussion and two chiefs who identified single men as some of the people who dump waste indiscriminately said that some single men sneak out at dawn to dump their waste haphazardly on their way to work or farm without tagging them [single men] with any denigrating remarks.

According to the participant of the study other culprits who indulge in indiscriminate waste disposal practices are children. Many of the participants held the view that children do not intentionally dump waste indiscriminately and that in most cases children dump waste on their way to the skip containers if they [children] are tired of carrying the waste. According to participants some of the children who managed to reach the skip containers dumped their waste besides the containers because the container is taller than them. To solve this problem metal structures have been mounted beside the skip containers to serve as a ladder for the children so that they could stand on them and dump their waste inside the containers instead of on the floor. Ironically, this initiative has not stopped some children from dumping waste on the floor of the skip containers (see plate 22 on page 116 for graphic presentation). A personal observation revealed that the size of the load some of the parents allow their children to carry to the skip containers is heavy. It was pity to see some of the children reeling under head pans full of waste to the skip containers. Also, the space between the floor and the first step of the metal structures is too long and as such some of the children find it difficult to climb the structures with a load of waste on their heads. Hence the size of the waste

some parents allow their children to carry and the space between the steps of the metal structures could partly explain why some children dump waste on their way to skip containers and on the floor of the containers respectively. The Assembly men/women explained that the space of the metal stand and the floor is long because the floor of the containers is not cemented so they anticipated that continuous stepping on it by the children would make it penetrate the floor to shorten the space. [Readers should note that at New Abirem the floor of the skip containers has been cemented so dumping on the floor was very minimal].

The interaction with the parents revealed that the children were the only available human resource the parents could depend on for such domestic tasks. For instance, four out of the 12 were the first children of their parents. Of the remaining eight the older siblings of three were in boarding schools at the second cycle level while elder siblings of two were on visit to relatives in urban cities. Of the remaining three, siblings of two were sick and the elder sister of the last one had been sent on another errand. A female resident at Mamanso who was a respondent had the following to say about children carrying refuse to dumpsite.

> *I just came back from the market, his father will be at home around 5: 30 PM. When he comes and his food is not ready, he would get angry at me, Kwasi [pseudo name] is the only person at home now because his elder sister is in boarding school so I had to send him.*

Another respondent asked:

> *Adjoa is the only child in this house if I do not send her whom should I send?(A resident of New Abirem).*

In addition to the above some parents considered sending their children on such errands as part of their training to become responsible adults in future. This also allows the parents to attend to other domestic chores. However, the crux of the matter on this issue is the size of waste some parents allow children to carry and for that matter public education on the size of waste a child should carry to the skip containers may help reduce the problem.

Plate 23: Girl child carrying waste at New Abirem

Plate 24: Boy child carrying waste at Mamaso

Plate 25: Girl child carrying waste at Akim Afosu

Plate 26: Boy child carrying waste at Adawsena

On the issue of the responsibility for the indiscriminate waste disposal practices on the part of the Assembly there were two conflicting opinions to this issue. Two out of the four officials interviewed at the Assembly responded that waste management is a collective responsibility and as such the Assembly could not be blamed for indiscriminate waste disposal practices of the area. Another two were of opinion that the Assembly is responsible for such action because financial constraint has prevented the Assembly from providing the necessary infrastructure such as good road networks and waste equipment and materials (enough tricycles, dustbins, skip trucks and skip containers) to the communities. The latter opinion validates Puopiel's (2010) assertion that

inadequate waste management equipment and materials such as skip, waste trucks, dustbins and tricycles were the factors rendering the TAMA ineffective of collecting and transporting heaps of waste Tamale Metropolis generates. It also confirms World Bank (2012) reports that local government in developing countries are gradually failing to collect heaps of waste urban dwellers create. And partly explains why residents may dump and burn waste indiscriminately if the cost of waste management is solely borne by government as the conceptual framework on page 52 indicates.

Furthermore, it substantiates Aprilia, Tezuka and Spaargeren's (2012) study that sometimes there is confusion in the perception of the people as whose responsibility should waste management lie (whether government or households). For instance, according to their study 47 percent of the respondents agreed that waste management is shared responsibility between government and the people whilst 49 percent also believed that waste management is the sole responsibility of government. This tied percentage of opinions could lead to a situation where nobody would take responsibility for the situation leading to blame games.

