

UNIVERSITY OF CAPE COAST

GENDER DYNAMICS OF RURAL SOLID WASTE MANAGEMENT IN
TWIFO-ATI MOKWA DISTRICT

BY

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DECLARATION

Candidate's Declaration

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

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Supervisors' Declaration

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

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ABSTRACT

Proper solid waste management is key for sustainable environmental development. Despite high level policy efforts and technical investments, unmanaged solid waste remains a problem in Ghana. There is a paucity of information on gendered aspect of solid waste management in Ghana. It is in line with the gender and rural solid waste management gap that the thrust of this study is defined. The study sought to explore gender dynamics of rural solid waste management in Twifo-Ati Mokwa District.

The study adopted a qualitative approach and exploratory research design. Quota sampling and purposive sampling techniques were used to select respondents for the study. Evidence was gathered through observations, semi-structured interviews, focus group discussion and documentary review. The analysis of the data was done manually. The common trends defined from the data were sorted and organised into various thematic areas using the research objective and conceptual framework as a guide.

The main findings of the study were that household have differing views about what is regarded as waste. The study also revealed that traditional norms influence the behaviour of women, men and children in terms of solid waste management. It concludes that traditional gendered division of labour in solid waste management was not only limited to the private space but also the public spaces. This study explains why and how this new knowledge can be used to inform future policy and initiative on solid waste management.

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DEDICATION

To my parents, Ebenezer Boateng Amoah and Mary Kyeewah. Also my lovely siblings; Joyce Amoah, Jennifer Amoah, Josephine Amoah and James Amoah

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LIST OF ABBREVIATIONS

DAWN	Development Alternatives with Women for a New Era
EHSD	Environmental Health and Sanitation Directorate
EPA	Environmental Protection Agency
FGDs	Focus Group Discussions
GAD	Gender and Development
GAMA	Greater Accra Metropolitan Area
GNP	Gross National Product
GYEEDA	Ghana Youth Employment and Entrepreneurial Development Agency
MLGRD	Ministry of Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
PGNs	Practical Gender Needs
PPP	Public–Private Partnership
SGNs	Strategic Gender Needs
SWM	Solid Waste Management
UNDFW	United Nations Development Fund for Women
WAD	Women and Development
WID	Women in Development
WMD	Waste Management Department

CHAPTER ONE

INTRODUCTION

Background to the study

Issues with the disposal of solid waste can be traced from the time when humans began to congregate in communities and the accumulation of unwanted materials became a consequence of life (Tadesse, 2004). In the twenty-first century, however, the rate of waste generated is increasing even faster than the rate of urbanisation (Hoorway & Bhada-Tata, 2012). For instance, about 1.3 million metric tonnes of municipal solid waste was generated globally in 1990 (Beede & Bloom, 1995) and in 2012, the annual generation was 220.82 million metric tonnes (United Nation Environmental Program, 2012). Waste generation in sub-Saharan Africa is approximately 62 million tonnes per year (Hoorway & Bhada-Tata, 2012). According to Coffey and Coad (2010), the average rate of waste in developing countries is between 0.2-0.4 kilograms per day, though this number may vary greatly between and within cities.

Concerns about sustainable development and environmentally sound policies have been growing considerably everywhere since 1990 (Kohlscheen, 2003). Effective solid waste management is one of the essential drivers of human development. This is because poorly managed waste has several impact on health, local and global environment, and the economy. These impacts are most obvious in situations where waste collection and treatment is insufficient or even absent. Improperly managed waste usually results in

down-stream costs higher than what it would have cost to manage the waste properly in the first place (Hoorway & Bhada-Tata, 2012).

Waste generation and management need to be seriously considered and dealt with from different perspectives. Kadfak (2011) stressed that solid waste management involves different levels of actors who operate within different social spaces. This suggests that different locations require different solutions to solid waste management challenges.

Among several communities in Ghana, cleanliness is broadly embraced as a virtue. However, most of the time the perception of cleanliness is constrained to one's immediate environs with little care for what happens outside the households (Tsiboe & Marbell, 2004). The belief is that the state will take care of waste within public domain hence one should not be bothered. This kind of orientation Tsiboe and Marbell (2004) explain has some historical underpinning which they trace to colonial rule. Ghanaians according to them were alienated from events that took place outside their homes. Solid waste and its related issues were seen as the preserve of the colonial administration that usually employed sanitary officers to take care of the environs (Kendie, 1999).

Another aspect of the perception and attitude towards waste is the way persons with formal education perceive it. In the 1960s and the '70s, it was even considered a stigma to work with the Ministry of Local Government and various district assemblies, since they deal directly with local politics and environmental and sanitation issues at district assemblies (Tsiboe & Marbell, 2004). Even though civic awareness and re-orientation have largely repressed this state of mind, official records indicate that most district assemblies still

lack the requisite personnel to handle waste related issues. A state of affairs that appears to be indicative of the fact that the stigmatisation of waste collection may still exist albeit on a much lower scale (Post & Obirih-Opareh, 2003).

Primary responsibility for solid waste management in Ghana falls within the local government's mandate. However, in most instances, the state invites private sector to provide the actual services under contract or franchise, as appropriate. In the case of franchise, the franchisee may propose services above the minimum specified standard, as long as the user is able to pay can be relied upon. The franchisee may also propose tariffs and subsidy levels, subject to final approval by the local assembly (Ministry of Local Government and Rural Development, 2010).

Local government authorities have not been able to keep pace with the rapid accumulation of waste (Tsiboe & Marbell, 2004). Coinstreau (1987) assert that waste streams from households, congested market places and unplanned indigenous industries makes their proper management difficult (as cited in Kamara, 2006, p. 5). Also, majority of the district assemblies do not keep records on waste generation, origin, characteristics and social gender dynamics. This lack of information leaves the decisions regarding proper waste management to assumptions and inferences, which result in waste mishandling with serious consequences for the environment (Taboada-Gonzalez, Aguilar-Virgen, & Ojeda-Benitez, 2010).

To address the problem of waste management in Ghana, the Government has over the years put in place policies as well as regulatory and institutional framework such as an Environmental Sanitation Policy which was

formulated in 1999 (ECO Discipline, 2012). The Environmental Sanitation Policy since its inception was revised in the year 2010. Additionally, a number of waste control legislations have been enacted. These measures notwithstanding, waste management in Ghana remains a problem.

Public participation is considered to be a critical part of waste management strategies (Kohlscheen, 2003). Sanoff (2000) argued that genuine participation is when there is empowerment of people, letting the community participate in the decision-making process and in finding solutions for the problems, instead of the authorities simply presenting ready answers for the community (as cited in Kohlscheen, 2003, p. 42). Sanoff (2000) further explained that among the purposes for community participation are exchange of information, more user satisfaction, better maintained physical environment, and increase awareness about a certain problem.

A fundamental premise of gender analysis is to accept that solid waste management is not a neutral process, but rather, it is rooted in historically, politically and socially constructed structures or institutions (Rahman, 2003). In turn, solid waste management practices also affect existing socioeconomic inequalities such as gender inequality. According to Rahman (2003) there are three extensions of this premise. The first is that the costs and benefits of solid waste management practices are not distributed equally among men and women. Secondly, the unequal distribution of costs such as diseases related to solid waste reinforces existing social and economic inequalities between men and women. Finally, solid waste can also affect the ability of actors to control and resist one another. The ability of women to resist marginalisation is often propounded by changes in environmental conditions (Rahman, 2003).

According to Fredericks (2008) waste is a subject embedded with cultural meanings which shape and are shaped by the social organisation of waste work and the political landscape of waste management. Hence, one cannot comprehend the waste management system in Ghana or the issues that surround it without first looking at the household, market, community, state and labour that goes into managing waste before it reaches the final disposal site. Socio-culture traditions penetrate everything in Ghana, including formal institutions (Tsikata, 2001).

This gives the gender problem a depth that is not recognised or address by current attempts to deal with gender issues in Ghana. Fredericks (2008) for example questioned how the connection of household waste as women's work plays in the politics of waste management. Muller and Scheinberg (2001) argued that women are responsible for waste in their homes: it is part of the definition of who they are and what they do. It is not considered strange or unfair that they do not get paid, even when these activities extend beyond the household to public space. Women who are able to afford waste management services may pass this responsibility to people. However, men tend only to handle waste when they are waged for it, or when it is connected to their productive activities (Kadfak, 2011). Men's participation in domestic waste management is regarded as help (Gaunt, 2008).

Kwawe (1995) has outlined the reason for the female exclusive handling of waste in Ghana as follows: In the first place, in the institution of marriage, it is the duty of the women to cook, fetch water and clean the house so it makes sense for her to learn from her mother how to clean, dispose of waste and keep the house in order. Secondly, since it is the woman who

produced the waste as a result of her domestic chores, it beholds on her to find the means to dispose of her own waste. The man is out of the house most of the time and as such produces less refuse as compared to the other members of the family. Most women themselves were seen to have internalised the traditional views of their roles by subscribing to and not questioning the assumptions underlying practice such as waste management (Tsikata, 2001).

Poswa (2004) argued that due to women's reduced mobility and restricted access to public spaces, women, who cannot leave their homes for cultural or religious reasons, will find it difficult to deliver waste to a public collection point. Gender specific data are available to show that people who have physical contact with hazardous waste materials contract diseases like cholera, diarrhoea and skin infections more frequently than people who do not have such engagement (Muller, n.d). The fundamental question that can be deduced is that which categories of people (men, women or children) are more exposed to specific diseases related to solid waste? Consequently, how do these diseases further disadvantage such groups in undertaking their daily activities? It is crucial to take into account the specific needs of women and men to ensure that they can have equitable and affordable access to facilities and services in policy formulation and implementation. All these are critical issues that need to be considered when planning solid waste management systems.

Attention must be given to understanding local demands and gender dynamics in deciding on the type and quality of waste management service to be provided. In mobilizing community resources, successful interventions should focus on resolving social inequalities such as gender inequalities.

Problem statement

One of the critical areas that need to be considered when assessing the impact of social factors on solid waste management is gender relations (Poswa, 2004). In all societies, women have a different role from that of men. Accordingly, creating different expectation about specific responsibilities among women and men on solid waste management within the household and beyond.

According to Rahman (2003) trying to understand solid waste management issues separate from the social gender relations context would not give a complete picture. For instance, David and Greenstein (2009) suggest that gender norms influence people's beliefs about the tasks that are appropriate for women and men. These beliefs, in turn, determine the division of responsibilities in both domestic and public spaces. Thus, gender division of labour and occupational sex segregation in solid waste management practice reflects societal gender ideologies and socialization processes (Davis & Greenstein, 2009).

The 2010 population and housing census indicated that 37.7 percent of households dispose of their solid waste in open space at public dumps and about one-quarter (23.8%) dispose of their solid waste into public containers (Ghana Statistical Services, 2012). In the regions, most households dispose of their solid waste at public dumps, either in containers or in open space. The report further suggests that the proportions of households which dump their solid waste indiscriminately is higher in rural localities. For instance, 5.7 percent of households in Central Region compared to 4.4 percent of households in Greater Accra dump their solid waste indiscriminately (Ghana

Statistical Services, 2012). This problem raises some concerns considering the fact that eight out of the ten regions in Ghana are predominantly rural, with the level of urbanization below the national average of 50.9 percent (Ghana Statistical Services, 2012).

The quantity of waste generated is increasing in rural areas as a result of increased population (Ghana Statistical Services, 2012). It is estimated that 0.3 to 0.4 million metric ton of solid waste are generated each day in rural areas (DDWS-GOI-UNICEF, 2008). Although the quantity of waste generated in rural areas is increasing, it is still relatively low compared with urban areas. Most waste management studies however, have focused on big cities, such as Accra, Kumasi and town level such as Somanya in the Eastern Region (Amfo-Otu, Waife, Kwakwa, & Akpah-Yeboah, 2012; Kadfak, 2011; Tsiboe & Marbell, 2004). Additionally, lacking in such studies is an understanding of the gender dimensions in solid waste management. Rural communities are more likely to have some of its traditional social structures intact. Hence, rural settings might have a more distinct gender norms about females and males relative to urban settings with serious implications for policies enacted to manage solid waste in such communities.

Twifo-Ati Mokwa District a predominantly rural district faces a number of challenges in managing its solid waste (Twifo-Ati Mokwa District Assembly, 2012). Women and men in predominantly rural locality such as Twifo-Ati Mokwa District with traditional attitudes regarding gender allocate solid waste management tasks along traditional lines. There is however, a paucity of information on gendered aspect of solid waste management in Ghana in general. In particular information on the gender dimensions that are

likely to play out within solid waste management system in the rural setting is lacking. However, the gender issues likely to arise out of rural solid waste management is crucial for policy enactment.

Objectives of the study

The general objective of the study was to explore gender dynamics of rural solid waste management in Twifo-Ati Mokwa District. Specifically, this study sought to:

- examine the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management;
- describe the allocation of resources used in solid waste management;
- explore gendered division of labour in solid waste management;
- examine the institutional rules guiding solid waste management practices;
- make suggestions for addressing the gendered challenges that impact solid waste management.

Research questions

- What are the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management?
- How are the resources used in solid waste management allocated?
- How do gendered division of labour play out in solid waste management?
- What are the institutional rules that guide solid waste management practice?

Significance of the study

The study provides insight into how social gender relations influence solid waste management practices in Twifo-Ati Mokwa District. The outcome of this study can inform systems and structures designed to improve solid waste management in rural Twifo-Ati Mokwa District. Since it departs from dominant concentration on technical and urban aspects of solid waste management, the study stands in good stead to add to the literature on gender and solid waste management in the Ghanaian situation. Subsequently, it produces evidence that puts solid waste management in a different context. That is viewing solid waste management from a gendered perspective. This knowledge would help the district to redefine its solid waste management practices so as to ensure gender sensitive policies that address both women's and men's needs. Thus, leads to more sustainable solid waste management policies.

Scope of the study

The study covered the assessment of how social gender relations influences solid waste management practice in rural localities. The study examined the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management; the process involved; rules; division of labour in solid waste management, power relations and ascertain how different gendered roles of people in households, community, state and market affect waste management in the district. Geographically, the study was carried out in some selected rural communities within Twifo-Ati Mokwa District.

Organisation of the thesis

The study is divided into five chapters. The first chapter presents the introduction, which focuses on the background to the study, problem statement, objectives of the study, research questions. The introductory chapter in addition covers the significance and scope of the study, and organisation of the thesis. The second chapter presents relevant literature on the theories and concepts on the subject matter of the study and concludes with a conceptual framework. Third chapter presents the methodology of the study. It includes the study area, study design, sources of data, target population, sample size, sampling procedure and instrumentation. The chapter also discusses data collection methods, data processing and analysis. The fourth chapter presents the results and discussions of findings from the field. Chapter five, the final chapter, presents the summary, conclusions and recommendations of the study and points to areas for further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

This chapter devoted to the review of related literature is structured into three broad sections, namely: theoretical and conceptual issues, empirical evidence and the conceptual framework. The theoretical discussions focus on the nexus between development, environment and social gender relations. Relative resources theory, gender ideology theory and gender and development theory (GAD) that underpins the work are explored. It also presents definition of terms and concepts relating to gender, work, power and waste management. The chapter also touches on the link between gender and waste management.

Theories

Researchers have used several theoretical explanations to account for the gendered nature of solid waste management. These explanations include regime theory, and social standpoint perspective (Bisht, 2005; Fredericks, 2008; Kadfak, 2011). This study examining waste management from a gender and development perspective relies on the gender and development theory (GAD) as the main underlying theoretical framework. In addition, related theories such as relative resources theory and gender ideology theory are also considered. These theories are adopted in the thesis to examine the gendered nature of solid waste management in a rural locality.

Blood and Wolfe's (1960) theory of relative resources have been used by some researchers to explain division of domestic tasks by sex. The central

assumption underlying this theory is that the balance of power will be on the side of that individual who contributes the greater resources to the household (Diefenbach, 2002, p. 45). The individual with greater resources is able to withdraw from domestic work. Blair and Lichter argued that the amount of household labour done by each spouse is determined by the distribution of marital power, which depends on the spouses' external relative resources such as income, education, and occupational status (Gaunt & Bouknik, 2012, p. 191). Indeed, many studies have found that a spouse involvement in domestic work decreases in relation to the number of hours he or she works in the productive sector (Lewim-Epstein, Stier, & Braun, 2006; Roeter, Van Der Lippe, & Kluwer, 2010). It can be deduced from the assumption that domestic work such as waste management is undesirable burden which every individual will wish to avoid. Since men's earnings, educational, and occupational status are higher on average than women's, they are able to use their greater relative resources to reduce their own share of domestic labour (Gaunt & Bouknik, 2012).

Though findings from several empirical studies support the theory of relative resources there is also contradicting evidence. Fox study, for instance, found that husbands' authority does not increase linearly with education, occupational status, and income (as cited in Diefenbach, 2002, p. 46). Also, Atkinson and Boles found that wives, who earn more income than their husbands do far more housework than their spouses (ibid). This still holds true when husbands are unemployed and thus have time to share in domestic work (Brayfield, 1992).

The existence of contradictory evidence to the main ideas of the relative resources theory can be explained using gender ideology perspective. Gender ideology theorists argue that the division of labour within the household does not result from the relative resources of person, but from how an individual identifies him or herself with regard to marital, familial, and occupational roles that are traditionally linked to gender (Diefenbach, 2002). While the relative resources model assume that the division of labour follows gender-neutral principles of efficiency or exchange, the gender ideology model assumes that the division of labour reflects societal gender ideologies and socialization processes (Davis & Greenstein, 2009). Gender ideology perspective assumes that individuals behave according to their value orientation on subjects like the housework or the gender roles (Haragus, n.d). This approach predicts that women and men with traditional attitudes regarding gender allocate tasks along traditional lines, such that the man takes on the role of breadwinning and the woman is responsible for domestic labour. By contrast, Gaunt and Bouknik (2012) drawing on data from Israel argued that individuals with egalitarian, non-traditional attitudes allocate the tasks more equally, which leads to greater involvement of men in domestic work. A number of studies have found that men with less traditional gender ideologies do a greater share of the household work (Brayfield, 1992; Lewim-Epstein et al., 2006). The theory suggests that gender norms influence an individual's beliefs about the tasks that are appropriate for men and women. These beliefs, in turn, determine the division of responsibilities in the family and market (Davis & Greenstein, 2009).

There is evidence that gender ideology is associated with perceptions of fairness in the division of household labour. Several studies (DeMaris & Longmore, 1996; Greenstein, 1996a; Nordenmark & Nyman, 2003) indicated that traditional women are less likely than non-traditional or egalitarian women to perceive that inequalities in the division of household labour are unfair (as cited in Greenstein, 2009, p. 97).

Finally, gender ideology acts as a lens through which individuals view their social world and upon which they make decisions. Many social related behaviours and domestic task such waste management are influenced by gender ideology. Consequently, understanding how gender ideology is socially constructed can help researchers understand the decisions women and men make regarding waste management and how individuals negotiate their socially allocated tasks in this regard (Davis & Greenstein, 2009).