In another scenario even though each of these two conflicting opinions given are reasonable, it proves that the Assembly has no comprehensive waste management plan. If the Assembly has a comprehensive waste management blueprint or framework there would be uniform information in the opinion of the top officials. This is because a good policy framework has a well planned communication component or policy to ensure that information given by any official is uniform, what many media experts describe as "Information Management".

Effects of waste on social relation

In most of the literature reviewed effects of waste are mostly related to health and poor environmental governance (WSP, 2011; Gotame, 2012; Oberlin, 2012; Spencer, 2012; World Bank, 2012). Others also centered on social disorder which manifests in the demonstrations embarked on by the residents who stay close to landfill sites due to their [landfill sites] poor management by the local governments (Moore, 2006; Mazinyo, 2009; WSP, 2011). However, effects of waste on social relations in this study concern with how waste affects marriages and interactions between neighbours. Information gathered at the focus group discussions indicated that indiscriminate waste disposal on one's compound does not necessarily lead to quarrels or verbal attacks on the culprits. Unless the culprit repeats his or her action or culprit (the one who has littered or dumped waste on another person's compound indiscriminately) refuses to heed to the reproach of the one whose compound has been littered or the one who has seen him or her dumping the waste. Participants of the focus group discussions who expressed their views on this issue said that in most cases the culprits understand and pick whatever he or she has dumped but if he or she does not show any remorse and the action is repetitive then the matter is reported to the elders for amicable settlements. In relation to this issue a participant from Akim Afosu said:

> *Any time I see somebody dumping waste on my compound, I rebuke the person and let him/her collect the rubbish.*

Another participant said:

> *If I see someone dropping waste on my compound or another person's compound, I impressed on him/her to stop such habits.*

If I see the same person doing that again I report the matter to the Assembly man. (A resident of New Abirem).

These and other similar sentiments were recorded at the focus group discussions. According to the Assembly man and women they received reports about such incidents from time to time and settled them amicably. One Assembly woman had this to say:

Sometimes people come here with anger on such issue but I intervened, I rebuked the culprit and settled the matter.

Residents disapprove indiscriminate waste disposal due to its health complications, social stigmatizations and sanctions they feared they may receive from Sanitary Health Inspectors. The following are excerpts from the data to illustrate this point.

If I do not rebuke and stop the person arbitrarily dumping waste on my compound, it would look as if I have deliberately left waste on my compound, so in case a Sanitary Inspector chances on it I would be sanctioned and not the one who secretly dumped that waste on my compound. (A participant at Mamanso).

If people see waste on my compound they would perceive me to be a dirty woman, so if I see the person I will stop him or her from doing that. (A resident of Adawsena).

Waste can cause illness so I will stop the person from doing that. (A participant at Afosu).

On the effects of waste on marriage, responses given indicate that if a wife refuses to sweep her matrimonial home and she is not sick or cannot find

reasonable explanation for such action she faces four main sanctions from her husband. The ultimate of the sanctions is divorced. The other three sanctions are her husband could stop maintaining her, her husband could report her to the elders for reproach with the hope that she would change and she could be sent to her mothers' home for retraining in domestic chores. [Readers should note that on the third sanction, respondents explained that it is not a divorce but separation]. Popular response given in the divorce response category recorded was:

> *Why should I marry her, I marry her to keep my house clean, so if she fails to do that without any reasonable explanation, I will divorce her. (A participant at Akim Afosu).*

The only male participants who would not sanction his wife said that:

> *I will be wondering why my wife is doing that, it maybe that I have not given her house keeping money, maybe I have not pay the children's school fees, even if she is doing that for no apparent reasons, it would not worry me I will hope that she will change but if she does not change no problem I would take it like that because we came from different backgrounds. (A participant at New Abirem).*

Married men who sweep their homes if their wives were sick or there is reasonable excuse for her not to perform such function would do it only for a short time (maybe three days or a week) and even with that they prefer sweeping at dawn (4:30 – 5:30 AM) to avoid embarrassment from their neighbours. Responses given by participants who were married men point to

the fact that neighbours would perceive them as weak husbands or a spell has been cast on them by their wives. One respondent said that:

> *I would be sweeping and my wife sleeping or sitting down doing nothing it means she is the man and I am the woman in this house. (A participant at Mamanso).*

Another participant said:

> *If I sweep this house continuously whilst my wife is around it will look as if my wife has cast a spell on me. (A participant at Adawsena).*

This authenticates the notion held by many gender activists that sexual division of labour is a cultural issue and emphasizes Muller and Scheinberg (1998), World Bank (1999), Gani et al (2012) and Schienberg et al (1999) cited in Muhammad and Manu's (2013) conclusion that household waste management is the responsibility of women in most cultures in developing countries.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter covers summary of the findings, conclusions, recommendations and suggestions for further studies.

Summary of the study

This study used qualitative method to describe domestic solid waste management practices in the Birim North District in the Eastern Region, Ghana. Non-probability sampling techniques were mainly used to select 87 respondents to participate in the study. Focus group discussions, interview and personal observation were used to collect data. The analysis of the study was largely qualitative and centered on the objectives and the research questions.

The study revealed that waste is dumped and burnt indiscriminately and some of the factors responsible for this problem are poor funding of the District Assembly and residents low income status.

Findings

The findings of this study are the following.

Traditional waste management practices

Traditionally, waste was reduced, reused and recycled at the study communities. For instance, cassava, plantain and yam peels were used to feed domestic animals or dried for future use as food. Maize stalks were used as fuel or “ass-wipe”. Cocoa, kola, palm nuts and coconuts husks were used as

fuel or compost and sometimes these waste were burnt to produce soda. Maize leaves, palm and coconut branches were used for food and drugs packaging or artifacts or craftworks such as mat, doormat and hat. One major advantage of these practices was that they led to waste segregation and reduction making waste that was finally disposed of very minimal. Also, these waste management practices were easy to practice because production was mainly for household consumption and few for barter trade (subsistence level of production) and the waste generated yesteryears was mostly organic or biodegradable which did not have much environmental concern even if one dumps waste indiscriminately. Because it decomposes easily to re-fertilize the land or it could eaten by rodents and domestic animals. Many of these traditional waste management practices no longer exist and even if all of them are still in practice their effect on waste reduction will be virtually irrelevant because the traditional barter economy has changed to a cash economy. Now production is not for household consumption but for mass consumption and international market and as such waste generation has reached a monstrous proportion making local reuse and recycling insignificant to the quantum of waste produce. Corollary to the above large acres of land have been used for oil palm and citrus productions putting pressure on land and limiting space for landfills. Population keeps increasing in the study communities and as time passes by land for sanitary landfill site will be difficult to come by. Also, mode and equipment use for daily activities such as cooking, packaging and manufacturing of local artifacts have changed. For instance, now they depend on electric and gas appliances for cooking and blacksmithing instead of coconut husks, maize stalk and palm kennel shells. Plastic has replaced leave

packaging and other household tools such as brooms made of palm and coconut branches and because plastics are non-degradable their disposal is posing a real problem in the study communities.

In addition to the above community social networks such as communal labour which had been used to fight filth previously is no longer possible because everybody is not a farmer. For instance, once near egalitarian communities now have status differentiation as a result of immigration of elites, middle class and people with higher purchasing power. The culture the immigrants brought is dwarfing the culture of the indigenes. For instance, once farming communities now have a mixture of substantial number of formal and non-formal workers who ply their trade from Monday to Sunday making setting a day aside within the week for community work virtually impossible.

People who manage waste at homes in the study area

Women and children are responsible for domestic waste management practices. As Mothers sweep, gather the rubbish and children carry it to skip containers. Culturally, a male child is not supposed to be involved in this household chore unless he is unfortunate to be the first child of his family or he does not have female siblings. Even with the latter waste management practice, it is conventional for parents to stop allowing their male child at the ages of 15 years and above from carrying rubbish to dumpsites even if he is willing to do so. Parents who send their male children of 15 years and above on such errand risk receiving innuendos from other community members implicitly or explicitly. And because this practice is a socialization issue male children grow to see domestic chores as the responsibility of females only.

Hence when they [male children] become men and are living as singles without wives they sneak out at dawn to dump waste they create indiscriminately. Even though such action is inimical to the environment and health of the residents, they [single men] are not rebuked or chastised when they are seen dumping waste indiscriminately. However, if a woman dumps waste indiscriminately she is rebuked and labeled as a dirty or a lazy woman who did not receive proper training from her mother. Hence the insults women received when they dump waste indiscriminately extend to their mothers. But if men dump waste indiscriminately it is seen as normal.

The culture of partially or not training male child in domestic waste management practices partly explains why some married men would stop maintaining their wives if the women do not sweep their matrimonial homes. It also explains why some married women are sent to "elders' court" for tutorials on how "good wives" should behave. Furthermore, it can partially explain some of the separation or divorce cases. The social stigmatization of males handling of domestic waste illuminates why men want to sweep at dawn to avoid embarrassment from their nieghbours.