The construction of gender ideology is further explained by gender and development theorists. Gender and Development (GAD) perspective, also referred to as the "empowerment approach" or "gender-aware planning" emerged in the 1980s as an alternative to Women in Development (WID) and Women and Development (WAD). The focus on 'gender' rather than 'women' was influenced by the feminist writers such as Oakley (1972) and Rubin (1975) who were concerned about the general way of perceiving the problems of women in terms of their biological difference from men, rather than in terms of their gender (as cited in Vijayamohanan et al., 2009, p. 14). Some feminists and development theorists have remained unconvinced by both the WID and WAD approaches, arguing that neither challenge the fundamental factors that structure and maintain gender inequalities (Connelly, Li,

MacDonald, & Parpart, 2000; Vijayamohanan, Ponnuswamy, & Asalatha, 2009). These scholars also argued that GAD framework explored variety of issues that were neglected by WID and WAD perspectives. For instance GAD questions the underlying tenets of social, economic and political structures (Peet & Hartwick, 2009). GAD is also concerned with addressing the root causes of gender inequalities that create many of the practical problems women experience in their lives (Connelly et al., 2000).

GAD approach is credited to the grass-roots organisational experiences and writings of Third World feminists and has been most clearly articulated by a group called Development Alternatives with Women for a New Era (DAWN). Connelly et al. (2000) explained that DAWN was launched publicly at the 1985 Nairobi international NGO forum (an event attended by 15 000 women activists and held parallel to the official World Conference on Women). Sen and Grown asserted that DAWN called for an approach to women's development that recognizes the importance of global and gender inequities (as cited in Connelly et al., 2000, p. 129). The GAD approach also emerged from the experiences and analysis of western socialist feminists interested in development issues (Elson, 1992).

Socialist feminism set out to bring together knowledge of operations under capitalism and patriarchy into a unified explanation of all forms of social oppression (Ritzer, 2008). Socialist feminists redefined the radical-feminist conception of patriarchy to mean a set of hierarchical relations with a material base in men's control over women's sexuality, procreation, and labour power. They also argued that the Marxist definition of economic activity had to be expanded to include both productive and reproductive work

(Vijayamohanan et al., 2009). Drawing on the socialist-feminist approach, the GAD perspective contends that women's status in society is deeply affected by their material conditions in life and by their position in the national, regional, and global economies (Connelly et al., 2000). GAD also recognizes that women are deeply affected by the nature of patriarchal power in their societies at the national, community, and household levels (Connelly et al., 2000).

GAD adopts a two-pronged approach to the study of women and development, investigating women's material conditions and class position, as well as the patriarchal structures and ideas that define and maintain women's subordination (Connelly et al., 2000). The focus is on relationships between women and men, not on women alone. The GAD approach is also concerned with the interactions between gender and other social relations of power such as age, race and ethnicity. Again, proponents of GAD focus on the interrelationship between the household, the political, economic and other social structures (Hopper, 2012). GAD further recognises the differential impacts of development policies and practices on women and men, and insists that both women and men should benefit equally from development initiatives (Vijayamohanan et al., 2009). This framework thus calls for critical assessment of existing social gender relations and the development process.

Within the GAD perspective, a distinction is drawn between women's interests (a biological category that assumes homogeneity among women) and gender interests (a socially constructed set of relations and material practices). Gender interests or needs can be either practical or strategic (Molyneux, 1985). Practical gender needs (PGNs) or interests arise out of inadequacies in living conditions; these are the immediate perceived needs identified by

women to assist their survival in their socially accepted roles, within existing power structures. Such needs may include food, shelter, water, and health care (Reeves & Baden, 2000). These needs when met, will improve the lives of women without challenging women's subordinate position in the society.

Strategic gender needs or interest (SGNs), are those needs identified by women that require strategies for challenging male dominance and privilege. These interests may relate to discriminations in the gender division of labour, ownership and control of resources, participation in decision-making, or to experiences of domestic and sexual violence (Reeves & Baden, 2000). SGNs arise out of an analysis of women's subordination and require changes in the structures of gender relation that define women's position in any given culture. Strategic gender needs take account of the goal of gender equality (Connelly et al., 2000). Thus, these needs when met will result in changes in unequal power relations between men and women.

The ultimate goal of GAD theorists is to achieve equitable and sustainable development with both women and men as critical actors. The scheme to adopt according to GAD proponents is to empower the disadvantaged and transform unequal relations. Moffat, Geadah and Stuart (1991) proposed three main approaches in this regard, first, a reconceptualization of development process by taking gender and inequalities into account. The second call for, identifying and addressing practical needs, as determined by women and men. The third demands, improving the living conditions as well as addressing strategic gender needs of women and the poor through people-centred development (Moffat, Geadah, & Stuart, 1991).

In conclusion, GAD approach to development originated from social-feminist perspective in 1980s. GAD theorists' focuses on global and gender inequalities. Thus socially constructed relations between men and women that tend to disadvantage women. The problem according to GAD proponents is unequal power relations between men and women, which prevent women from achieving equitable benefits from development policies. The proposed scheme to bridge this gap is through empowerment of disadvantaged and transformation of unequal relations.

Conceptual issues

Development, environment and social gender relations

The term sustainable development came into popular use after the 1987 report of the World Commission on Environment and Development, commonly known as the Brundtland Report (Reddock, 2000). The report was largely a response to the growing international environmental and ecological pressure groups. According to the report, sustainable development refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987). Bhasin (1993) identified the following components of sustainable development: it must be in harmony with nature (if nature is to sustain us, we must sustain nature); it must be people centred and oriented (people have to be seen as the subjects, not the objects, of development); it must be women centred (recognizing the responsibility that women have always assumed for catering to the basic needs of society); it must cater to the needs of the majority; there must be decentralization of

decision-making and control over resources within countries and internationally; democracy must become more participatory and at every stage, sustainable development must advance the politics of peace, nonviolence, and respect for life (Reddock, 2000, p. 28). According to Brooks, paradigms emerging around the concept of sustainable development recognised the need to ensure and expedite the following actions: integration of conservation and development; maintenance of ecological integrity; satisfaction of basic human needs; achievement of equity and social justice; and provision of social self-determination and cultural diversity (Reddock, 2000, p. 28).

In general, women's lives vary significantly from those of men because of patterns of socialization related to gender. In terms of the environment, women around the world play distinct roles: in managing plants and animals in forests, wetlands, agriculture and waste; in collecting water, fuel and fodder for domestic use and income generation; and in overseeing land and other resources. In this respect, they contribute time, energy, and skills to family and community development. Women's extensive experience makes them an invaluable source of knowledge and expertise on environmental management and appropriate actions (Muller, Iyer, Keita, Sacko, & Traore, 2002).

While women's environmental contributions offer a motivation for a thorough analysis of gender relations, there is a wider perspective as well. The focus on gender rather than women makes it critical to look not only at the group 'women' instead women in relation to men (Muller, n.d). A recent World Development Report (2012) argues that gender equality is a core

development objective in its own right and, as Aguilar (2002) argues, sustainable development is not possible without gender equity. In fact, it is a prerequisite for any action aimed at improving people's quality of life. In as much as gender equity is integral to a human-centred development agenda, it is necessary to ensure that these broad goals of survival and security are met for women as well as men (Kabeer & Subrahmanian, 1996). This implies that gender equality and equity are not only essential for human rights and social justice, but also a necessity for environmental conservation and sustainable development.

Gender activists have played a critical role in the movement against environmental degradation and for sustainability right from the movement inception (Reddock, 2000). For instance, the 1995 United Nations Fourth World Conference on Women in Beijing and the affiliated NGO Forum in Huairou provided an opportunity to consolidate social justice decisions already made and bring them forward into the Beijing Platform for Action. Section K, on women and the environment, asserts that "women have an essential role to play in the development of sustainable and ecologically sound consumption and production patterns and approaches to natural resource management" (as cited in Women, n.d, p. 22).

The 2002 World Summit on Sustainable Development in Johannesburg issued the Johannesburg Declaration and Plan of Action which confirmed the need for gender analysis, gender specific data and gender mainstreaming in all sustainable development efforts, and the recognition of women's land rights. The Declaration states: "We are committed to ensuring that women's empowerment, emancipation and gender equality are integrated in all the

activities encompassed within Agenda 21, the Millennium Development Goals and the Plan of Implementation of the Summit” (Women's Environment and Development, 2002).

Another issue highlighted by Asia et al. (2013) states that, sometimes, despite large obstacles, women have proven to be highly effective agents of change, organising all over the world to demand and work towards a healthy environment. Innumerable organisations with women at the helm have contributed to setting a sustainable agenda through their advocacy and lobbying, developing alternatives to unsustainable development, and making sure that women’s voices are heard and their perspectives taken into account (Women, n.d).

Nevertheless, there is still limited recognition of what women contribute or have the potential to offer to survival and development. For most societies in the present world, biased social structures and sentiments, at household, community and market levels, persist in deeply entrenched patterns of gender inequality (Women, n.d). Many women encounter steep barriers related to their family, socio-economic status, and a number of serious environmental challenges. In Ghana, major environmental challenges that confront both men and women includes; land degradation, coastal erosion, pollution of rivers and lagoons, deforestation, desertification and poor waste management (Ministry of Local Government and Rural Development, 2010).

Concept of gender

Five main terms will be defined briefly under the concept of gender. These terms includes the following; sex, gender, gender relations, gender

division of labour and gender analysis. These are intended to help explore some of the key ideas and issues in this thesis such as gender perceptions of solid waste management.

The need to differentiate sex from gender stems from the fact that women's subordination has often been presented as natural and a fact of their biological traits. Sex is the biological difference between men and women. A person's sex is biologically determined as female or male according to certain identifiable physical features which are fixed (Reeves & Baden, 2000). Sex differences are concerned with men's and women's bodies. For instance, men produce sperm whilst women produce breast milk for children. Sexual differences are the same throughout the human race (March, Smyth, & Mukhopadhyay, 1999). Biological dissimilarities cannot explain why women have less access to power and lower status than men (March, Smyth, & Mukhopadhyay, 1999). To understand the cultural value placed on someone's biological sex, the concept of gender was employed to help explain and challenge biological determinism.

Gender is how a person's biology is culturally valued and interpreted into locally accepted ideas of what it is to be a woman or man (Reeves & Baden, 2000). Gender describes all the socially given attributes, roles, activities, and responsibilities connected to being a male or female in a given society (March, et al., 1999). Gender is socially constructed and not directly derived from biology. Gender identities and associated expectations of roles and responsibilities are therefore changeable between and within cultures. The value of the distinction between the terms 'sex' and 'gender' has been challenged as 'sex' has also been seen to be socially constructed (Baden &

Goetz, 1998). Whilst often used interchangeably, 'sex' and 'gender' are in fact distinct terms. This study focuses on gender because it is interested in socially constructed relations between women and men around waste management in rural Ghana.

Gender relations are hierarchical relations of power between women and men that tend to disadvantage women (Reeves & Baden, 2000). Elson explained that "the concept of gender relations sought to shift attention away from looking at women and men as isolated categories to looking at the social relationships through which they were mutually constituted as unequal social categories" (as cited in Kabeer & Subrahmanian, 1996, p. 25). Gender relations are concerned with how power is distributed between men and women (March et al., 1999). This power distribution either reduces or exacerbates systemic differences in men's and women's positions in a given society. It defines the way in which responsibilities and claims are allocated and the value attached to given tasks. Gender relations vary according to time and location, and between different groups of people. There is also emphasis on the interaction of gender relations with other hierarchical social relations such as class, caste, ethnicity, age, disability and race (Reeves & Baden, 2000; March, et al., 1999).

In many parts of the world, women and men are allocated tasks, activities and responsibilities according to their sex. Gender or sexual division of labour refers to socially determined ideas and practices which define what roles and activities are deemed appropriate for women and men (March, et al., 1999). Whilst the gender division of labour tends to be seen as natural and irreversible, in fact, these ideas and practices are socially constructed hence

can be changed. The gender division of labour varies from one society to another, and within each culture, it also changes with external circumstances and over time (March et al., 1999). Since in most societies, gender relations are skewed in favour of men and, the values ascribed to men's tasks are often higher relative to women's tasks.

The conceptualisation of gender division of labour varies depending on theoretical framework. Kabeer explained that from a social relations approach the gender division of labour is recognised as a form of social connection. In other words, “gender division of labour makes it essential for men and women to engage in relationships of co-operation and exchange” (as cited in Razavi & Miller, 1995, p. 29). This conceptualisation suggests that even if women can exercise control over particular products or an activity, they will not necessarily gain real autonomy or equality unless the overall terms of exchange and co-operation are also shifted in their favour (Razavi & Miller, 1995).

Many social related behaviours such waste management are influenced by gender relations. Women and men behave according to prescribe societal gender roles. Therefore, understanding how social gender relations are constructed can help researchers understand the decisions men and women make regarding waste management. Gender analysis is therefore required in examining these decisions. Gender analysis is the collection and examination of information about: the different roles of women and men; the relationship and inequities between them; their different experience, capacities, needs, constraints, and rights issues; the reasons for these differences; and the need, strategies and opportunities for change (CARE Bangladesh, 2005). Gender

analysis identifies the types of gender differences and inequalities that might otherwise be taken for granted when designing policies. March et al. (1999) explained that such an analysis explores and highlights the relationships of women and men in society, and the inequalities in those relationships, by asking: Who does what? Who has what? Who decides and how? Who gains or losses? These questions are further assessed by asking: Which men or women are involved? Gender analysis makes a distinction between the private sphere (involving personal relationships) and the public sphere (which deals with relationships in wider society). The analysis also explores how power relations within the household interrelate with those at the international, state, market, and community level (CARE Bangladesh, 2005; March, et al., 1999).

Concept of work

GAD theorists argued that the Marxist definition of economic activity had to be expanded to include both productive and reproductive work (Vijayamohan et al., 2009). Thus, in all kinds of work carried out by men and women, a division can be made between productive works (production) and reproductive works (reproduction). Productive work involves all activities such as manufacturing, processing, marketing of goods and rendering of services for income or subsistence (Vijayamohan et al., 2009). These activities are recognised and valued as work in many parts of the world. Also, computation of national income account concentrates on such activities. Both men and women engage in productive work but sometimes there are variations in the monetary rewards and the social recognition accorded (Reeves & Baden, 2000).

Reproductive work includes the care and maintenance of the household and its members, such as washing, cleaning, bearing children and caring for the aged (March et al., 1999). This work is essential for sustainable development; however, it often treated as externality by mainstream economics when computing national income accounts. This is because such activities are normally unpaid tasks in most societies. Reproductive work is mostly carried out by women (Reeves & Baden, 2000).

Concept of power

Understanding how some people effectively control the actions of others is one of the central questions in social sciences. Power has served as a useful concept to allow an interrogation of ‘control of actions’. Giddens (1985) defined power as transformative capacity. That is, the ability to make a difference in the world (ibid). Thus, consequences of a social action may go against many other individuals’ vested interests. Similarly, Weber defines power as the ability of an actor (or actors) to realise his or her will in a social action, even against the will of other actors. Everyone carries out social actions, so it follows that all persons have power (as cited in Shortell, n.d, para. 4).

However, the amount of power an individual has is related to resources. Giddens (1985) outlines two distinct types of resources: first, allocative resources, which are the control over physical things such as enterprise and farm; secondly, authoritative resources, which are the control over the activities of people; for example, family head and an owner of an organisation or enterprise. All social systems are viewed as ‘power systems’,

and usually this means that they are involved in the ‘institutional mediation of power’ (Giddens, 1985, p. 9). By this, Giddens means that institutions, such as the state, attempt to control the lives of individuals by the use of rules, which become deeply embedded in everyday lives.

Related to power is the distinction between access to and control over resources. Access may be defined as the opportunity to make use of a resource but control is the power or ability to decide how a resource is used, and who can use it (March et al., 1999, p. 19). Rules, norms and practices give some actors authority over others in determining the principles of distribution and exchange within that sphere. Consequently, the distribution of ‘allocative’ resources tends to be embedded within the distribution of ‘authoritative resources’ (Giddens, 1985), the ability to define priorities and enforce claims. Heads of households, chiefs of ethnic groups, directors of firms, managers of organisations, elites within a community are all endowed with decision-making authority within particular institutional contexts by virtue of their positioning within those institutions. In most developing societies women by virtue of their gendered positions often have access to but lack the control over the resources.

Concept of waste management

Waste has been a major environmental issue everywhere since the advent of human civilisation (Management, 2010). The United Nations Environmental Programme defines waste as objects which the owner does not want, need or use any longer, which requires treatment and/or disposal (McDougall, White, Franke, & Hindle, 2001). Kennedy argued that what

makes things garbage is their worthlessness to human purposes (as cited in Hird, 2012, p. 455). Waste provides appreciable epistemological insights into how humans determine the existence and status of objects.

Waste can broadly be categorised as liquid waste and solid waste. Liquid waste come in non-solid form. Some solid waste can also be converted to a liquid waste form for disposal (Management, 2010). Examples of liquid waste include point source and non-point source discharges such as storm water, release of collected water from dams, wastewater from homes, used oil, liquid by-products generated in industries and human waste such as urine (ibid). Solid waste are unwanted, discarded, non-liquid materials emanating from various human activities at home, the workplace, in the community, and on farms. Solid waste include materials from the house such as paper, wood, dust, and garbage; the street such as paper, animal droppings, carcasses, and leaves, the market such as empty sachets, bottles, cartons, and abandoned automobiles from industries (Olanipekun, Oyeniya, & Konwea, 2007).

Both liquid and solid waste can be hazardous. Hazardous or harmful waste are those that potentially threaten public health or the environment (Management, 2010). Such waste could be inflammable, react when exposed to certain gasses, corrosive and poisonous to the environment. In many countries, it is required by law to involve the appropriate authority to supervise the disposal of such hazardous waste (ibid). Examples include fire extinguishers, old propane tanks, pesticides, mercury-containing equipment such as thermostats and lamps fluorescent bulbs and batteries. Household waste that can be classified as hazardous waste include old batteries, shoe polish, paint tins, old medicines, and medicine bottles (Ministry of Local

Government and Rural Development, 2010). Besides, the greatest source of environmental cadmium is thought to be from batteries thrown out in domestic waste (Hird, 2012). Cadmium is a soft silver white metal mostly used in metal plating and to make pigments and batteries. Cadmium may cause health problems such as kidney damage if present in public or private water supplies in amounts greater than the drinking water standard set by Environmental Protection Agency (ECO Discipline, 2012). Though rural settlers use a lot of batteries relative to urban dwellers, rural waste is often considered less hazardous not from technical but pragmatic perspective (ECO Discipline, 2012).

Solid waste is classified on the basis of sources of generation and type. Source-based classification is basically categorising waste on the basis of sector and activities (Technobanoglous, Theisen, & Eliassan, 1977). This is depicted in Table 1. According to Tadesse (2004) sources of solid waste are dependent on the socioeconomic and technological levels of a society. Tadesse further insists that a small rural community may have known types of solid waste from known sources. That is the waste from rural communities tend to be more homogenous whilst waste from urban communities have many sources and therefore more likely to be heterogeneous.

Table 1: Sources and Types of Solid Waste

Sources	Typical waste Generators	Types of solid waste
Residential	Single and multifamily dwellings	Food waste, paper, cardboard, plastics, textiles, leather, yard waste, wood, glass, metals, ashes, special waste (e.g., bulky items, consumer electronics, batteries, oil, and household hazardous waste).
Industrial	Light and heavy manufacturing, fabrication, construction sites, power and chemical plants.	Housekeeping waste, packaging, food waste, construction and demolition materials, hazardous waste, ashes.
Commercial	Stores, hotels, restaurants, markets, office buildings.	Paper, cardboard, plastics, wood, food waste, glass, metals, special waste, hazardous waste.
Institutional	Schools, prisons, government centres, hospital.	Food waste, plastics, needles, syringes, surgical blades, human parts.
Construction and demolition	New construction sites, road repair, renovation sites, demolition of buildings	Wood, steel, concrete, dirt.
Municipal services	Street cleaning, landscaping, parks, beaches, other recreational areas, water and wastewater treatment plants	Street sweepings; landscape and tree trimmings; general waste from parks, beaches, and other recreational areas.
Process (manufacturing)	Heavy and light manufacturing, refineries, chemical plants, power plants, mineral extraction and processing.	Industrial process waste, scrap materials, off-specification products, slay tailings.
Agriculture	Crops, orchards, vineyards, dairies, feedlots, farms.	Spoilt food waste, animal carcasses, hazardous waste (e.g., pesticides).

Source: Adapted from Hoorney & Laura, 1999

The types of solid waste can further be grouped into biodegradable and non-biodegradable waste. Biodegradable are made of substances that will decay relatively quickly as a result of bacteria action and break down into elements such as carbon that are recycled naturally (Biodegradable, 2009). Biodegradable waste are organic waste from plant and animal sources (Management, 2010). They are occasionally used as manure for backyard farms. Example includes waste food, spoilt vegetables, wood and animal droppings. Non-biodegradable waste are inorganic waste which comprised of material other than plant or animal matter, such as glass, plastic, metal, concrete and chemicals (Sustainable Sunshine Coast, n.d). Rather than dispose of inorganic waste, it is sometime reused or recycled as new technologies are developed (ibid). Table 2 below shows a comparison of biodegradable and non-biodegradable with their degenerative time. Non-biodegradable waste can pose environmental challenge when left unmanaged because they take longer time to degenerate (Ramachandra, 2009).

Table 2: Biodegradable and non-biodegradable waste: Degeneration Time

Category	Types of waste	Approximate time taken to degenerate
Biodegradable	Organic waste such as vegetable fruit peels, and leftover foodstuff	A week or two
	Paper	10-30 days
	Cotton cloth	2-5 months
	Woolen items	1 year
	Wood	10-15 years
Non-biodegradable	Tin, aluminium, and other metal items such as cans	100-500 years
	Plastic bags	One million years
	Glass bottles	Undetermined

Source: Ramachandra, 2009

This study will utilise on source-based classification because of socioeconomic background of the study area.

Musah, (2009) quoting the United Nations and the West Africa Health Examination Board explains waste management as the collection, transportation, processing, and disposal of waste materials usually produced through human activities in an effort to reduce their effects on human health or local aesthetic. In addition, West Africa Health Examination Board viewed waste management as the systematic administration of activities which provide for the collection, transportation, and processing of waste. It is the handling process of solid waste material from sources of generation to their final disposal (ibid).

The scope of solid waste management may involve complex interdisciplinary relationships among such fields as political science, town and regional planning, geography, economics, public health, sociology, demography, gender studies, communications, and conservation, as well as engineering and material science (Tadesse, 2004).

The methods of solid waste treatment and disposal vary in different localities. These methods include: sanitary landfills, which is the oldest and most common waste disposal method. It is based on the disposal of compacted waste layers in the surface soils of the earth (Kohlscheen, 2003). Appropriate landfill management involves waste separation, and transporting only the waste that cannot be recycled and composted to the landfill site. Appropriate landfills, are also lined at the bottom to minimize the leakage of soil pollutants and other toxins from getting into the water table (Management, 2010). According to Kohlscheen (2003) there is a large difference between landfill

and open dumps. The former is a place specially designed for waste disposal, with mechanisms to avoid contamination and minimise health hazards (Management, 2010). The latter refers to areas in which the waste is deposited without any protection for the environment and public health (Kohlscheen, 2003). Landfills disposal method is effective, but expensive.

ECO Discipline (2012) insists that in most developing societies, individuals put all their waste together and deposit them at small satellite locations. This is then transported by waste collection contractors and dumped at the open dump site which are usually abandoned sand and stone quarries, without any treatment, covering or adequate effluent management plans (ECO Discipline, 2012).

Incineration method of waste management involves the process of the burning combustible components of solid waste (Tadesse, 2004). There are two main types of incinerators, the open and the closed systems. In the open system the waste is incinerated in a chamber open to the air; while the closed system contains a special chamber designed with various parts to facilitate incineration (Tadesse, 2004). It requires a chimney of appropriate height to provide a good flow of air through the combustion chamber. This method is often used in countries with limited land space.

Composting is an effective mode of solid waste treatment and disposal. With the right conditions such as air and moisture, organic waste such as food and plant materials can be decomposed by bacteria, fungi, worms and other organisms (Management, 2010). Decayed organic matter produce humus. Humus improves the water retaining properties of soil and adds nutrients to the soil. Biodegradation is a natural, ongoing biological process that is a

common occurrence in both artificial and natural environments (Tadesse, 2004). Composting organic waste can significantly reduce waste stream quantity and offers economic advantages for communities when the costs of other options are high (ibid).

Recycling is another method of managing solid waste which involves processing used materials or waste into new, useful products (Management, 2010). This is done to reduce the use of raw materials that would have been used to produce recycled products. Recycling is also a great way of controlling the nuisance solid waste cause to the environment such as pollution. Efficient recycling starts with household or the place where the waste was created (Tadesse, 2004). In many countries, the solid waste management authorities assist households with labelled waste bins. Households then separate their waste themselves and place them in the right waste bins for collection. Waste that can be recycled include paper, plastic, aluminium and glass.

The dumping of solid waste into water bodies such as streams, rivers, lakes, seas, and oceans is one of the modes of disposal. This is still practiced in some communities located on banks of rivers or sea shores. Dumping solid waste into water bodies can be ineffective due to the washing of the waste to the shores and interference of sanitation of the bathing area (Tadesse, 2004). Such a disposal method often ignores the role of water bodies in sustainable environment such as source of water supply, flood control and breeding ground for most species (Tadesse, 2004).

Solid waste treatments if not done effectively and efficiently, will bring about unsatisfactory waste management. It is therefore important for managers of solid waste to critically assess each method of waste disposal by

considering issues like public education and approval, health impacts, initial cost, land area required, and sustainability (Tadesse, 2004).

Private and public management of waste

A crucial issue in waste management is the classification of waste either as public or private good (Kadfak, 2011). There are two vital defining characteristics in distinguishing between private and public goods. The first is excludability or control of access. Exclusion occurs when potential users can be denied access to goods or services unless they meet the terms and conditions of the supplier (Ostrom & Ostrom, n.d). Where exclusion is feasible such goods or services are classified as private goods. On the contrary, where controlling access may be costly and virtually impossible such goods or services are classified as public goods. The second basic feature is subtractability or rivalry. Rivalry exist when consumption of a good or service by one person prevent its use or consumption by another person (Ostrom & Ostrom, n.d). In that case consumption is completely subtractible. Thus, the total amount of the goods or services available reduces in supply. Private goods have the feature of rivalry whilst public goods are generally classified as non-rivalry. That is public goods despite its use by one person remain available for use by others in unreduced quantity and quality (Ostrom & Ostrom, n.d). This aspect considers waste management as a kind of interaction between households and the state. When waste is classified as a private good, individuals are required to pay for the service of disposing of the waste from their household. A practice of disposing solid waste outside of the household, rather than within it where it was traditionally handled by

composting, burning, burying, and feeding to animals (Muller & Scheinberg, 2001). This system can be related to the 'willingness-to-pay' principle (Kadfak, 2011).

Kadfak, (2011) quoting Cointreau-Levine's insists that solid waste management is a public good. This position is supported by making reference to features of waste management such as nonexclusive, non-rivalry and essentially the primary responsibility of the state. Nonexclusive feature of waste management refers to the situation where access to service such as disposing of solid waste from household is unregulated, free and open to everyone. Non-rivalry suggests that no user is capable of subtracting from the welfare of other users. That is use of the service by a person does not prevent or reduce its use by another. When waste is classified as a public good, the responsibility of waste disposal belongs to the state authorities. Kironde (1999) asserted that waste management has the characteristics of being public goods. This is due to the fact that once waste has been disposed of, it becomes an environmental or health hazard affecting society as whole (as cited in Kadfak, 2011, p.9).

The classification of solid waste as private or public good is aimed at facilitating an assessment of how cost and benefits of solid waste management practice are distributed between men and women. Similarly, there is the need to examine whether the distinction of solid waste as private or public good exacerbate any gender gaps identified, leave the gap as they are or reduce the gender gap detected.

GOA (1997) defined privatisation as any process aimed at shifting functions and responsibilities, in whole or part, from the government to the

private sector. There are several methods used in waste privatization, including franchise, contracting and concession. Adama (2007) explains that the different methods assign different roles to the state and private parties. In the franchise system, the client is charged by the firm for their service and the firm bears the cost of the service itself. With concession, the private firm is expected to finance and own the facilities for some period of time. The contracting system entails a private firm providing services under contract. The firm is paid by the general revenues or by money charged from direct users (Adama, 2007, p. 103).

Kadfak (2011) mentioned that privatization has gained popularity in waste management because of the poor performance of state-run services and/or budget constraints. For instance, According to Coffey and Coad (2010) though up to 1 percent of Gross National Product (GNP) and 20 to 40 percent of municipal revenues in developing countries are is dedicated to solid waste management, the services are frequently inadequate. According to Twifo-Ati Mokwa District Assembly (2012) 60 percent of the assembly's internally generated fund is channelled towards solid waste management.

The United Nations mentioned that involving the private sector in service delivery is an option that local governments should take into consideration if they want to improve cost-effectiveness, quality and coverage (UN-HABITAT, 2010). Partnering with the private sector with the aim of achieving a more efficient waste management is often seen as a strategic element in the management of solid waste (Johnson & Seidenstat, 2007). Involving the private sector in waste management services is also seen as opportunity to mobilise private sector investment and introduce efficiency in

some developing countries (Cointreau-Levine, 1994). However, Hofny (2006) argued that since the 1980s, the trend toward privatisation of waste management has operated in many cities in the developing countries and the results vary greatly between countries.

In Ghana, systematic solid waste management started in 1898, with the establishment of Accra City Council. In 1925, public dustbins, which were emptied by means of two pushcarts, were introduced (Oteng-Ababio, 2009). These were replaced with large carts drawn by mules and, later, with special sanitary vehicles. Incinerators were also introduced in 1929. By the late 1950s, the existing arrangements had become stressed due to population growth, cumulating in a total breakdown of the only incinerator by 1970 (Oteng-Ababio, 2009). This led to the pile-up of refuse especially in the low-income areas. In an attempt to halt the decline, the City Council, through the Federal Republic of Germany, established the Waste Management Department (WMD) in 1985. Subsequently, refuse collection was by either house-to-house collection or communal container collection in the high- and low income areas, respectively. Commercial rates were charged for house-to-house services, whilst cross-subsidization was adopted for the communal container collection. In 2008 about 660 tonne of refuse were generated daily in AMA. Managing this volume of solid waste has led to a huge financial burden on AMA as users of, communal container collection constituting about 70% of the entire population, enjoyed free services (Oteng-Ababio, 2009).

To improve revenue mobilization, a privatization policy was conceived which was also seen as a means to extend coverage. Treatment and disposal of waste, however, remained the sole responsibility of the WMD. In the Greater

Accra Metropolitan Area (GAMA), the public–private partnership (PPP) policy came into effect in 1999, when five contractors were appointed to collect waste in selected areas (Oteng-Ababio, 2009). The coverage has since increased significantly responding to One reason for incorporating PPP in SWM, increase service coverage.

Table 3: Waste generation and service coverage in the four large cities in Ghana

City	Population	Daily waste generation (tonnes)	Average daily collection coverage (tonne)	Average daily collection coverage (%)
Accra	3,500,000	1,800	1,200	65
Kumasi	1,300,000	1,000	700	70
Tema	500,000	250	200	80
Sekondi-Takoradi	300,000	250	165	66

Source: AMA/WMD, 2005

Table 3 gives the waste generation and service coverage in the four large cities in Ghana. None of the cities the table shows had the required capacity to collect the generated waste, with Accra attaining 67 percent coverage while Tamale manages only 47 percent (Table 3). In GAMA, the amount of waste collected between 2002 and 2005 indicated an overall progressive increase from 690,000 in 2002 to 745,000 tonnes in 2005; an

increase of 25 percent. Ironically, this observed expansion does not translate into improved environmental conditions, particularly in the low-income areas. It was shown that, Tema Metropolitan Area achieved 80 percent coverage, and 66 percent in AMA, whilst the remaining refuse was either dumped indiscriminately, self-disposed, burnt or recycled at some source (Post 1999). According to Ministry of Local Government and Rural Development (2010) Ghana's four largest cities (Accra, Kumasi, Sekondi-Takoradi, Tema and Tema) account for 19.6 percent of the total population and their residents generate an estimated 3,200 tonnes of waste per day. There are around 105 other urban localities each with population 15,000 with environmental sanitation challenges similar to those of large cities. These other urban localities comprising about 34 percent of the total population generate in excess of 5,000 tonnes each day (Ministry of Local Government and Rural Development, 2010). From a baseline environmental sanitation data gathered in 2007 and 2008 by MMDAs close to 76 percent of households still rely on improper waste collection and disposal methods, with only less than 5 percent relying on house-to-house collection (Ministry of Local Government and Rural Development, 2010).

Structure of the Ghana waste management system

Official regulations governing solid waste management in Ghana normally emanate from the Ministry of Local Government and Rural Development (MLGRD) and Environmental Protection Agency (EPA). The roles of these two state organs are outlined in the MLGRD's Environmental Sanitation Policy. The mandate of the Ministry of Local Government and Rural Development (MLGRD) includes the provision of oversight and

direction for: assisting Metropolitan, Municipal and District Assemblies (MMDAs) to draft bye-laws and guidelines with respect to procurement, tax rates, revenue mobilisation, infrastructure and municipal services including environmental sanitation; and facilitating and coordinating through its departments, such as the Environmental Health and Sanitation Directorate (Ministry of Local Government and Rural Development, 2010).

The Environmental Health and Sanitation Directorate (EHSD), under the MLGRD was elevated from a unit to a directorate in 2006 to provide a “more visible home for environmental sanitation” and to give the directorate “space” at high-level management meetings of the ministry (Ministry of Local Government and Rural Development, 2010). The EHSD provides sector coordination and facilitation of MMDAs in implementing national-level and other ministries “programmes on environmental sanitation such as the Waste Management and Sanitation Module of the National Youth Employment Programme (NYEP)” now Ghana Youth Employment and Entrepreneurial Development Agency (GYEEDA) managed by the Ministry of Youth and Sports.

The Environmental Health and Sanitation Unit in MMDAs is mandated by the MLGRD to handle all waste management issues at the district level (Ministry of Local Government and Rural Development, 2010). The waste management functions with respect district assemblies include; the collection and sanitary disposal of waste. The document states that they may provide the services either directly or indirectly through private contractor or franchisees. The MMDAs are enjoined to maintain in all cases, an in-house capacity to provide at least 20 percent of the services directly (Ministry of

Local Government and Rural Development, 2010, p. 29). The Environmental Health Officer is designated as the head of the unit to be supported by an administrative assistant.

Empirical evidence on gender and solid waste management

In many developing countries, waste management practice have focused on technical issues as opposed to socioeconomic aspects such as gender relations. A range of research studies have demonstrated the fact that waste management is gendered, regardless of the nature of theoretical approach adopted (Asia, Busch, & Nkengla, 2013; Foster, Dixey, Oberlin, & Nkhama, 2012; Kadfak, 2011; Poswa, 2004; Fredericks, 2008). This section of the review will tease out critical issues which relates to gender dynamics in waste management as described by various researchers.

Fredericks (2008) and Poswa (2004) have suggested that waste is not a neutral concept and as such should be understood within the cultural context realising that within the same society, household, men, women and children may have differing perceptions and views about what constitutes solid waste. According to Muller, (n.d) there is a gendered definition of “waste” which should be considered during the discussion of priorities regarding waste management in the community consultation process. Perception of SWM is very crucial. While Kadfak (2011) asserted that the main concern of local people was proximity of disposal site studies by Poswa (2004) in South Africa reveal great differences between men and women on the choice of type of waste collection services. Whilst women preferred door-to-door waste collection systems, men on the other hand chose drop off centres. These findings were attributed to the fact that most women in developing societies

are required to allocate their time strategically in order to meet the demands of domestic work (Kadfak, 2011). Again, women and men (and also children) are almost certain to have different (and not always overlapping) knowledge of waste disposal places in their neighbourhoods (Muller & Scheinberg, 2001).

Generally, waste management responsibilities originate from social construction of roles. Societal norms in many communities tend to ascribe waste management duties within the domestic and public spaces to women. Awumbila (2001) mentioned that in traditional Ghanaian society, women were primarily responsible for all reproductive activities including solid waste management. Scheinberg et al. (1998) also demonstrated that across many cultures, women handle waste in homes although the richer women tend to delegate this task to domestic workers.

Gender division of labour in SWM is not limited to domestic sphere. For example, Foster et al. (2012) in a related study revealed variations in the tasks performed by both men and women in SWM organisations. Thus, men dominated in tasks supposed to require physical strength such as loading waste into trucks whilst women dominated in the collection of revenue. There were differing reasons given for this gender division of labour in waste work. These include the lower physical demands of the work and the perception that women are more trustworthy than men (Fredericks, 2008, p. 7). Muller and Scheinberg (2001) further explained that that women may often be involved at a civic activity level, but when there is an opportunity to institutionalise waste management activities, it is overwhelmingly men who are selected for paid labour. Even when women are involved, it is usual for them to work within the stereotypically acceptable women's roles in administration as clerical

assistants. Similarly, women are among the lowest-paid in waste management enterprise; they work in the dirtiest and most dangerous conditions; they have no social or health insurance; and they may have to have their children work with them in these conditions (Muller & Scheinberg, 2001).

Foster et al. (2012) point to existing evidence which appears to that the social stereotypes associating masculinity with authority in the work place and the ensuing notion of what is “man’s work” and “women’s work” was being challenged. Women according to Foster et al. (2012) were contesting traditional gender roles and were heading SWM organisations as managers and also carrying out heavy work usually reserved for men. While some of the work in SWM was questioning women’s roles, there were a number which, in many cases, were reinforcing women’s and men’s traditional roles (Foster et al., 2012, p.214). For example, SWM organisations in Senegal were actively recruiting young women as sweepers with the justification that women were better workers and importantly less likely to cause trouble (Fredericks, 2008, p. 7).

A related debate in SWM is the empowering potential of employment opportunities in this sector. Fredericks (2008) observed from his studies in Senegal that gender empowerment through SWM employment is a fallacy. He insists that is an analysis of empowerment claims must pose the question of how the mobilisation of traditional discourses such as women’s cultural responsibility for waste may in fact risk reinforcing systems of embedded power (Fredericks, 2008). On the contrary, Foster et al. (2012) drawing on data from Tanzania and Zambia argued that SWM has not only offered women employment, but also empowered them. The empowerment of women in this

regard was attributed to increasing income and developing of meaningful civic activities. Many examples were cited in their studies to support this assertion. For example, “women organisational owners and employees have been able to pay house rents, build houses and send their children to school; some women had been invited to meetings to do with the maintenance of a clean environment for their communities.” (Foster et al., 2012, p.211).