Residents' involvement in the Assembly's waste management strategies

The Assembly's key stakeholders in its waste management strategies in the area such as chiefs and residents are not involved in the Assembly's waste management plans. The Assembly is over relying on the Assembly men/women to relay information to the chiefs and the residents but the information is not trickling down as expected by the Assembly. The chiefs and the residents are not getting the message. Also, the mobile van announcements on waste management have not had any impact on the people because

residents seemed not to be aware of any waste management strategy of the Assembly. On the basis of these residents' participation in the decision-making process of the Assembly's waste management strategy is very minimal. Residents' participation is limited to views expressed by the Assembly men/women and Unit Committees at the Assembly's meetings. Unfortunately, the Assembly takes these views as the true reflection of the needs of the residents it serves. Hence it is not surprised that waste is burnt and dumped indiscriminately in all the study areas. Also, the Assembly seems not to have an effective and comprehensive blueprint on waste management as there were conflicting opinions of the information gathered at the Assembly. And even if there is any policy framework it is ad hoc and ineffective and its implementation is not having any significant effect on indiscriminate waste disposal practices in the area. For instance, the communication model the Assembly is using to articulate its waste strategy to the people can be likened to the old hypodermic needle and magic bullet theory of the press which had been discredited and discarded by media experts.

Common dumpsite for residents in the study communities

The two major sites or places residents dump, bury and burn waste are their own backyards and in their gardens. Reasons assigned for such actions were distance between their homes and the next available skip containers and inadequate waste equipment and material such as waste trucks, skip containers, tricycles and mobile dustbins on the part of the Assembly. The distance between most homes and the skip containers is long and as such it is practically impossible for majority of residents to walk a distance of about an hour to dump their waste in the skip containers. As a result of that residents do

not perceive dumping, burying and burning of waste at their compound as indiscriminate waste disposal practices. It is dangerous for residents not to consider these practices as indiscriminate because they are harmful to their health. Also, once they do not see anything wrong with their actions they may not stop such practices. Only few people who are staying closer to the skip containers carry their waste to the communities' waste dumps for onward transportation to the landfill site. What residents perceived as indiscriminate waste dumping is dumping on road side, foot paths, gutters and empty plots of land and besides the skip containers. Culprits of these actions were identified as "dirty and lazy women", children and single men.

Others reasons responsible for indiscriminate waste disposal practices were irregular transportation of waste from the skip site to landfill site, delay in releasing of the Common Fund and poor performance of the IGF. Constant breakdown of the Assembly's waste truck and residents' inability to pay for door to door waste collection service were also seen as some of the factors causing indiscriminate waste disposal practices.

Effects of indiscriminate solid waste disposal on social relations

At community level indiscriminate waste disposal on one's compound does not necessarily result in physical or verbal attack or it does not disrupt social interaction or social cohesion unless such action is repetitive by the same offender and or the offender refuse to heed to the advice of the one whose compound he or she has dumped waste indiscriminately. If the culprit shows remorse and if necessary picked the waste he or she has dumped the matter ends. Also, if one spots somebody dumping waste indiscriminately on another person's compound and the culprit heeds to the advice of the one who

had seen him or her the one whose compound has been littered with waste may not even have knowledge of what has happened but if the culprit did not show any remorse the matter is reported to the elders for an amicable settlement. Also, if the action is repetitive the worse punishment the culprit may receive is reproach from the elders of the community and the matter is settled amicably. Thus at community level indiscriminate waste disposal does not disrupt social cohesion among residents.

At household level the case was different, if wives refused to sweep or clean their matrimonial homes without any reasonable explanation it could lead to broken homes. The punishments for women who refused to sweep or clean their husbands' homes start from starvation and non-maintenance through reproach, separation and divorce. On the basis of this one could define domestic waste handling as the domain of the woman and because it is a cultural or socialization issue not only did the victims [women] see anything wrong with this cultural practice but also encourage it. Hence the cultural division of labour between the sexes is not withering away any time soon and it may need more than gender mainstreaming before some men may accept to take part of the household chores.

Conclusions

The following conclusions are drawn from the above findings.

- In a near future most of the traditional waste management practices may cease to exist because waste produce is increasingly becoming plastic. Also, production for mass consumption and international

market is making traditional waste management practices ineffective. Hence poor waste management practices may continue for long.