Related to perceptions of SWM practices is willingness to pay for SWM services. For instance, studies by Kadfak (2011) revealed that though women were the key players in SWM, decisions concerning payment for services are reserved for men. This evidence was as result of the fact that men had high economic power relative to women. Furthermore, the patriarchal order that assigns leadership of the domestic sphere to men also explains this finding. On the contrary, Amfo-Otu, Waife, Kwakwa, & Akpah-Yeboah (2012) adopting a quantitative approach found that respondents sex, level of education, income, expenditure level, frequency of payment, frequency of collection and satisfaction with the present waste management system do not have any significant influence on the willingness of the respondents to pay for waste collection but rather, variables like mode of collection, occupation and age are appeared to have a significant effect on willingness to pay (p. 49). Amfo-Otu et al. (2012) assumed gender-neutral situation in solid waste management presupposing that the willingness to pay policy will meet the practical gender needs of women and men equally.

Muller and Scheinberg (1997) observe that community participation in decision-making about waste management is gendered. Muller and Scheinberg (1997) insists that despite women’s relatively high involvement in both private

and public spaces, men are more likely to have access to institutions that set priorities and make decisions regarding waste management infrastructure. One of the reasons of such denial according to Dankelman (2005) is probably that apart from a merely technical and statistical viewpoint, gender carries a strong component of politics and power. Community consultations processes often fail to take gender inequalities into consideration and thus neglect women's preferences (Muller & Scheinberg, 1997).

Poswa (2004) and Foster et al. (2012) points to evidence that women tend to be more environmentally aware and engage in more environmental protection activities. Poswa (2004) studies conducted in South Africa reveal that women were more active in waste management enquiry relative to men. Citing Muller et al. (2002) Foster et al., (2012, p.205) also noted from their research in Mali that women “had more practical knowledge about the environment than men” and that in terms of organising waste management associations, women were the “main leaders”, having a special interest in and capacities for environmental improvement.

Muller (n.d) explained that the introduction of new technology for waste collection, disposal, and treatment such as recycling equipment or tricycle designed for SWM organisations requires asking gender-related questions. Such questions include the ability of women-owned enterprises just as men's to afford such investment. Others are if women as well as men have the managerial expertise required to operate such equipment? Do women as well as men have an equal chance to get the necessary training? How the new technology affect the health of both women and men and if their operation creates equal risks or offer equal protection against health risks for women and

men (Muller, n.d). These issues Muller, (n.d) observe are often ignored or taken for granted and do eventually lead to a growing socioeconomic disadvantage for women.

The discussion so far appears to support the conclusion that SWM is gendered. This is demonstrated by: gendered division of labour; challenge of traditional gendered division of labour; women's higher awareness of the environment protection; perception of gender SWM; the gendered differences in willingness to pay for SWM services; and empowering potential of SWM. However, most of the studies reviewed focused on urban households SWM practices (Asia et al., 2013; Foster et al. 2012; Fredericks, 2008; Poswa, 2004). Kadfak (2011) and Amfo-Otu et al. (2012) studied SWM in semi-rural areas in Ghana. The rural context and how it impacts gender relations in SWM is therefore not clear. This study sets out to address the knowledge gap in understanding the gendered forces at play in rural SWM spaces by focusing on two rural localities in in the Twifo-Ati Mokwa District.

Conceptual framework

In an attempt to unravel the gender dynamics of solid waste management in the Twifo-Ati Mokwa District it has become necessary to adopt a conceptual framework that will make gender relations visible. The social relations approach as enumerated by Naila Kabeer (1994) was considered most appropriate. Social Relations Approach to gender and development analysis has been developed by Naila Kabeer at the Institute of Development Studies, Sussex University, UK, in partnership with policy-makers, academics, and activists, primarily from the South. Like GAD

perspective, the theoretical underpinning of the Social Relations Approach is social feminism. As a conceptual framework the social relations approach is based on the premise that the processes by which gender inequalities are socially constructed are not limited to households' relationships, but are reproduced across a range of institutions, including many of the policy making agencies (March, et al., 1999). It is therefore essential to put to one side the declared ideologies of different institutions and to examine empirically the actual rules and practices through which their various organisational forms are established (Kabeer & Subrahmanian, 1996). What such an analysis would make clear is that, although different institutions may operate with their own distinct 'ways of doing things', there are certain common norms and assumptions which cut across the different institutional locations, leading to the systemic and widespread construction and reinforcement of certain social inequalities such as gender inequality (Kabeer & Subrahmanian, 1996). For this reason, the framework employed for the analysis of gender inequality is one which focuses on the institutional construction of gender relations and hence the institutional construction of gender inequality.

The Social Relations Approach is envisioned as a tool of analysing existing gender inequalities in the distribution of resources, responsibilities, and power (March, et al., 1999). It is also used for designing policies and programmes which enable women to be active agents of their own development. The framework uses concepts to demonstrate the relationships between people and their relationship to resources and activities and how these are reproduced through social institutions such as the state, family and the market (March, et al., 1999). From the foregoing, it is also clear that the

importance of gender in studying SWM cannot be underestimated. Social relations approach will examine crucial issues such as perceptions, division of labour and participation outcomes in SWM. The resultant conceptual framework is depicted in figure 1. The framework depicts how gender ideologies in various social institutions influences SWM practice. It also isolates the elements of gendered waste management so that it can be measured empirically.

There are five main concepts underlying Social Relations Approach. First, the Social Relations Approach, views development as any activity aimed at increasing human well-being. It is not basically about macroeconomic levers such as growth and low inflation. 'Human well-being is seen as concerning survival, security, and autonomy, where autonomy means the ability to participate fully in those decisions that shape one's choices and one's life chances, at both the personal and the collective level' (March et al., 1999, p.104). Consequently, development policies must be appraised not only in terms of technical efficiency, but also social in terms of how well they contribute to the broader goals of survival, security, and human dignity.

Critically, it follows from this that the concept of work must not be perceived only from productive activities but also reproductive activities such as households' solid waste management practices which contribute to human well-being. That is reproductive work is equally important as productive work and as such should be given equal value and reward. This will encourage continuity in those tasks performed by people to ensure a healthy and sustainable environment.

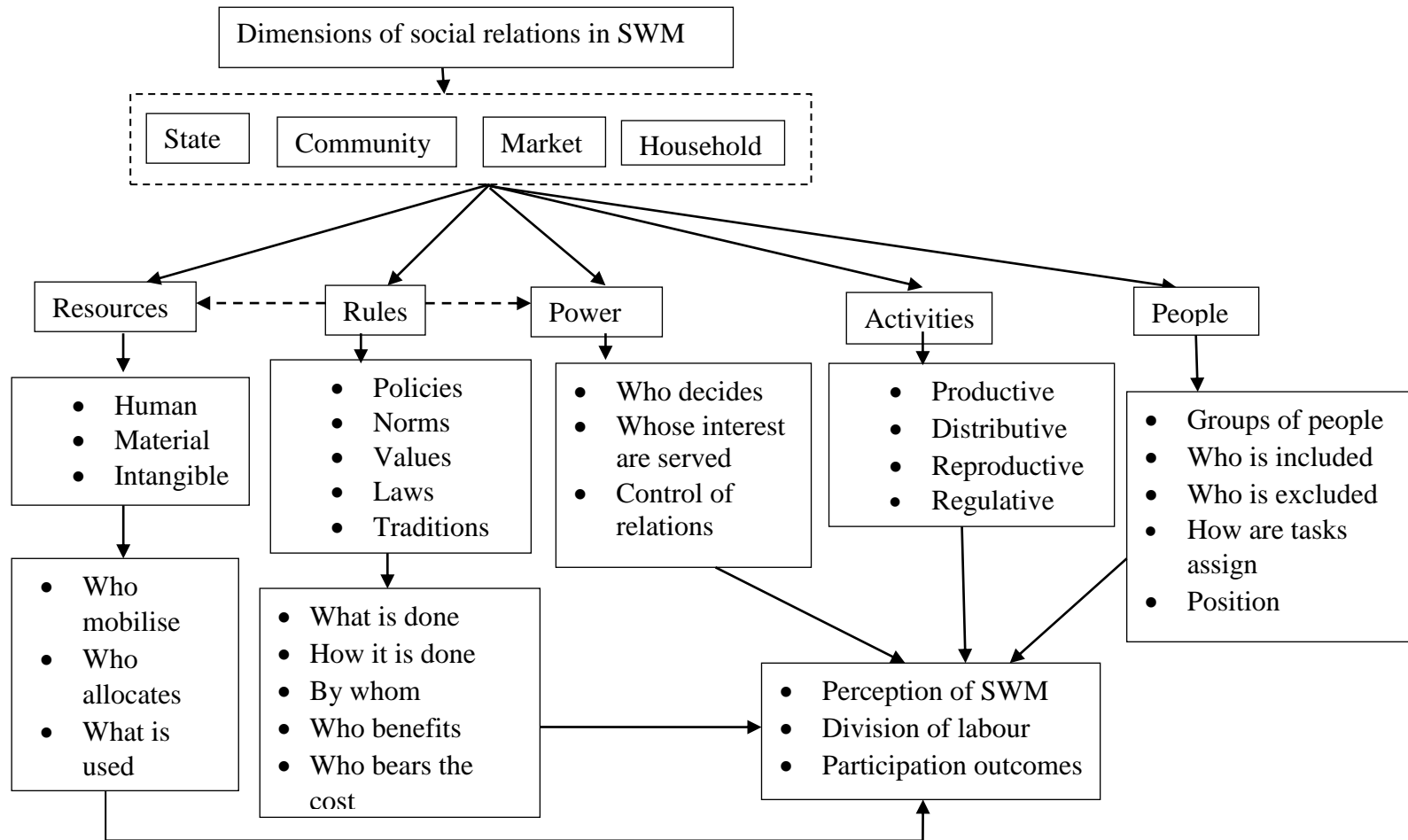


Figure 1: Social relation approach and solid waste management

Source: Adapted from Kabeer, 1994

Secondly, Kabeer (1994) uses the term social relations to describe the structural relationships that create and reproduce systemic differences in the positioning of different groups of people. Such social relationships shape who we are, what our roles and obligations are, and what demands we can make; they determine our rights, and the control that we have over our own lives and those of others (March et al., 1999). Social relations produce inequalities, which establish peoples positions in the structure and hierarchy of their society. Gender relation is a type of social relation which is visible in every culture (Reeves & Baden, 2000). It is also important to note that gender relations do not operate in a social vacuum but are products of the ways in which institutions are organised and reconstituted over time (Kabeer & Subrahmanian, 1996). Social relations are not permanent; they can change through social actions.

The third concept is institutional analysis. This concept is intended as technique for analysing the underlying causes of gender inequality. March et al. (1999) explained that gender inequalities are not limited to the households but are reproduced across a range of institutions, such as the community, the state, and the market place. Kabeer defines an institution as a framework of rules for achieving certain social or economic goals. Institutions ensure the production, reinforcement, and reproduction of social relations and thereby create and maintain social difference and social inequality. Organisations, on the other hand, are defined as the specific structural forms that institution take (as cited in March et al., 1999, p. 104). For the purpose of this study: Twifo-

Ati Mokwa District Assembly; solid waste management organisations and households represent the state, market and family respectively.

The Social Relations Approach challenges two fallacies about institutions: that they are ideologically neutral and independent entities hence a change in one of them will not affect the others. Contesting the fallacy of ideological neutrality, Kabeer (1994) argues that institutions produce, reinforce, and reproduce social difference and inequalities. “Kabeer (1996) further argues that, in order to understand how gender inequalities (in roles, responsibilities, claims, and power) are produced, reinforced, and reproduced through institutions, we must move beyond the official ideology of bureaucratic neutrality, and scrutinise the actual rules and practices of institutions to uncover their core values and assumptions”.

The Social Relations Approach also contests the fallacy of independence of institutions. It emphasize that social institutions are inter-related, and that a change in the policy or practice in one institution will alter the activities of other institutions directly or indirectly. These interrelations though very vital, are often ignored. It is therefore crucial to pay critical attention to the interactions between these institutions. In figure 1 these institutions are represented by a box with dashed lines based on the recognition that social institutions are not static but rather can change as a result of external influences. Studying gender relations through such an institutional approach helps to highlight the complex ways in which rules, cultural norms and practices from different institutional locations interact to produce and sustain such inequality across society (Kabeer & Subrahmanian,

1996). It also helps to emphasize which needs to consider in an attempt to address such inequality through policy interventions (ibid).

Social institutions in practice vary across cultures. However, the Social Relation Approach states that all institutions have five different, but interconnected components of social relationships: rules, activities, resources, people, and power. These components are central to the analysis of gender relations. Analysing institutions on the premise of these components, aid in understanding the underlying gender dynamics at play (March et al., 1999).

Rules are basically principles governing behaviour within a particular institution. These institutional patterns of behaviour may be official and explicit. They may also be unofficial and implicit, expressed through norms, values, traditions and laws which limit or allow what is done, how it is done, and by whom. They also determine who the outcomes will benefit (Kabeer & Subrahmanian, 1996). The establishment of rules has the advantage that it allows decisions to be made without overlap. However, rules entrench ways of doing things, often to such an extent that they seem natural or permanent (March et al., 1999). In figure 1 rules is presented in a box with an arrow emanating from the dimensions of social relations.

Institutional rules give rise to different patterns of activities to be performed. The sets of activities are organised around the meeting of specific needs of a given institution. These activities can be “productive, distributive or regulative but their rule governed nature means that institutions generate routinized practices and are reconstituted through such practice” (Kabeer & Subrahmanian, 1996, p. 27). Similarly, in figure 1 activities is presented in a box with an arrow stemming from the dimensions of social relations.

Consequently, certain tasks are linked to certain social groups, so that it seems that these groups are best fitted for doing that particular task (March et al., 1999). For instance, the strong association of women with the tasks of cleaning and waste management both within the private and public arenas is often explained in terms of their natural inclination (Foster et al., 2012).

Institutions also have the ability to mobilise and allocate resources. These may be human resources (for example, labour, education, and skills), material resources (equipment, assets, land, or money), or intangible resources (information, political, clout, or goodwill). The allocations of such resources are often in line with institutional rules (Kabeer & Subrahmanian, 1996). Resources are vital because they determine what is used and what can be produced. The dashed arrow from rules to resources depicts the relationship between rules and resources. It assumes that rules form the basis for allocation and mobilisation of resources.

Institutions are constituted by specific kinds of people. Institutional rules and practices determine which groups of people are included or excluded, how they are assigned specific tasks, activities and responsibilities within the production process, and the different resources in the allocative processes of the institutions (Kabeer & Subrahmanian, 1996). An institutional pattern of inclusion, exclusion, positioning and progress of people reinforces gender relations and other social inequalities. This is shown in figure 1 by the arrow from social dimensions of social relations to people.

Power determines who decides and whose interests are served. Central to every institution is authority and control of relations. The Social Relations Approach assumes that in reality few institutions are egalitarian, even if they

profess to be so. The unequal allocation of resources and responsibilities, together with the official and unofficial rules which promote and legitimise this allocation, ensures that some institutional actors have authority and control over others (March et al., 1999). The dashed arrows from rules to power is a reflection of how unequal power relation manifest among various institutional actors (Figure 1). These actors then promote practices which serve their privileged interests, and they often ensure that the status quo remains.

The conceptual framework also identifies the subjects that will be measured within gendered waste management. These include: the perceptions in solid waste management, characterised by definition of waste, SWM practices and willingness to pay; division of labour; and participation outcomes explained along two dimensions; material and relational outcomes. Besides, the conceptual framework gives a pictorial representation of how these activities leads unsustainable solid waste management.

The fourth concept in Social Relations Approach is institutional gender policies. Policies are broadly classified as gender blind policies and gender-aware policies. Gender-blind policies recognise no distinction between the males and females. These policies incorporate biases in favour of existing gender relations and therefore tend to exclude women (as cited in March et al., p. 108). Thus, policies are implicitly male-biased in that they privilege male needs, interests and priorities in the distribution of opportunities and resources (Kabeer & Subrahmanian, 1996). Gender-aware acknowledge that both men and women are development players, and that they are limited in different,

often unequal, ways as potential participants and recipients in the development process (March et al.,1999).

Kabeer categorised gender-aware policies into three types, depending on the extent to which they acknowledge and address gender issues (as cited in March et al., p. 108). First, gender-neutral policies are the minimum expected from any gender-aware policy analysis (Kabeer & Subrahmanian, 1996). Such policies aim to ensure that development interventions target and benefit both sexes effectively to meet their practical gender needs (March et al., 1999). Gender-neutral policies operate within the existing gender division of resources and responsibilities without any attempt to alter the status quo. Second, gender-specific policies are policies which are aimed to target and benefit a specific gender (men or women) in order to achieve certain policy goals or to meet certain gender-specific needs more effectively (Kabeer & Subrahmanian, 1996). They also operate within the existing gender division of resources and responsibilities. Thirdly, gender-redistributive or transformative policies are interventions which are designed to transform existing distribution of resources and responsibilities to create a more equal relationship between women and men (March et al., 1999). They may target both women and men, or only one group specifically. Gender-redistributive policies focus on strategic gender interests or needs.

Analysing solid waste management policies is also depicted in figure 1 by the box that contains the indicators of rules. This attempt to categorise different policies according to the extent to which they acknowledge gender as an analytical, rather than a prescriptive tool. The different policy interventions

need not annul each other but rather one may be used as a precursor to another. Thus, these policies are not mutually exclusive.

The concepts in social relations approach explained above are employed in; examining the perceptions of people, allocation of resources used, gendered division of labour, institutional rules and participation outcomes of women and men in solid waste management practices and services of the Twifo-Ati Mokwa District.

CHAPTER THREE

METHODOLOGY

Introduction

This chapter discusses the study area and present methodological issues. It covers the study area, study design, study population, sample and sampling procedures used to select the study respondents. The chapter also covers issues related to data such as data sources, method of data collection, processing and analysis.

Study area

The Twifo-Ati Mokwa District formerly part of Twifo-Heman Lower Denkyira District with its capital Twifo Praso is one of the 20 District Assemblies in the Central Region of Ghana. It has a total land area of 1199km² with 1,510 settlements (Twifo-Ati Mokwa District Assembly, 2012). It is located between latitudes 5°50'N and 5°51'N and Longitudes 1°50'W and 1°10'W. It is bounded on the north by the Upper Denkyira East Municipal, on the south by the Twifo-Heman Lower Denkyira District, on the west by the Mpohor Wassa East District and the East by the Assin North Municipal (Twifo-Ati Mokwa District Assembly, 2012).

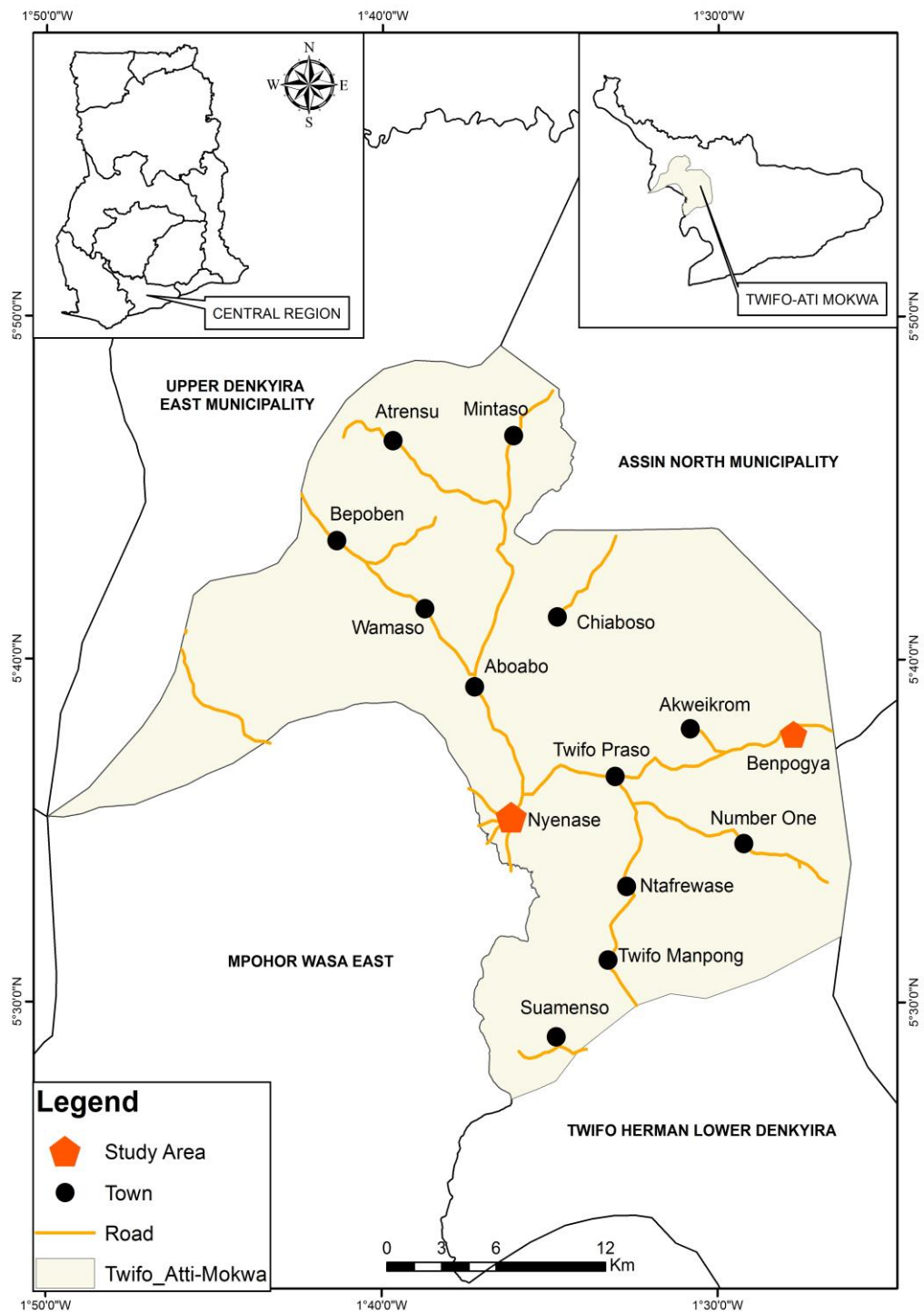


Figure 2: Map of Twifo-Ati Mokwa District

Source: Department of Geography and Regional Planning, UCC, 2014

Twifo-Ati Mokwa District had a population of 107,787 in 2000 and 116,874 in 2010. The current population growth rate in the District is 2.2 percent which is lower than the corresponding regional growth rate of 3.1 percent and national growth rate of 2.5 percent (Ghana Statistical Services, 2012). The population growth rate is attributed to the fertile soil which support crops like oil palm, cocoa, plantain, cassava and others, which has resulted in many migrant farmers living in District (Twifo-Ati Mokwa District Assembly, 2012).

The age-sex structure of the district depicts a situation where males outnumbered females in 1984 census until the trend was reversed during the 2000 population census (Twifo-Ati Mokwa District Assembly, 2012). The high level of male emigration for jobs elsewhere explains this (Twifo-Ati Mokwa District Assembly, 2012). The sex composition may be measured by sex ratio, which is the number of males per 100 females. The sex ratios for 1970, 1984 and 2000 population census counts were 109:100, 100:100 and 99:100 respectively (Twifo-Ati Mokwa District Assembly, 2012). Females constitute 50.6 percent of the Twifo-Ati Mokwa District's population (Ghana Statistical Services, 2012). The district is a typical rural district. There are out of the 1,510 settlements in the District, only Twifo Praso currently with a population of 11,853 is considered statistically urban (Ghana Statistical Services, 2012). This urban population constitutes 10 percent of the district's population. Twifo-Ati Mokwa District performs typically agricultural functions with very limited urban functions such as recreation, residential areas and formal employment avenues.

The main agro-processing industries identified in the district are palm oil extraction, rice milling, soap making, cassava processing and local gin (akpeteshie) distilling. These industries play an important role in the socio-economic development of the district. Palm oil extraction activity is carried out mainly at Ampenkro Eduaben, Ntrafrewaso, and Nyenase. The source of the raw material, which is palm fruit is from local farmers in the district. An average of five casual labourers are engaged in each enterprise. The average production of a palm oil enterprise during the peak season is ten drums per day and six drums per day in the lean season (Twifo-Ati Mokwa District Assembly, 2012). The market centres are Cape coast, Techiman, Obuasi, Kasoa, Accra, Takoradi and Elmina. The rice milling activities are located in Aklomah, Twifo Praso, Akwkrom Benponso, Ampekrom, Nuamakrom, and Asarekwaku (Twifo-Ati Mokwa District Assembly, 2012). An average of two casual labourers are employed and an average of ten bags of rice are processed a day during the peak season. The main market centres are located in Twifo Praso, Elmina, and Kasoa (Twifo-Ati Mokwa District Assembly, 2012). The cassava processing industries are located mainly in Kenkuase, Nuamakrom, Benpogya and several parts of the district. The products are gari and cassava dough. An average of two people are employed in each of the establishment. Two bags of gari are produced a day. Markets for the products are located in Accra, Kumasi, Takoradi, Kasoa and Techiman.

One of the main locally produced alcoholic drinks in the district is akpeteshie which is distilled from palm wine tapped from palm trees. The distilleries are located in Twifo Praso, Agona, Benpogya, and Bukrusu. Apart from the average of two people who are employed to distil this drink, palm

fruit farmers, palm wine tappers and others also benefit from this venture in terms of employment (Twifo-Ati Mokwa District Assembly, 2012). The main market centres are Kumasi, Accra, Cape Coast, Sekondi, Kasoa, Sunyani, Aflao, and Lome. Soap production is concentrated at Twifo Praso and New Mampong. This could be attributed to the presence of the major raw material, palm oil in the district. An average of six people are employed with about seven thousand and two hundred cakes of soap produced in a day, employing almost half of the youth in the area. This helps the assembly in its fight to curb the rural-urban drift in the country which has caused the capital cities to be densely populated (Twifo-Ati Mokwa District Assembly, 2012). An example of soap manufacturing company in the district is “Yewodze” Enterprise.

The district is rich in mineral deposits including gold, diamond and manganese. This have given advantage to those engaged in small-scale mining in gold and diamond since these mineral deposits cover about one hundred and six acres of land (Twifo-Ati Mokwa District Assembly, 2012). Some mining companies are already operating at Twifo Kojokrom, Twifo Aburochire, Twifo Brofoyedur, Twifo Praso and Ati Mokwa. In addition to mining, small scale stone quarrying are undertaken in the district. Entrepreneurs in the business rely on rocky outcrops and boulders found on the hills and along the hilly slopes. Stones are conveyed to the lowlands mainly along the roads and then broken into chips. The chips are used as aggregate in building and road construction, both in and outside the district (Twifo-Ati Mokwa District Assembly, 2012). Also, there are artisans and people engaged in crafts of various types ranging from hairdressers to goldsmiths.

The various economic activities discussed above generate different forms of solid waste in Twifo-Ati Mokwa District. Besides, there are gender dimensions in all the economic activities in the district. Men dominate areas that are supposed to require strength such as mining. Women dominate in occupations that are assumed to be less robust and are extensions of their gender roles. For example, women dominate in palm oil production.

The Environmental Health and Sanitation Unit in MMDAs is mandated by the Ministry of Local Government and Rural Development (MLGRD) to handle all waste management issues at the district level. The Environmental Health Officer is the head of the unit. The head of the unit is supported by assistant environmental health officers and sanitary guards. According to the Environmental Health Officer at post at the time of the data gathering, the assembly's core management design the district sanitation bye laws and present it to the assembly members for approval. The core management (District Planning Committee Unit) comprise of seven persons. There is only one female who is the director of information. Assistant environmental health officers and sanitary guards enforce sanitation bye-laws of the district assembly. Sanitation Act 296 of 1993 gives the environmental health officers and sanitary guards the right to enter and inspect any house to see whether or not the households members, in practice, observe the sanitation laws. Sanctions such as fines are prescribed for any breach of sanitation bye laws (Twifo-Ati Mokwa District Assembly, 2012).

The collection and transportation of solid waste in public spaces is done by the private waste organisation. Zoomlion Company Limited which has been contracted by the district assembly to perform this task. Terms of

service delivery includes, the collection of all solid waste from markets and other public spaces such as streets. Solid waste in the district is mostly generated by household and market activities. There are three major forms of households' waste collection services in Twifo-Ati Mokwa District in which the studied communities are located. The older form of collection requires households to transport their waste to communal dump site. The second method is basically using communal skip containers which are placed at central points within the recipient communities. In addition to this method, there is also the practice where households resort to backyard solid waste receptacles.

Research design

This study adopted qualitative research approach. According to Sarantakos (2005) qualitative methodological approach is based on diverse theoretical principles such as phenomenology, hermeneutics and social interactionism, employing methods of data collection and analysis that are non-quantitative, and aiming towards exploration of social relations, and describes reality as experienced by the respondents. Qualitative research permits a deeper interrogation of the assumptions, questions, and logic of the theoretical perspectives (Charmaz, 2004). This study sought to examine the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management. It also, set out to examine the allocation of resources used, gendered division of labour, institutional rules and participation outcomes in solid waste management practice in a rural district.

Qualitative research approach has both strengths and weaknesses. Strengths of qualitative approach includes: achieving a deeper understanding of the respondent's world; allowing higher flexibility, humanising the research process by raising the role of the researched; researching people in natural setting; and presenting a more realistic view of the world. (Chadwick, Bahr, & Albrecht, 1984). Qualitative research is often criticized on basis of the following: it is time-consuming; small sample size and generalizability of findings; problems of objectivity; and risk of collecting meaningless and useless information (Chadwick, Bahr, & Albrecht, 1984).

There are three main rationale for adopting qualitative research design for this study. First, the assumption that the subjective experience of women differs from that of men and children. For instance, Fredericks (2008) stressed that men, women and children may have differing perceptions and views about what is regarded as waste. Secondly, flexibility in qualitative research makes room for shifting from gender bias research that generalises from the experience of men to all people. Thirdly, the study aims at gaining in-depth insight into what happens in the study communities (Nyenase and Benpogya). The focus is not on generalisation but at best, on transferability in similar context. The findings of the study are context-specific. The study was conducted in the setting where all this complexity operates over time and where data on multiple realities was collected.

The specific study design for this study was exploratory research. According to Sarantakos (1997) exploratory research aims at advancing knowledge about an issue, usually when there is not enough information available about the research subject. There is paucity of information on

gendered aspect of solid waste in Ghana. Exploratory research was employed in order to gain insight about gender dynamics in rural solid waste management. Consequently, exploring the processes and nature of social relations in rural solid waste management practice. Exploratory research design facilitated the extension of the theory of GAD, and Social Relations Approach to explore rural solid waste management issues. Thus, going beyond providing a general overview of the subject, an exploratory study was useful for developing an accurate picture of the gender dynamics of solid waste management situation in Twifo-Ati Mokwa District.

Study population

The study population were waste generators and waste management institutions in Twifo-Ati Mokwa District. This comprised of traditional leaders, children, men and women household members and agro-processing enterprise owners and workers. Others were political office holders and officers of the District assembly's waste management structure as well as, private waste management workers.

Sample and sampling procedure

The respondents were selected from three main levels. These comprises of community level, state level, and private waste management organisation. These levels are represented by households, Twifo-Ati Mokwa District Assembly and Zoomlion Company Limited respectively.

The study employed non-probability sampling techniques in selecting the respondents. This implies that not all respondents in the study area had

equal chance of participating in the study. The specific techniques used for this study were purposive and quota sampling. According to Sarantakos (1997) in purposive sampling technique the researchers deliberately choose respondents who, in their opinion, are thought to be relevant to the research topic. Neuman (2011) mentioned that the primary consideration in purposive sampling is to select unique cases that are especially informative. This study was carried out in Benpogya and Nyenase. These two communities were selected purposively because they are rural localities according to Ghana Statistical Services (2012). Benpogya and Nyenase face challenges in managing its solid waste relative to other rural communities within the district (Twifo-Ati Mokwa District Assembly, 2012). The main purpose for choosing more than one community is to get a detailed understanding of gender dynamics of solid waste management situation in the studied area but not necessarily to compare the two communities.

Purposive sampling procedure was adopted in selecting various key persons in the waste management chain in the district. The choice of this technique was guided by the fact there is a fore knowledge about the actors involved in the solid waste management process in the district. These included two assembly members in Benpogya and Nyenase respectively, head of private waste management organisation (Zoomlion Company Limited), head of District Environmental health and Sanitation Unit, four sanitary guards, two managers of palm oil extraction and cassava processing enterprises. Besides, six Zoomlion Company Limited workers and two traditional leaders, in Benpogya and Nyenase respectively were purposively selected to be interviewed. Two children who engage in solid waste related activities such as

transporting solid waste were purposively selected from each of the six occupational groups in Nyenase and Benpogya respectively. A sample of eleven key persons was purposively selected. These actors are in positions to provide the required information for achieving the stated objective of the study. The adoption of this technique was also based on the fact that the study sought to understand the gender dynamics in resource allocation. The three communal dump sites in the studied communities were purposively selected to observe the interaction among the various actors. Dump sites were observed for four hours a day for fourteen days.

Quota sampling was used to select respondents from specific population groups. Specifically, the selection was based on occupational groups. The community was divided into zones on the basis of dominant occupations. The households in Nyanse were divided into four groups: traders, palm oil extraction workers, farmers and craft producers. Similarly, households' respondents in Benpogya were divided into four groups: small scale miners, cassava processing workers, farmers and traders. Two married men and women, single men and women were selected from each of the occupational groups. Married and single persons were selected in order to understand the gender dynamics. A total of twenty-four respondents were selected in Nyanse and Benpogya respectively. Quota sampling technique was chosen to represent the major characteristics of the population by sampling a non-proportional amount of each occupational group in the communities.

Table 4: Overview of category of respondents involved in the field study

Category of respondents	Sample
Household level	
Traders	12
Palm oil extraction workers	6
Famers	12
Craft producers	6
Small scale miners	6
Cassava processing workers	6
Children	17
Community level	
An assembly member each from:	
Benpogya	1
Nyenase	1
Chief of Benpogya	1
Chief of Nyenase	1
Queen mother of Nyanse	1
Manager of palm oil extraction enterprise	2
Manager Cassava processing enterprise	2
District Assembly level	
Head of District Environmental Health and Sanitation	
Unit	1
Sanitary guards	4
Services Provider	
District operations supervisor	1
Project staff	6

Source: Field work, 2014

Background of respondents and organisations

The respondents selected from the two communities for the study comprised of women, men and children. The female respondents comprise of nine children and twenty-nine women. This includes Nyanse queen mother. The women were aged between twenty and fifty-five years. The female children were also between the ages of nine and sixteen years. With regards to formal educational level of the female respondents, it ranged from no formal education to the highest level of senior high school. The male respondents included eight children and thirty-one men. This includes the chief and assembly member of Benpogya and Nyanse respectively. The men were aged between twenty-two and sixty-five years, with the highest level of education being postgraduate degree (MPhil) and minimum being no formal education. The children were between the ages of eight and thirteen years. All respondents selected for the study were Christian except the traditional chief of Benpogya.

At Twifo-Ati Morkwa District Environmental Health and Sanitation Unit, two men and three women participated in the study. According to the interviews, the acting Environmental Health Officer is a graduate from School of Hygiene in Ho and aged fifty-seven. The Environmental Health Officer has work with the unit for the past twenty-one years. The remaining interviewees were sanitary guards. The sanitary guards are senior high school graduates. Their number of years of working experiences ranged from one to four years. Sanitary guards interviewed were aged between twenty-three and twenty-seven years.

Zoomlion Company Limited is a waste management as well as environmental sanitation business in Ghana. According to the document reviews, the company was formed under the company's Act in January 2006 but became operational in Twifo-Ati Morkwa District in March 2009. Four male respondents were interviewed from the company. This includes the District Operations Supervisor who holds National Higher Diploma certificate. The other men interviewed were project staff (field workers), with their highest level of formal education being junior high school. The least to be interviewed had no formal education at all. The female respondents were three, but had no formal education. The women worked as project staff, with an age ranged between forty and forty-five years.

Data sources

Data was collected from both primary and secondary sources. The primary data was gathered from respondents, while the secondary data was obtained from documents which contained environmental issues that covered solid waste management at the district assembly and office of the Environmental Protection Agency in the district. Also, other documents such as government environmental policy documents were gathered for analysis.

Data collection techniques

Three main primary data collection techniques were used in this study. These methods were interviewing, focus group discussions and non-participant observation.

Semi-structured interviews were conducted in Nyenase and Benpogya. The defining characteristic of semi-structured interviews is that they have a flexible and fluid structure, unlike structured interviews, which contain a structured sequence of questions to be asked in the same way of all interviewees (Lewis-Beck, Bryman, & Liao, 2004). Semi-structured interview was employed to gain individual perspective of households, private service provider (Zoomlion Company Limited) and district assembly staff in terms of waste management. The aim was to ensure flexibility in how and in what sequence questions are asked, and how particular areas might be followed up and developed with different interviewees. This is so that the interview can be shaped by the interviewee's own understandings as well as the researcher's interests, and unexpected themes can emerge (Lewis-Beck, Bryman, & Liao, 2004). In the process of conducting the interview, note taking was done so as to capture information that was provided by the respondents. However, where respondents allowed their voices were taped.

Focus group is a special qualitative research data collection technique in which according to Neuman (2011) people are informally interviewed in a group setting. Babbie (2005) mentioned that group dynamics frequently bring out aspect of the topic that would not have been anticipated by the researcher and would not have emerged from interviews with individual. Focus group discussion was adopted with the aim at obtaining information on concepts, perceptions, and ideas of the group. Four focus groups were convened in this study because of the danger that a single group of 6 to 12 people will be atypical to offer any generalizable insight (Babbie, 2005). To get a great deal of insight into gender dynamics of SWM in Twifo-Ati Mokwa District, four

different FGDs were organised with the assistance of two research assistants. The FDG 1 was made up of both women and men in Nyenase and FDG 2 consisted of children in Nyenase. Similarly, FDG 3 was made of children and FDG 4 consisted of both women and men in Benpogya. Each of the FDGs were made up of ten respondents. Though the FDG guide was written in English Language, the interactions were conducted in Twi, a widely spoken local language of the people.

According to Marshal and Rossman (2011) observation entails the systematic noting and recording of events, behaviours, and objects in the social setting. Non-participant observation was employed to study the gender dynamics of solid waste management system. Aspects of the present waste management system such as waste collection system, transportation, and waste disposal sites were observed. Babbie (2005) insists that one advantage of the field research is presence of an observing researcher at the scene of the action.