- Women's role as domestic waste manageresses may continue for long because it is a socialization issue. And women may continue to be burdened with domestic chores unless cultural practices that place women at home and stop men from helping them change.
- The Assembly's waste management policy lacks adequate planning and residents' participation in its formulation and implementation is also poor. These may prolong indiscriminate waste disposal practices in the District.
- Poor planning, lack of broad consultation and inadequate funding on the part of the Assembly have made indiscriminate waste disposal practices rife in the study areas. Also, residents' low income levels have led many of them resort to indiscriminate waste disposal practices.
- The effect of poor waste management on household is more severe than that of residents. Husbands can break their homes if wives refuse to clean the house.
- The overall conclusion that can be drawn is that mass production and plastic waste have made traditional ways of waste management virtually impossible in the study communities. It is likely that this problem may last longer because the Assembly and residents do not have enough resources to tackle the problem.

Recommendations

All the participants of the study including the four officials of the Assembly were of the opinion that provision of more skip containers can decrease the distance between people's homes and the skip containers' sites. About half of the participants also added that construction of roads could make some areas accessible hoping that these would help reduce the problem.

On the issue of irregular transportation of the skip containers when they are full with waste, the Assembly attributed it to its poor financial standing. To help solve this problem, the Presiding Member recommended that the Assembly must appeal to private organizations operating in the area to help it [the Assembly] regularly transports waste to the landfill site to avoid public nuisance uncollected waste creates to those staying closer to the skip containers, their visitors and passers-by.

Almost every participant of this study recommended prosecution of individuals who have a penchant for dumping waste haphazardly to serve as deterrent to others. They recommended that increasing the number of the Sanitary Health Inspectors [tankas] and resourcing them would help solve the problem. Three out of the four Chiefs and two out of the four officials at the Assembly and Assembly men/women recommended that waste separation practices such as segregation of the organic to be used as compost, metal and plastic for recycling and incinerating wastes that cannot be reused to generate electricity could help reduce the problem. They were also of the opinion that intensive public education campaign could minimize the problem.

All the participants of the study were of the opinion that stopping children under age 15 from carrying waste to waste dumps and cementing the

floor of the sites of the skip containers could help reduce indiscriminate waste disposal and also limits dumping of waste on the floor of the containers sites.

Some of the measures recommended by the research participants to solve the problem may not be practicable in the context of the study area. For instance, provision of more skip containers and construction of good road networks at new residential areas could help reduce the problem. However, these cannot work at old residential areas because these areas are inaccessible due to the nature of the housing units. In addition to the above getting sites for more containers at old residential areas could be problematic since it is difficult to find sites for the few the Assembly had provided because residents have resented the use of their land for such purpose due to irregular transportation of the skip containers when they are full. For instance, New Abirem has three containers all of them located at one site and Akim Afosu has four containers two located at one site and the other two on another site due to the above-mentioned problems. In the case of Mamaso the situation was worse. The distance between where the skip container is located and the majority of the residents is about an hour walk. The reason given was that no resident is prepared to allow the Assembly to place the container on his or her land. On the basis of this the Assembly could provide more tricycles in the areas where the road network is poor due to the patterns of the housing units (old residential areas) to make every home or majority of the homes accessible. The Assembly can also provide every ten houses in the old residential areas with mobile plastic bins which can be pushed to the nearby street when it is full so that it could be transported to the landfill site by the skip trucks. However, the Assembly can increase the number of skip

containers at new sites where the housing units are well planned and the road network is well constructed to reduce poor domestic waste management at these areas.

On the issue of stopping children under the ages of 15 years from carrying waste to the skip containers, a personal experience on the field and in an interview with their parents revealed that such idea is not practicable because children form majority of people who carry waste to skip containers. These children are between the ages of nine and 13. Information gathered from parents of these children was that they [children] were the only available persons in their homes to do that job when their elder siblings were not at home so stopping this practice could be problematic. In addition to the above some parents perceive that practice as a way of training their children to become responsible adult in future and their [the children's] contribution of helping their parents attend to domestic chores. Hence opinion leaders in these communities can educate parents on the size of load children can carry to dumpsite to prevent children from dumping waste indiscriminately.

Once single men have been identified as culprits who dump waste indiscriminately and root of this action has been attributed to cultural practice that stops mothers from training their young boys on domestic waste handling when they are 15 years and above and as result of that men find it difficult to handle waste especially in public it will be proper if parents in the study area and by extension society look at sexual division of labour which stops boys and men from handling waste and by so doing men will not be embarrassed if someone sees them handling waste in public. This may go a long to stop single men from duping waste indiscriminately.

The Assembly should not only rely on the minutes of meetings with the Assembly men/women and Unit Committees in formulation and implementation of the Assembly's waste management policy. The Assembly can conduct research on waste management practices in the area in order to get first hand information of what residents prefer and by so doing the Assembly can fashion policies to address indiscriminate waste disposal in the communities it serves. The Assembly can also organize fora on waste management to seek views of residents and incorporate them into its waste management policy.

The Assembly can add posters to its mobile van street announcement on waste management. For instance, posters on proper ways of waste handling can be distributed to residents or posted at vintage points within the communities to help educate residents on proper waste management practices to address the situation. However, these should be backed by provision of adequate waste logistics by the Assembly so that residents could positively respond to these strategies to reduce indiscriminate waste disposal practices in the area.

Suggestions for further studies

In connection to the above, it would be better if the following studies are conducted in the area in order to help solve the problem.

- Gender and waste with particular focus on how boys, single and married men handle waste.
- Willingness to pay for waste management on the part of residents.
- Need based approach on household waste collection preferences

- Political economy of waste with emphasis on cost of waste management to government and households' abilities to pay for waste management.
- Capacity of the District Zoomlion in terms of materials and human resource and the volume of waste residents create per day.

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APPENDIX A

Focus group discussion guide

Indiscriminate waste disposal

1. Where do you dump waste?
2. Why would you dump or burn waste at unproved sites such as roadsides, undeveloped land and gutters?

Traditional waste management practices

1 Please, can you tell us any traditional waste management practice you know?

2 Are they still in practice?

3. If yes, why do people continue practicing them?
4. If no, why have they stopped practicing them?

Who manages waste at homes

1 Who manages waste at your home and why?

2 When did the Assemblytake over waste management in this community?

3 We are you consulted before the taken over?

4 What has changed after the taken over?

Effect of indiscriminate waste burning and dumping on social relations

1 What do you feel if one burns and dumps waste indiscriminately in your neighbourhoods?

2 How do you react if you see or spot the person?

3 Do these practices affect your social interactions/relations with the person?

4 Can you speak on how such practices strain social interactions/relations?.

5 Please, can you speak on specific instances and give examples?

Recommendations

1 Please, can you offer solutions to the problem?

APPENDIX B

Interview guide

Interview guide for the Assembly men/women

Indiscriminate waste disposal

1. Please, do you receive complaints from residents on the state of indiscriminate waste dumping and burning in your community?
2. Please, can you speak on some of the complaints?
3. Why such practices persist?

Assembly's waste management strategies

1 Does the Assemblyconsult you if it is planning its waste management strategies?

2 If yes, please tell me your contribution

3 If no, please tell me how your absent can negatively affect waste disposal practices?

Effect of indiscriminate waste disposal on social relations

4 Does indiscriminate waste dumping and burning disrupt social interactions/ relation in this community?

4b. Have you received any complaint like that?

4c. Please, if yes can you speak on specific instances?

Recommendations

1 Please in your what should be done to solve this problem

Interview guide for the Chiefs of the Study Areas

1. Nana, please, can you tell me some of the traditional waste management practices in this community?
2. Are those practices still in practice?
3. If no, please can you speak on why they are not in practice?
4. Nana, please are aware that people indiscriminately burn and dump waste in your community?
5. Please, in your opinion what are the causes of this problem?
6. Nana, does the Assembly seek your opinion when it is formulating and implementing its waste management strategies?
7. Nana, please can you suggest feasible solution to address indiscriminate waste disposal in your community?

Interview guide for four Men in the Study community

1. Please, please can you suggest solution to stop indiscriminate waste disposal in this community?

Interview guide for the key personalities at the Assembly

Indiscriminate waste disposal

1. Why do residents dump and burn waste indiscriminately?

2Do you feel responsible for such actions?

3 If yes why and if no why?

Community participation in Assembly's waste management strategies

1 How do you communicate your waste management planning strategies to the communities you serve?

2 Howdo residents contribute to your waste management plans?

3 Please, can you speak on the challenges you faced in the implementation of your waste management strategies?

4 Whythose challenges?

Interview guide for elderly males

1 How do you react if wife did not sweep the house?

2 Please, can you offer solutions to indiscriminate waste disposal

Interview guide for parents

1 Please, how old is your boy how carried waste to the dump site?

2 Please, don't you think the load he carried was too heavy?

This is a guide the responds from the interview will prompt further questions.

APPENDIX C

Observation guide for the researcher

- Transient work through the communities to observe general environmental situation
- Standing at the central communal waste collection from 6am to 8 am in the morning and 4pm to 6pm to observe who carried waste to dump sites.