Data collection instruments

The various data collection instrument for this study were interview guide, focus group discussion and observation record guide. The structure of a semi-structured interview guide was organised around the study objectives. Also, focus group discussion guide contained themes organised around the research objectives of the study. The thematic areas covered in the instrutments were description of waste management process in Benpogya and Nyanse, resources used, rules, perceptions of various players and gender division of labour in solid waste management. Observation record guide was adopted to ensure systematic recording of events. The observation record

guide was structured around solid waste management processes and the various actors involved. The researcher started each day at 4:30 am during which various households, and streets cleaning were observed. The various dump sites were also visited to observe the interaction among various actors. Equipments used for transporting solid waste were also observed. The non-participant observation presented an opportunity to validate some of responses of the respondents. Recorders and cameras cannot capture all the relevant aspects of social processes. Consequently, in both direct observation and interviewing, it is vital to make full and accurate notes of what goes on. Some notes were taken during the direct observation but when that was not feasible, notes were taken as soon as possible afterward.

Ethical considerations

Consent were sought from parents of the children who participated in the study. The involvement of the children were also voluntary. Thus, the children were also given the chance to freely determine whether to participate or not. This was done to ensure that the children were not coerced by their parents to participate in the study. The adult participants were informed of the nature and rationale of study so as decide either to participate or not. Also, the research participants were assured of anonymity and confidentiality. Efforts were also made to ensure that the research participants were not exposed to psychological harm by avoiding emotional and embarrassing questions.

Fieldwork

The actual data gathering was carried out in January 2014. An initial visit was made to the various key persons in December 2013 to book appointments for the interviews. Two research assistants were employed to aid in the data recording exercise during the group interviews. Between six to eight interviews were conducted a day. Each interview lasted for an average of 45 minutes.

There were some challenges in the data gathering exercise. Some households in Nynase thought the researcher was part of the Electricity Company of Ghana inspection team which were disconnecting electricity metres for non-payment of monthly bills. As a result most of the households were trying to avoid the data collection team. The only way out was to explain my mission to those respondents. The outcome was that most of the respondents agreed to grant the interview.

Data processing and analysis

Bodgan and Biklen (1990) mentioned that analysing qualitative data involves organising data, breaking it into manageable units, synthesising data, searching for patterns, discovering what is important and what is to be learned and deciding what to tell others (p.145). The analysis of the data was done manually. The data analysis began in the field with recording of incidents and reflections on the research process. Interview notes were edited at the end of each day and, where necessary, follow-ups were made. All the interviews with the household respondents were translated into English and transcribed fully. The data was then coded after common trends were identified. The common

trends defined from the data were sorted and organised into various thematic areas: description of waste management process in Benpogya and Nyanse, resources used, rules, perceptions of various players and social gender division of labour in solid waste management. Specifically, the analysis of households' and organisational perceptions focused on what women and men considered as waste, main generators of waste and choice of waste management services. Organisational perceptions was also analysed from how women and men perceived their work in relation to the attitude of other people towards their organization and services. The analysis of resource allocation between women and men centred on difference between access to and control over resources. In order to appreciate the gender division of labour, the analysis focused on what work men and women did and why these patterns existed. The analysis of rules in SWM concentrated on standard pattern of behaviour concerning SWM and why these patterns exist. Tools in conceptual framework were used as guide for the write-up. Very interesting quotes were used in the text of the analysis to support the argument being made. For the secondary data a qualitative content analysis was used.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter applies the conceptual framework to findings from the study. The findings are discussed under five thematic areas. The first section discusses perceptions of various stakeholders on solid waste management. The second describes the existing solid waste management system in the studied communities. The third section describes allocation of resources used in solid waste management. The fourth section discusses gendered division of labour in solid waste management and the last section examines rules in solid waste management practice.

Perceptions of stakeholders on solid waste management

The stakeholders of solid waste management comprised of households, Twifo-Ati Mokwa District Assembly and Zoomlion Company Limited. In order to understand the perceptions of the various players on solid waste management practices, the discussion was divided into two parts. The first part examines the domestic space and the second part explores the organisational space. The analysis of households' and organisational perceptions focused on what women and men considered as waste, main generators of waste and choice of waste management services. Organisational perceptions was also analysed from how women and men perceived their work in relation to the attitude of other people towards their organization and services.

The responses as captured from the field indicated that most women interviewees perceived solid waste as useless materials. Twenty-six (90%) out

of the twenty-nine women respondents perceived solid waste as useless materials. However, out of a total of thirty-one men respondents, ten (33%) indicated that given the advancement in technology nothing can be classified as waste in recent times. For example, a 65-year-old chief of Nynase explained that:

In this modern age of technology, there is nothing like waste because of recycling plants hence it will be very difficult to call something waste. The only challenge is that we do not have recycling facilities.

At the household level when asked ‘what activities generate most waste within household?’ The responses pointed to one direction: domestic chores and playing activities of children. Women and children are perceived as the main generators of solid waste within the household. For example a 42-year-old male trader, stated that:

Oh, the women and children generate a lot of waste in this compound house, I go to work very early just like the other men in this house and so any waste generated is from the women and children who stayed back.

Twenty-five (86.2%) out of the twenty-nine women respondents shared similar view on the activities that generate most waste within the household. For instance, a female respondent explained that:

The role of a woman within a household is to cook and manage domestic activities...and you know that in the course performing this social duty, a lot of waste is

generated in the process. And so, I know that domestic waste is largely generated by women and children.

Observations revealed the contrary, men import plastic waste into households because they do a lot of buying when they return from work and tend to leave used items indiscriminately within the compound houses.

The study explored the extent to which respondents perceived the present manner solid waste was managed in their communities as a problem. The responses gathered from the field tried to investigate the differences in female and male responses. On the whole males appeared to stress the economic and environmental impact of poorly managed waste in the Twifo-Ati Mokwa District while females were more concerned about the demands on their time and indictment on their integrity. For instance, a female household member stated:

It is an indictment on my integrity when solid waste are left uncollected within the household. Proper waste management is my responsibility as a wife.

Both females and males were concerned about the health implications of poorly managed waste for the community. The male respondents went further to expressed other implications such as paying of medical bills anytime a member of their household especially children suffer from waste related disease like cholera. On the contrary, women respondents mentioned other effects such as spending most of their limited time on their sick relatives. Again, women respondents were quick to add that unmanaged waste within the domestic space is seen as an indictment on their integrity as women. At organisational level, all twelve (100%) respondents claimed their integrity is

questioned by households when solid waste is left unmanaged. For instance the District Environmental Health Officer explained:

When our environment is very dirty and solid waste is left uncollected, people do not respect me and my office. Recently, there was indiscriminate dumping in one of the rural communities, when my office was prompted...I went there personally and unfortunately the culprit was my church member. She verbally assaulted me for serving her a summon. Besides, people generally rain insults on us anytime we go to the communities for inspection.

Similarly, the District Operations Supervisor of Zoomlion explained how unmanaged solid waste affect his daily activities:

When solid waste within public spaces is left unattended to for days due to breakdown of skip trucks, I am queried by the district environmental officers and my organisation's regional office. Households also complain bitterly on the airwaves. Hmm, radio presenters also attack my office.

Those assigned responsibility for managing solid waste whether traditionally or institutionally such as women and officers of district assembly and Zoomlion Company Limited felt their integrity at stake whenever there is a fault in the proper collection and disposal.

The study was interested in the importance persons employed in the two organisations assigned institutional responsibility for managing waste attached to the service they were providing the community. Both females and males at all levels of the solid waste management organisations perceived

SWM work as social protection for less privilege citizen. One female workers had this to say:

Solid waste management work is reserve for illiterate not for people with formal education.

During the interviews, a male worker stated:

Solid waste work is designed for dirty people and also people who can stand stench.

The data also revealed that workers of SWM organisations face disrespect from households and even sometimes from staff of the same organisation. This was because handling of solid waste materials is considered demeaning. In an attempt to describe the attitude of other people towards SWM work. The District Operations Supervisor of Zoomlion Company explained:

People perceive me as a commoner because am working with Zoomlion. For instance, one of my project staff insists that I go back to school because of my intellectual abilities. He was assuming I do not have any qualification from a higher institution of learning.

A similar comment was made by a male communal container attendant:

People normally tease my work because waste management work is perceived as job for useless people. A man once told me that, the last job he will do on earth is to collect 'bola' (solid waste). Again, road users normally hold their nose when passing by us. This is very irritating, don't we have similar sense of smell?

According to the women sweepers, some members of households intentionally dump their waste by roadside. For instance, a female sweeper stated:

On 24 December, I had a verbal exchange with a woman who dumped soild waste in my presence, when I asked her to collect the dumped waste. Hmm! She said to me, if I cannot do the job I should resign.

There were claims by some staff interviewees that the stigmatisation of their work is extended to their wards. One female respondent explicitly commented on the stigmatisation:

Some community members including children demonstrate stigma through singing of songs about my organisation. The most popular among the songs is ‘wɔ maame yɛ Zoomlion, wɔ papa yɛ Zoomlion, wɔ nsoso yɛ Zoomlion’ which literally means ‘your mother is Zoomlion, your father is Zoomlion and you are also Zoomlion’.

The study was interested in whether the geographical location of the studied communities played a hindrance towards proper waste management or not. Out of a total number of sixty household respondents, the majority, fifty-two representing 87% indicated that “authorities fail to provide them waste management services relative to their fellow citizen in urban areas”. However, the few dissenting views, eight representing 13% explained that the geographical location of their communities is not a drawback towards proper waste management. For example, a 20-year-old female respondent stated:

I think the geographical location of our community plays no role in our current waste management practices because

Twifo Praso (district capital) is relatively dirty when compared to my community despite the fact that they received more attention from the district assembly.

The studied communities shared similar perception on disposal practices. Interviewees in Nynase and Benpogya had claims to make about problems of their main dumpsite. Fifty-five (92%) out of the sixty household respondents mentioned that location of their dumpsite is inappropriate and poorly managed. For example, a 34-year-old female respondent in Nynase stated:

Hmm, where our dumpsite is situated is very bad. It is positioned at the very entrance of the community which gives a very negative impression about us especially to visitors. Besides, it is closer to that poorly constructed drainage.

Similarly, some respondents in Benpogya were quick to blame unit committee members of the area for situating a dumpsite between a river and community main road.

The location of the community dumpsite is now a nuisance to road users. This is due to the choking stench from the dumpsite. Besides, it close to the Pra River could cause leaching in the near future (44-years old assembly man of Benpogya).

The respondents demanded relocation of existing dumpsites at strategic locations such as old mining sites.



Plate 1: Dumpsite at the entrance of Nynase community

Photo credit: Fieldwork, 2014

Related to disposal practices, household respondents were asked ‘will you prefer door to door collection to personally transporting your waste to the disposal site?’ Women and children indicated a preference for door to door solid waste collection systems. Twenty-six (90%) out of the twenty-nine women and all the seventeen (100%) children respondents opted for door to door solid waste collection system. Out of a total of thirty-one men respondents, only ten (33%) opted for door to door solid waste collection system. Most of men respondents indicated they will only opt for door to door collection system with the condition that it will be a free public service. These men claimed, they are already burdened with lots of household expenses such as electricity bills. Other men respondents also mentioned that the transportation of solid waste by women and children is not a problem. For

example, a 29-year old male respondent had this to say about the ‘door to door’ collection system:

The women and children are always at home to transport the household solid waste but we men go out to work, so I do not see the need for such collection system. However, if this service will be free, then why not.

All the respondents indicated that they have not subscribed to any private waste management service. The results of what constitutes solid waste are similar to the findings of Fredericks (2008). The author explained that waste is not a neutral concept and as such should be understood within the cultural context realising that within the same society, household, men, women and children may have differing perceptions and views about what constitutes solid waste. Also, the results of choice of type of waste collection services confirm the observation made by Kadfak (2011) and Poswa (2004). Poswa (2004) in South Africa reveal great differences between men and women on the choice of type of waste collection services. Whilst women preferred door-to-door waste collection systems, men on the other hand chose drop off centres. These findings were attributed to the fact that most women in developing societies are required to allocate their time strategically in order to meet the demands of domestic work (Kadfak, 2011).

Waste management process

In order to appreciate the waste management process in the district, the exploration focused on both the domestic and public spaces. The analysis of SWM process focused on collection, storage, transportation, the nature of solid

waste and actors involve. The study discovered that handling waste in the domestic sphere is the responsibility of women and children. Solid waste generated within a day is deposited into a faulty bucket, basket or sack. The next morning, women and children sweep compound and the rooms and add to the waste stored overnight from the previous day. The waste is transported by foot to community dumpsite or open dump spaces in the backyard of homes. The transportation of the stored solid waste is the responsibility of women and children. From the observations, household waste bins contain both bio-degradable and non-degradable items. These waste include; cassava and plantain peels, dry leaves, black polythene bags, tinned tomatoes cans, sachet water plastics, empty plastic herbal medicine bottles among others.

Most of the households interviewed do not separate their waste. When asked why separation is not done, some of the interviewees mentioned that there is no reason to separate their waste. Out of the sixty household respondents covered in the study only sixteen stated that they separate their waste. The few respondents who claimed they separated their waste explained that, “We only keep plantain and cassava peels for our livestock”. Enterprise based respondents from cassava processing group made similar comment. For instance, in responding to major constituent of their solid waste, one female respondent said:

The main waste generated by our production is the cassava peels. We keep the cassava peels for people who have livestock in our community.

On the other hand, palm oil extraction workers reported that, the only solid waste generated by their activity is hard shell containing palm kernel. These

hard shells were used in filling wetlands around their production premises. The rationale was that palm oil workers considered wetlands as waste lands.



Plate 2: Solid waste from palm oil extraction

Photo credit: Fieldwork, 2014

Waste management activities move from domestic to public sphere. Twifo-Ati Morkwa district practices open dumping system of solid waste disposal. Findings from the field revealed that, Zoomlion Company Limited, the private waste collector, is required to collect all solid waste from markets and other open public spaces every day except Sundays. The district assembly is responsible for solid waste collection on Sundays and this is done by district sanitary labourers. The solid waste collected is stored temporarily at the skip containers located at designated sites. Skip containers are transported to the final dumpsite when filled to capacity. The District Operations Supervisor of the Zoomlion Company Limited explained that the dumpsite is occasionally fumigated to kill microorganisms and to reduce the stench. The main method of treatment is open burning. And the waste is not separated before burning.

When asked why waste separation was not undertaken, the Zoomlion District Operations Supervisor had this to say:

We do not have any engineered composite or recycling plant like what is situated in Accra, so we do not practice any waste separation. Besides, most of the waste generated are non-biodegradable as you saw from the dumpsite.

Figure 2 shows an overview of the waste management process in Twifo-Ati Morkwa District.

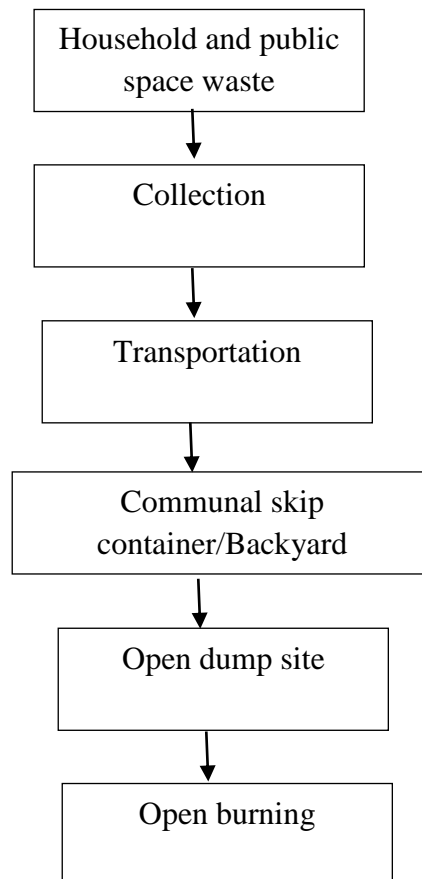


Figure 3: Waste management process in Twifo-Ati Morkwa District

Source: Field work, 2014

Using Hoornweg and Laura (1999) source-based classification of solid waste, this household waste can be classified as residential waste. The finding in relation to the major constituent of solid waste generated in studied rural communities contradicts Tsiboe and Marbell (2004). The two authors argued that domestic waste of rural households appear to be only simple organic farm products such as peelings from fresh foods.

Allocation of resources used in solid waste management

With regard to the way resources are allocated between women and men, the analysis centred on difference between access to and control over resources as shown in the conceptual framework. In the studied communities, material resources such as wooden baskets, faulty buckets and sacks were used as solid waste bins. These material resources were mobilised by women. Brooms are the main solid waste gathering device within the domestic space. There were divergent views among the female respondents about the source of these brooms. Some of the female respondents mentioned that they manufacture the brooms themselves. On the other hand, some females claimed they buy the brooms. When asked why women buy the brooms needed for domestic SWM. One male respondent answered:

Men pay electricity bill and other expenses requiring huge sums of money. Besides, women are responsible for housework such as sweeping so why should I buy brooms for them. It is shameful if a woman cannot mobilise things needed for housework.

Another female made a similar comment:

I am the caretaker of all domestic work, so when the house is not tidy, my husband and the other men within the household will blame me. As such I need to mobilise all that is needed to ensure that the house is clean.

The main human resources in domestic SWM are women and children. The societal norms within the studied communities explain this. That is waste related activities is seen as work's work. In the domestic sphere women control relations in terms of assigning SWM roles and it is they who allocate various SWM task to children in their respective households. Women therefore have allocative power over both human and material SWM resources within the household.

Within the organisational spheres however, resources were mobilised by the District Assembly and Zoomlion Company Limited management respectively. Management of both organisations are dominated by men (Table 5).

Table 5: Positions in waste management organisations and sex of occupant

Position in waste management organisation	Sex of occupant
Head of Environmental Health and Sanitation Unit	Male
Technical officers	Males
Administrative staff	Females
Sanitation guards	Males and females
District Operations Supervisor (Zoomlion)	Male
Assistant Operations Supervisor	Male
Secretary (Zoomlion)	Female
Project staff (Field workers)	Males and females

Source: Field work, 2014

In both District Environmental Health and Sanitation Unit and Zoomlion, leadership and management roles were occupied by men. On the contrary, women were the main actors in terms of clerical duties within the two organisations. When asked about the sex of senior staff of the unit, the District Environmental Health Officer answered, “The unit have two female officers responsible for administrative activities and five male officers who mostly go for field inspection”. At the district office of Zoomlion Company Limited, all leadership and administrative roles are performed by the District Operations Supervisor and his assistant. Educational and technical competences were

often cited requirements for leadership positions. For instance, the District Environmental Health Officer said:

Technical officers make all decision concerning solid waste management. There are five male technical officers and two female administrative staffs. However, in terms of rank, the men hold higher ranks than the women. These ranks are based on level of education and years of experience.

The material resources used by Environmental Health and Sanitation Unit and Zoomlion includes; brooms, wheelbarrows, rakes, shovels, nose masks, picking rods, baskets, foot forks, skip trucks, stairs, skip containers and tricycles. Women (waste collectors) have access to material resources such as wheelbarrows and brooms but no control over them. These resources are allocated and controlled by environmental sanitation health officers and Zoomlion district operations supervisor and his assistant. Women were denied access to tricycle training programs on the basis that it requires physical strength. The male tricycle riders claimed women lack physical strength to ride tricycle. The institutional pattern of excluding and positioning of women reinforces gender relations and other social inequalities. The conceptual framework's depiction of social dimension of social relations with respect to excluding people is corroborated. This is shown in figure 1 by the arrow from social dimensions of social relations to people.

An examination of the data shows that women have access to local politics of SWM but little control over which issues are discussed and the final decisions. The evidence is that men dominate the leadership of the waste

management organisations in the studied communities. Men have both allocative and authoritative power over organisational SWM resources. This reflects the conceptual framework's depiction of how power determines who decides and whose interest are served. The results of hiring only women for clerical work reinforces Muller and Scheinberg (2001) finding. These authors argued that even when women are involved in SWM organisational leadership; it is unusual for them to work outside of stereotypically acceptable women's roles in administration such as clerical.

Traditional leaders in collaboration with unit committees of the studied communities occasionally mobilise households for communal waste management exercise. The unit committee which assist the assembly member mobilises and allocates material resources needed for the exercise. The role of traditional leaders is just complementary. The traditional leaders claimed they have lost their political authority to modern democracy. The only critical role of traditional leaders is to allocate land space for communal dumpsite. The findings also corroborate the conceptual framework's depiction of the relationship between rules and resources. That is rules form the basis for allocation and mobilisation of resources.

Gendered division of labour in solid waste management

In order to understand the gender division of labour at the various spaces, the analysis focused on what work men and women did and why these patterns existed. The discussion is divided into two sections. The first section explores the division of labour in the domestic space and the second section describes tasks allocation within the organisational space.

Women and children are the key players in domestic SWM. In the two study communities, domestic work including SWM is solely the responsibility of women and children. This role form part of cultural norms of both communities. Women are socialised to take care of their homes. This socialisation forms a basis for women's involvement in waste management. Unmarried men sweep their rooms. However, SWM within common space of any compound house remains the exclusive responsibility of women who live within that house. One of the female respondents had this to say:

Women in this house are responsible for managing all waste. We sweep and also transport the waste to the dumpsite. The men are kings; they do not handle any waste.

Mothers assign roles to children on the basis traditional gender norms. Male children are normally asked to fetch water for the household. But female children are tasked to assist in cooking and also handle waste related activities like sweeping. Both boys and girls are involved in solid waste disposal. Observations at the dump site revealed an average of forty-six girls representing 71% as against nineteen (19%) boys bringing in household refuse to dispose off each day. Interview sessions and observations revealed that of the children assigned to dispose of waste at the dumpsite the boys were generally younger in age than the girls. When asked why this was so, a 16-year old female said:

The boys can decide to relinquish waste related activities such as sweeping and transporting waste to community dumpsite at certain age. This is usually the case when there

are other females in the house. Females do not have that choice.

Socialisation process in terms of waste management is skewed towards women. Women's role in solid waste management is not mediated by age. Observations revealed that the aged as well as young women disposing off solid waste at the communal dumpsite. This confirms gender ideology theory. Gender ideology perspective assumes that individuals behave according to their value orientation on subjects like the SWM or the gender roles (Haragus, n.d).

The gendered division is not restricted to only the domestic spaces. In both District Environmental Health and Sanitation Unit and Zoomlion District Office, women and men participated in SWM. In both organisations, there were more women grounds workers than men. When asked about why more females were recruited as sanitary guards and labourers, the District Environmental Health Officer answered:

You know women form greater part of persons who clean the environment that is why we employed more females. Also, it is because women dominate cleaning activities, they will be in a better position to educate people on solid waste management and other environment issues. Besides, when we advertised for the job more women applied relative to the men.

The conceptual framework's depiction of recruitment people on the basis of known gender stereotypes, is corroborated by the findings from the field. Street sweeping was done by only women. On the other hand, riding of

tricycle was mainly reserved for men. Riding tricycles was seen at very a robust activity as opposed to sweeping. Most women claimed they are told the tricycle is very difficult to ride. Training for tricycle riders was organised for only men. When asked why there is the division of labour by sex, the District Operations Supervisor of Zoomlion Company explained that:

Men ride tricycle to transport the solid waste gathered by women. You know that, naturally men are stronger than women in terms of physical strength, besides, the tricycles are very heavy, even ask yourself how many women can ride bicycle not to talk of tricycle. Also, riding of tricycle is exclusive reserve for men because it requires special skills which women lack.

A similar comment was made by a male of 38-year old tricycle rider:

The rational for reserving this job for only men is that, it is difficult to ride a tricycle. Riding also requires courage which most women lack; imagine a woman riding in front of a truck.



Plate 3: A tricycle rider approaching solid waste in Nynase Community

Photo credit: Fieldwork, 2014



Plate 4: A woman transporting solid waste in Nynase Community

A content analysis of staff database of Zoomlion District Office showed that some female workers were categorised as tricycle riders. However, their actual operations showed that they were sweepers and not riders. When pressed for further explained, the district operations supervisor responded, “We normally do that to make the labelling easier”.

The training of only men as tricycle riders according to the conceptual framework depicts how institutional practices determine which groups of people are; included and which excluded, and how they are assigned different responsibilities within the SWM process.

Solid waste collection was done by both women and men. However, there were differences in waste transportation methods. According to the observations, women were found using wheelbarrow whilst men rode tricycle.

There is a skip container site attendant who regulates activities at the skip containers storage site. The skip container site attendant is also responsible for loading waste dumped by the tricycle riders into the skip container. Loading waste into skip containers was considered a man's work. When asked why this work is done by only men, physical demands of the job were often mentioned:

Loading waste into skip container using shovel, requires physical strength which women lack (male assistant district operations supervisor).



Plate 5: A skip container site attendant loading waste into a skip container

Photo credit: Fieldwork, 2014

In relation to men loading waste into skip containers, similar observation was made by Foster et al. (2012), who argued that lifting and loading waste into pushcarts, trucks or trailers were nearly always considered a man's job. In spite of the high degree of agreement about what is considered a woman's work and man's work in SWM, these gendered divisions of labour did not go totally unchallenged. The district skip truck driver is assisted by a female janitor. The janitor is expected to cover the skip container on the truck with a net. This is done to prevent the waste from falling off the truck during transportation from skip container site to the final dumpsite. The janitor operates the gears which load and offload the skip container at the final disposal site. She also directs the skip driver at the skip container site and final disposal sites in relation to proper positioning for loading and offloading of skip containers. During the interviews, the District Operations Supervisor stated:

This is the first time a woman is performing this task. The female janitor showed interest and courage when the position became vacant. Actually, the reason for assigning her to the position was due to the fact that she had previous demonstrated leadership skills.

The results of hiring more females for SWM work are similar to the findings of Fredericks (2008). The author explained that SWM organisations in Senegal were actively recruiting young women as sweepers with the justification that women are better workers and importantly less likely to cause trouble or disagreement (Fredericks, 2008). Also, the training of only men as tricycle riders confirms the assertion made by Muller (n.d). Muller (n.d)

argues that, the introduction of new technology for waste collection such as tricycle designed for SWM organisations requires asking gender-related questions. For example, do women as well as men have an equal chance to get the necessary training? These issues are often ignored or taken for granted which eventually lead to a growing socioeconomic disadvantage for women.

Participation outcomes

The examination of participation outcomes are based on the changes respondents assign to their involvement in SWM job. The analysis of participation outcomes was done along two dimensions; material and relational outcomes. The material outcome explored changes caused by SWM work with regards to income, expenditure and ownership of assets. The information discussed in this section was drawn from respondents who were engaged as solid waste workers. The respondents reported that they joined the District Environmental Health and Sanitation Unit and Zoomlion Company Limited mainly to get employment. However, both men and women respondents mentioned that their engagement with waste management organisation have not brought any remarkable change in their standards of living. The findings revealed that ten (83.3%) out of twelve respondents indicated that the monthly allowance is not their only source of income. Some of male respondents work as famers as well, whilst the women work as traders and as palm oil extraction producers. When asked about changes in their lives in terms ownership of asset and expenditure capacities, which they could attribute to their work within SWM organisations one of the male tricycle riders said:

I cannot mention any specific benefit of my work, because I mostly borrow from friends to pay for my transportation fare when am going to work.

Responding to the same question, a 28-year old female sanitary guard stated:

I am still sharing a single room with my other siblings in my family's house. I am searching for a different job because the allowance paid by Zoomlion is nothing to write home about. I applied for admission into Ghana Police Service last year but unfortunately my application was not successful.

Relational outcome reveals changes in social interaction. In this study, relational outcome focused on decision making within households and attitude of community members to solid waste workers. The analysis of the data showed that decision making process in the household is still dominated by men. Female interviewees mentioned that their husbands have the final say in all issues within their households. Involvement in SWM organisation does not help women to ease the burden of domestic work. The traditional gendered roles in their families have not changed. Again, female respondents reported that the attitude of some community members has changed after their employment. This change is demonstrated through stigmatisation. The research findings on participation outcome showed that people's engagement especially women in SWM does not automatically transform the power relation between men and women. The conceptual framework's depiction of participation outcome along the two dimensions; material and relational outcomes are corroborated. This contradicts Foster et al. (2012). These authors

drawing on data from Tanzania and Zambia argued that SWM has not only offered women employment, but also empowered women. The empowerment of women in this regard was attributed to increasing income and developing of meaningful civic activities.

Women and men shared similar responses on terms and condition of their work. According to the interviews, project staff of Zoomlion receives 100-110 Ghana Cedis as monthly allowance. This allowance is always disbursed late. According to the respondents, the allowance sometimes delays for three months. Employees of both Zoomlion and Environmental Health and Sanitation Unit have no health insurance benefits. During the interviews, Zoomlion respondents in Twifo Ati-Mokwa District said, “We do not belong to any labour union”. The main challenge faced by workers in Zoomlion and Environmental Health and Sanitation Unit is the absence of skip container stairs. A skip container site attendant had this to say:

My brother, for the lack of stairs households especially children have no choice but to dump the refuse on the ground. This practice makes my work very difficult.



Plate 6: A girl child struggling to dump her waste due to absence of stairs

Photo credit: Fieldwork, 2014

Rules in solid waste management practice

Norms and social values play a key role in the domestic politics of SWM. The standard pattern of behaviour concerning solid waste management influences the behaviour of females and males within the domestic sphere. In order to understand the role of rules in SWM, the analysis concentrated on standard pattern of behaviour concerning SWM and why these patterns exist. Institutional policy documents of the studied organisations were analysed.

While interviewing respondents in the households, it became clear that women were responsible for all domestic work such as waste management. Women engagement in domestic SWM did not reduce due to their involvement in paid work and even when men are unemployed. Female exclusive handling of waste was explained as one of the virtues of a eligible

woman, that is, a woman who can manage the home in terms of housework. From the interviews, a woman who fails to perform domestic work such as waste management is seen as irresponsible and not properly socialised by her parents. Men's engagement in housework such as sweeping is considered 'help' and unusual especially when married. One of the male respondents had this to say:

I help my wife to clean the house when I am less busy. We all know that housework such as waste management within the household is a woman's task.

Male children are involved in domestic SWM particularly when they are residing with other relatives. However, at age fifteen and above, most male children particularly those who stay with their parents can retire from domestic SWM. According to the female interviewees, it is traditionally unfair to let a man perform domestic SWM tasks when females are present. When asked why this is so, both women and men interviewees claimed that, that was how they were socialised. For instance, one female respondent said:

My mother and other women perform domestic SWM task. This is a virtue of a responsible and a well-trained woman. I do not see anything wrong about this. Women in the city mostly refuse to perform their domestic work such SWM, that is why most of the city guys and Ghanaian men in the diaspora prefer to marry rural women.

Women respondents appeared to have internalised the traditional views of their roles by subscribing to and not questioning the assumptions underlying waste management practice. For instance, one of the female respondents said:

You know a married woman is supposed to sweep and clean the house, and not her husband. That is, one of the reasons why you were married and so if you fail to play your role as woman, then you cannot blame him for flirting with other women. A good woman should keep the house clean even if she is working.

Traditional rules were expressed through norms and values. Traditional leaders such as chiefs and queen mothers hold a special position in rural communities. According to the interviews, rules of royalty do not allow royals to handle waste of all kinds. Public handling of waste by a chief or queen mother is considered a taboo in the studied communities. This was attributed to the sacred nature of their positions. The waste management are left for servants and other people who live in the chiefs' palace. It is unacceptable for a royal to publicly handle waste. For instance, a royal is not expected to transport waste to community dumpsite.

The findings of the social norms and values of SWM practices confirms gender ideology theory. Gender ideology theorists argued that the division of housework does not result from the relative resources of person, but from how an individual identifies himself or herself with regard to marital, familial, and occupational roles that are traditionally linked to gender (Diefenbach, 2002). Gender ideology perspective assumes that individuals behave according to their value orientation on subjects like the SWM or the gender roles (Haragus, n.d).

Content analysis of Twifo-Ati Mokwa sanitation bye-laws showed that, the laws are gender blind. According to March et al. (1999) gender-blind

policies recognise no distinction between the males and females. For instance, paragraph (3) of Twifo-Ati Mokwa sanitation bye-laws states that:

Any person who fails to comply with an order made under sub-paragraph (3) of this paragraph commit an offence and is liable to conviction to a fine not exceeding 100,000.00 old cedis or to imprisonment not exceeding one month.

Similarly, the Environmental Sanitation Policy of 2010 in describing the household and community level responsibilities in relation to solid waste management practice showed that, the policy is gender blind. The policy recognise no difference between the gender needs of males and females. For instance, page (29) of the Environmental Sanitation Policy of 2010 states that:

Every individual shall be responsible for cleansing within and the immediate environs of the property they occupy, including access ways and the drains and roads abutting the property. (Ministry of Local Government and Rural Development, 2010)

Institutional rules of domestic and public waste management influences the behaviour of females and males in solid waste management duties. Female exclusive handling of waste was explained as one of the one virtues of a marriageable woman. Also, men's engagement in solid waste management duties is considered 'help'. However, the institutional policies and sanitations bye laws do not consider the gendered differences. This reflects the gender blind policy in SWM practice. The findings also corroborate the conceptual framework's depiction of rules in allowing what is done, how it is done, and by whom. In addition, the conceptual framework's depiction of official and

explicit rules and unofficial and implicit rules, expressed through norms is supported.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary, conclusions and recommendations from the study. The first section presents summary of the findings from study as discussed in chapter four. The second part covers the conclusions drawn from the findings. The final part offers recommendations to various stakeholders.

Summary of the main findings

The main findings on the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management include; differing views about what women, men and children regarded as waste within the same community and household. The women perceived solid waste as useless materials. However, some men indicated that given the advancement in technology nothing can be classified as waste in recent times. Women and children are perceived as the main generators of solid waste within the household. All interviewees perceived present solid waste situation in the studied areas as a problem. Women, men and children unanimously indicated that the health implications of poorly managed waste affect everyone. The study also found that women and men have different views about the effects of unmanaged solid waste. Men expressed financial effects such as paying medical bills anytime their household member especially children suffer from waste related diseases. On the contrary, women mentioned effects such as spending most of their limited time on their sick relatives. Besides, women perceived

unmanaged waste within the domestic space as an indictment on their integrity as women. Women and children indicated preferred door to door solid waste collection system because the community dumpsite is far from their houses. However, men indicated they will only opt for door to door collection system with the condition that it will be a free public service.

At organisational level, the study found that respondents claimed they suffer a lot of insults from households and query when solid waste is left unmanaged within the public sphere. Women and men at all levels of the solid waste management organisations face disrespect of households and even sometimes from staff of the same organisation. There were claims by some staff interviewees that the stigmatisation of their work is extended to their children too.

The second objective of the study focused on describing the allocation of resources used in solid waste management, the study found that in the studied communities, material resources such as wooden baskets, faulty buckets and sacks were used as solid waste bins. These material resources were mobilised by women. The main human resources in domestic SWM are women and children. In the domestic sphere, women control relations in terms of SWM. The study also found that within the organisational spheres resources were mobilised by the District Assembly and Zoomlion Company Limited management. The material resources used by Environmental Health and Sanitation Unit and Zoomlion includes; brooms, wheelbarrows, rakes, shovels, nose masks, picking rods, baskets, foot forks, skip trucks, stairs, skip containers and tricycles. At the organisational level, women have access to local politics of SWM but little control over which issues are discussed and

the final decisions. Also, women have access to material resources such as wheelbarrows and brooms but no control over them. Women were denied access to tricycle training programs on the basis that it requires some physical strength. Traditional leaders in collaboration with unit committees of the studied communities occasionally mobilise households for communal waste management exercises. The only critical role of traditional leaders is to allocate land space for communal dumpsites.

With respect to exploring the gendered division of labour in solid waste management, the study found that in the two studied communities, domestic work including SWM is solely the responsibility of women and children. Women's role in solid waste management is not mediated by age. This role forms part of cultural norms of both communities. Men who are not married sweep their rooms. However, SWM within common space of any compound house remains a responsibility of women who live within that house. Solid waste collection was done by both women and men. However, there were differences in waste transportation methods. The women were found using wheelbarrows whilst men ride tricycles. Loading of waste into skip containers was considered a man's work. There were also differences in challenges faced by both women and men in attempting to meet their expectations of their organisations. Besides, women and men engagement with waste management organisations have not brought any remarkable change in their standard of living.

The study has shown that the institutional rules in solid waste management practice play a critical role in both domestic and public SWM. The study found that the norms and social values of the domestic SWM

practice influence the behaviour of females and males within the domestic sphere. Female exclusive handling of waste was explained as one of the virtues of a marriageable woman. That is a woman who can manage the home in terms of housework effectively. Women who fail to perform domestic work such as waste management are seen as irresponsible and not properly socialised by their parents. The study also revealed that men's engagement in housework such as sweeping is considered 'help' and unusual especially when the man is married. It is considered traditionally unfair to let a man perform domestic SWM tasks when females are present. Women themselves were seen to have internalised the traditional views of their roles by subscribing to and not questioning the assumptions underlying waste management practice. Rules of royalty do not allow royals to handle waste of all kinds. Public handling of waste by a chief or queen mother is considered a taboo in studied communities. This is because managing waste is seen as demeaning. As a result women are considered as inferior to men because of their dominance in SWM. Content analysis of Twifo-Ati Mokwa sanitation bye-laws showed that, the laws are gender blind.

Conclusions

The first specific objective of the study was to examine the perceptions of women and men in Twifo-Ati Mokwa District on solid waste management. It is clear that in the households women, men and children have differing views about what is regarded as waste and its related issues such as solid waste collection system. Women and men at all levels of the solid waste management organisations face disrespect of households. For these reasons,

knowledge of what households consider as waste and its related issues is critical for planning a sustainable waste management system.

Describing the allocation of resources used in solid waste management was the specific objective. It is evident that the material resources such as wooden baskets, faulty buckets and sacks were used as domestic solid waste bins. These material resources were mobilised by women. In the domestic sphere, women control relations in terms of SWM. However, at the organisational level, women have access to local politics of SWM but little control over which issues are discussed and the final decisions arrived at. Within the organisational spheres resources were mobilised by the male dominated District Assembly and Zoomlion Company Limited management.

Women were denied access to tricycle training programs on the basis that it requires suppose physical strength. Denying women access to such training tends to reinforce the social gender inequality. Besides, the only critical role of traditional leaders is to allocate land space for communal dumpsite. Given the issues surrounding the location of communal dumpsites, it is evident that households especially women and children were not consulted before allocating land space for solid waste disposal.

The third objective was to explore gendered division of labour in solid waste management. The gendered nature of SWM is apparent at both domestic and private spheres. Thus, domestic SWM is solely the responsibility of women and children. Women's roles in solid waste management are not mediated by age while men's are. Public streets sweeping was actively done by only women. On the other hand, riding of solid waste collection tricycle was also mainly reserve for men. Again, loading of waste into skip containers

were considered a man's work. This is attributable to physical demands of the job.

Related to the SWM organisations are issues of participation outcomes of SWM work. The study showed that women and men's engagement with waste management organisation have not brought any remarkable change in their living standards. Women involvement in SWM does not automatically transform the gender power relations within the households in particular regard to decisions. Thus, the assumption that women's engagement in SWM work leads to their empowerment needs to be ruled out. Again, participation in SWM organisation does not help women to ease the burden of domestic work. Thus, addressing strategic gender needs of women through SWM organisational work was a fallacy.

The study found that the institutional rules in solid waste management practice play a critical role in both domestic and public SWM. It was obvious that norms and social values of the domestic SWM practice influence the behaviour of females and males within the domestic sphere. Female exclusive handling of waste was explained as one of the virtues of a marriageable woman. Nevertheless, men's engagement in SWM such as sweeping is considered 'help' and unusual especially when the man is married. The gendered nature of SWM norms therefore presents implication for developing a sustainable solid waste management.

Recommendations

The following are recommendations put forward based on the findings of the study:

District Assembly

- The whole culture of solid waste management that needs to be put in place should originate from the micro-level of rural households to the macro levels of city and nation.
- There is the need for Environmental Health and Sanitation Unit to involve all stakeholders especially women in all decision making process. To this end, efforts are needed to sensitise households so that they perceive staff of Environmental Health and Sanitation Unit as friends in enhancing a healthy environment.
- A gender perspective should be integrated in assessment studies, planning, implementation and monitoring of waste management projects. This should include a gender-specific analysis on the role of actors and resources used.
- Programmes such as ‘Waste Management and Sanitation Module’ of GYEEDA aiming at waste management that contributes to the reduction of social inequalities, should identify the different groups in the target population, and analyse the distinguishing factors that maintain their relatively disadvantaged position.
- The district assembly should determine how these basic factors can be addressed to enable also the disadvantaged social groups to benefit from new opportunities through waste management.

Private SWM Organisation (Zoomlion)

- Technical training such as tricycle riding may have to use a combination of approaches in order to reach both women and men.
- There is the need for provision of a variety of waste bins that are user-friendly and affordable to all households.
- Zoomlion Company Limited should ensure that all stakeholders especially women are involved at all levels of decision making process.
- The leadership of Zoomlion Company Limited should provide a clearly defined conditions of service for all project staff (waste collector) such as social health insurance.
- Civil society should assist SWM workers especially women to establish a labour union to pursue for their demands on work related needs.

Community

- Non-governmental organisations should sensitise and educate households especially men on the importance of collective responsibility to enhance proper solid waste management.
- Household based solid waste separation should be encouraged as a first option, and community-based collection, treatment and disposal systems, as the second option, based on the principle that waste should be treated as close to the source as possible.

Suggestions for further research

Further studies should be conducted into working conditions, occupational health and safety issues of women and men engaged as solid waste workers.

REFERENCES

- Adama, O. (2007). *Governing from above: Solid Waste Management in Nigeria's new city of Abuja*. (PhD dissertation). Stockholm University, Sweden.
- Aguilar, L. (2002). *In Search of the Last Gender Equity in Protected Areas*. San Jose: IUCN/Mesoamerican.
- AMA/WMD (Accra Metropolitan Assembly). (2005). *Annual Report from the Waste Management Department (WMD)*. Accra: Unpublished data from various internal reports.
- Amfo-Otu, R., Waife, E. D., Kwakwa, P. A., & Akpah-Yeboah, S. (2012). Willingness to Pay for Solid Waste Collection in Semi-Rural Ghana: A Logit Estimation. *International Journal of Multidisciplinary Research*, 2(7), 40-49.
- Asia, E., Busch, G., & Nkengla, L. (2013). The Evolving Role of Women in Sustainable Waste Management in Developing Countries: A proactive perspective? *International Conference on Integrated Waste Management and Green Energy Engineering (ICIWMGEE)*, (pp. 289-291). Johannesburg.
- Atkinson, M. P., & Boles, J. (1984). Wives as Senior Partners. *Journal of Marriage and Family*, 46, 861-870.
- Awumbila, M. (2001). 'Women and Gender Equality in Ghana: A Situation Analysis'. In D. Tsikata (Eds.), *Gender Training in Ghana: Politics, Issues & Tools* (pp. 33-58). Accra: Woeli Publishing Services.
- Babbie, E. (2005). *The Basics of Social Research* (3rd ed.). Belmont: Thomson wadsworth.

- Baden, S., & Goetz, A. (1998). Who needs [sex] when you can have [gender]: Conflicting Discourses on Gender at Beijing. In C. Jackson, & R. Pearson, *Feminist Visions of Development: Gender Analysis and Policy* (pp. 67-91). London: Routledge.
- Beede, D. N., & Bloom, D. E. (1995). The Economies of Municipal Waste. *World Bank Research Observer*, 10(2), 115-150.
- Bhasin, K. (1993). Some Thoughts on Development and Sustainable Development. *Women in Action*, 1, 10-18.
- Biodegradable. (2009). In *Microsoft Encarta Dictionary*. New York: Microsoft International Publishers.
- Bisht, M. (2005). Sanitation and Waste Management: A Perspective of Gender and Diplomacy. *Ensuring Public Accountability Through Community Action*. New Delhi: Institute of Social Studies.
- Blair, S., & Lichter, D. T. (1991). Measuring the Division of Household labour: Gender Segregation of Housework among American couples. *Journal of Family Issues*(12), 91-116.
- Blood, R. O., & Wolfe, D. M. (1960). *The Dynamics of Married Living*. New York: Free Press.
- Bogdan, R. C., & Biklen, S. K. (1990). *Qualitative Research for Education: An Introduction to Theory and Methods*. Boston: Allyn and Bacon, Inc.
- Brayfield, A. (1992). Employment Resources and Housework in Canada. *Journal of Family and Marriage*, 46, 19-30.
- Brooks, D. (1990). *Beyond Catch Phrases: What does Sustainable Development really mean*. Ottawa ON: International Development Research Centre.

- CARE Bangladesh. (2005). *Gender Analysis Framework*. Bangladesh: CARE Bangladesh.
- Chadwick, B. A., Bahr, H. M., & Albrecht, S. L. (1984). *Social Science Research Methods*. Englewood Cliffs: Prentice-Hall.
- Charmaz, K. (2004). Premises, Principles and Practices in Qualitative Research: Revisiting the Foundations. *Qualitative Health Research*, 14(2), 976-993.
- Coffey, M., & Coad, A. (2010). *Collection of Municipal Solid Waste in Developing Countries*. Malta: UN-Habitat.
- Coffey, M., & Coad, A. (2010). *Collection of Municipal Solid Waste in Developing Countries*. Malta: UN-Habitat.
- Cointreau, S. J. (1987). *Solid Waste Recycling: Case Studies in Developing Countries*. Washington D.C: The World Bank.
- Cointreau-Levine. (1994). *Private Sector Participation in Municipal Solid Waste Services in Developing Countries*. Washington D.C.: World Bank.
- Connelly, M. P., Li, T. M., MacDonald, M., & Parpart, J. L. (2000). Feminism and Development: Theoretical Perspectives. In J. L. Parpart, M. P. Connelly, & V. E. Barribeau (Eds.), *Theoretical Perspectives on Gender and Development* (pp. 51-55). Ottawa: International Development Research Centre.
- Dankelman, I. (2005). Women: Agents of Change for a Healthy Environment. *9th Int. Interdisciplinary Congress on Women (WWOS)*. Seoul. Retrieved on November 12, 2013 from [http://aaws07.org/english3/speech/5.2.Irene Dankelman.pdf](http://aaws07.org/english3/speech/5.2.Irene%20Dankelman.pdf)

- Davis, S. N., & Greenstein, T. N. (2009). Gender ideologies: Components, Predictors and Consequences. *Annual Review of Sociology*, 35, 87-105.
- DDWS-GOI-UNICEF. (2008). *Technical Note on Solid and Liquid Waste Management in Rural Areas*. New Delhi: DDWS-GOI-UNICEF.
- DeMaris, A., & Longmore, M. A. (1996). Ideology, Power, and Equity: Testing Competing Explanations for the Perception of Fairness in Household Labour. *Soc. Forces*, 74, 1043-1071.
- Diefenbach, H. (2002). Gender Ideologies, Relative Resources, and the Division of Housework in Intimate Relationships: A Test of Hyman Rodman's Theory of Resources in Cultural Context. *International Journal of Comparative Sociology*, 43(1), 45-64.
- ECO Discipline. (2012, March 19). Waste Management (liquid and solid) Practice in Ghana. Retrieved on June 20, 2013 from <http://www.eco-discipline.com/waste-management-liquid-and-solid-waste-practices-in-ghana/>
- Elson, D. (1991b). Male Bias in Macroeconomics: The Case of Structural Adjustment. In D. Elson (Eds.), *Male Bias in the Development Process* (pp. 41-68). Manchester: Manchester University Press.
- Elson, D. (1992). From Survival Strategies to Transformative Strategies: Women's Needs and Structural Adjustment. In L. Beneria, & S. Feldman (Eds.), *Unequal Burden: Economic Crises, Persistent Poverty, and Women's Work*. (pp. 26-48). Boulder: Westview Press.
- Foster, S., Dixey, R., Oberlin, A., & Nkhama, E. (2012). Sweeping is Women's Work: Employment and Empowerment in Solid management in Tanzania and Zambia. *International Journal of Health Promotion*

and Education, 50(4), 203-217. Retrieved on August 17, 2013 from <http://dx.doi.org/10.1080/14635240.2012.703392>

- Fox, G. L. (1973). Another Look at the Comparative Resources Model: Assessing the Balance of Power in Turkish Marriages. *Journal of Marriage and Family*, 35, 718-730.
- Fredericks, R. (2008). Gender and the Politics of Trash in Dakar: Participation, Labour and the "Undisciplined" Woman. *Thinking Gender Papers*. Los Angeles: UCLA Center for the Study of Women.
- Gaunt, R. (2008). Maternal Gatekeeping: Antecedents and Consequences. *Journal of Family Issues*, 29, 373-395.
- Gaunt, R., & Bouknik, S. (2012). Exploring the Division of Household Labour Outside the Family Context: Utilizing Resources for Doing Gender. *Community, Work & Family*, 15(2), 189-208.
- Ghana Statistical Services. (2012, May). 2010 Population and Housing Census: Summary Report of Final Results. Ghana. Retrieved on August 17, 2013 from http://www.statsghana.gov.gh/docfiles/2010phc/201_POPULATION_AND_HOUSING_CENSUS_FINAL_RESULTS.pdf
- Giddens, A. (1985). *The Nation State and Violence: Voume Two of A Comtemporary Crique of Historical Materialism*. Cambridge: Polity.
- GOA. (1997). *Privitisation: Lesson Learned by State and Local Governments*. Washing D.C: General Accounting Office.
- Greenstein, T. N. (1996a). Gender Ideology and Perceptions of the Fairness of the Division of Labour: Effects on Marital Quality. *Soc. Forces*, 74, 1029-1042.

- Haragus, P. T. (n.d). Unequal but Content: Possible Effects of the Division of Household Labour on Relationship Quality in Eastern European Countries. *XXVII IUSSP International Population Conference*. Busan.
- Hird, M. J. (2012). Knowing Waste: Towards an Inhuman Epistemology, Social Epistemology. *Journal of Knowledge, Culture and Policy*, 26, 3-4.
- Hofny, C. (2006). *The Potential for Using Composted Municipal Waste in Agriculture: The Case of Accra, Ghana*. (PhD dissertation). Swedish University of Agricultural Sciences, Sweden.
- Hoorway, D., & Bhada-Tata, P. (2012, March). What a Waste: A Global Review of Solid Waste Management. Washington DC, USA: World Bank. Retrieved on July 11, 2013 from www.worldbank.org/urban
- Hoorweg, D., & Laura, T. (1999). What a Waste: Solid Waste Management in Asia. *Working Paper Series No.1*. Retrieved on August 15, 2013 from <http://web.mit.edu/urbanupgrading/urbanenvironment/sectors/solid-waste-sources.html>
- Hopper, P. (2012). *Understanding Development: Issues and Debates*. Cambridge: Polity Press.
- Johnson, V., & Seidenstat, P. (2007). Contracting Out Government Services: Privatisation at the Millenium. *International Journal of Public Administration*, 30(3), 231-247.
- Kabeer, N. (1992). Triple Roles, Gender Roles, Social Relations. *The Discussion Paper No. 313*.
- Kabeer, N. (1994). *Reversed Realities: Gender Hierarchies in Development Thought*. London: Verso.

- Kabeer, N., & Subrahmanian, R. (1996). Institutions, Relations and Outcomes: Framework and Tools for Gender-Aware Planning. *IDS Discussion Paper 357*.
- Kadfak, A. (2011). *An Analysis of the Social Relations in Waste Management: Two Case Studies on Somanya and Agormanya in Ghana*. (Master's dissertation). Uppsala University, Sweden. Retrieved on November 22, 2013 from <http://uu.diva-portal.org/smashm/get/diva2:453271/FULLTEXT01>
- Kamara, A. J. (2006). *Household Participation in Domestic Waste Disposal and Recycling in Tshwane Metropolitan Area: An Environmental Educational Perspective*. (Master dissertation). University of South Africa.
- Kendie, S. (1999). Do Attitudes Matter? Waste Disposal and Wetland Degradation in the Cape Coast Municipality of Ghana. Bradford: Development and Project Planning Center, University of Bradford.
- Kennedy, G. (2007). *An Ontology of Trash: The Disposable and its Problematic Nature*. New York: Suny Press.
- Kironde, L. J. (1999). Dar es Salaam, Tanzania. In A. Onibokun (Eds.), *Managing the Monster: Urban Waste and Governace in Africa* (pp. 101-172). Ottawa: IDRC.
- Klundert, A. V. (1999). Integrated Sustainable Waste Management: The Selection fo Appropriate Technologies and the Designed of Sustainable System is not only a Technical Issue. *CEDARE/IETC Inter-Regional Workshop on Technologies for Sustainable Waste Management*. Alexandria Egypt.

- Kohlscheen, C. W. (2003). *Towards Integrated Solid Waste Management in Low-income Housing Areas in Durban, South Africa*. (Master's dissertation). Royal Institute of Technology, Stockholm. Retrieved on July 15, 2013 from <http://www.infra.kth.se/bba/MASTER%thesis20carina.pdf>
- Kwawe, D. B. (1995). Culture of Waste Handling: Experience of a Rural Community. *Journal of Asian and African studies*, 30(2), 1-6.
- Lewim-Epstein, N., Stier, H., & Braun, M. (2006). The Division of Household Labour: A Negotiated Process between Partners. *Sex Roles*, 56, 307-324.
- Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2004). *The Sage Encyclopedia of Social Sciences Research Methods*. London: Sage.
- Management, W. (2010). Waste Management. (eSchooltoday, Compiler) Retrieved from <http://www.eschooltoday.com/waste-recycling/waste-management-tips-for-kids.html>
- Manson, J. (2002). *Qualitative Researching* (2nd ed.). London: Sage.
- March, C., Smyth, I., & Mukhopadhyay, M. (1999). *A Guide to Gender Analysis Frameworks*. London: Oxfam GB.
- Marshal, C., & Rossman, G. B. (2011). *Designing Qualitative Research* (5th ed.). London: SAGE Publication, Inc.
- McDougall, F., White, P., Franke, M., & Hindle, P. (2001). *Integrated Solid Waste Management: A Life Cycle Inventory*. London: Blackwell Science.

- Ministry of Local Government and Rural Development. (2010). Environmental Sanitation Policy (Revised). Ghana. Retrieved on July 19, 2013 from http://www.google.com.gh/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCgQFjAA&url=http%3A%2F%2Fwww.ecowrex.org%2Fsystem%2Ffiles%2Frepository%2F2010_environmental-sanitation-policy_ministry-of-local-government-and-rural-development.pdf&ei=nHf6UcWDPIe3hAf
- Ministry of Local Government and Rural Development. (2010, September). National Environmental Sanitation Strategy and Action Plan. (NESSAP). Ghana. Retrieved on July 19, 2013 from http://go.v.wc-ghanawcghana.com/reports/nationalenvironmental-sanitation-strategy_and_action_plan.pdf
- Moffat, L., Geadah, Y., & Stuart, R. (1991). *Two halves makes a whole: Balancing gender relations in development*. Ottawa: Canadian Council for Co-operation, MATCH International Centre.
- Molyneux, M. (1985). Mobilisation Without Emancipation: Women's Interest, State, and Revolution in Nicaragua. *Feminist studies*, 11(2), 227-254.
- Muller, M. S. (n.d). Gender, Social Inequality and Waste Management. Gouda, Holland. Retrieved on July 15, 2013 from http://www.worldbank.org/-urban/solid_wm/erm/Annexes/US%20Sizes/Annex%201.2.pdf
- Muller, M. S., & Scheinberg, A. (2001). *Gender and Waste Electronic Discussion Group 9-31 May 1998: A Summary Waste*. Gouda: UWEP Occasional Paper.

- Muller, M. S., Iyer, A., Keita, M., Sacko, B., & Traore, D. (2002). Differing Interpretations of Community Management in Bamako and Bangalore: Some Methodological Considerations. *Environment and Urbanisation*, 40(2), 241-258.
- Muller, M., & Scheinberg, A. (1997). Gender and Urban Waste Management. *Gender, Technology and Development*. Amsterdam:TOOLCONSULT.
- Musah, T. K. (2009). Solid Waste Generation and Management Practices as a Determinant of Health Status of People in Ijebu-Ode Local Government. *Toxicological & Environmental Chemistry*, 91(5), 1005-1013.
- Neuman, W. L. (2011). *Social Research Methods: Qualitative and Quantitative Approaches* (7th ed.). Boston: Allyn and Bacon.
- Nordenmark, M., & Nyman, C. (2003). Fair or Unfair? Perceived Fairness of Household Division of Labour and Gender Equality Among Women and Men: The Swedish Case. *European Journal of Women's Studies*, 10, 181-209.
- Olanipekun, J., Oyeniya, P., & Konwea, P. E. (2007). Assessment of Solid Waste Management Techniques. *Journal of Nigerian School Health*, 19(2), 76-89.
- Ostrom, V., & Ostrom, E. (n.d). Public Goods and Public Choices. *Workshop in Political Theory and Policy Analysis*. Indiana University. Retrieved on September 21, 2013 from <http://socsci.colorado.edu/~mciverj/Ostrom-PG%26PC.PDF>
- Oteng-Ababio, M. (2009). Private Sector Involvement in Solid Waste Management. *Management & Research*, 322-329.

- Patton, M. (1990). *Qualitative Evaluation and Research Methods*. Beverly Hills: Sage.
- Peet, R., & Hartwick, E. (2009). *Theories of Development*. New York: The Guilford Press.
- Post, J. (1999). The Problems and Potentials of Privatising Solid Waste Management in Kumasi, Ghana. *Habitat International*, 23, 201-215.
- Post, J., & Obirih-Opareh, N. (2003). Partnership and the Public Interest: Assessing the Performance of Public-Private Collaboration in Solid Waste Collection in Accra. *Space and Polity*, 7(1), 45-63.
- Poswa, T. (2004). The Importance of Gender in Waste Management Planning: A Challenge for Solid Waste Managers. *The 8th World Congress on Environmental Health*. Durban.
- Rahman, M. (2003). Gender, Global Environmental Change, and Human Security. *AVISO*, 9(12), 1-8.
- Ramachandra, T. V. (2009). *Management of Municipal Solid Waste*. New Delhi: TERI Press. Retrieved on September 21, 2013 from <http://books.google.com.gh/books?id=H1IWqSJwcC&pgPA4&lpg=PA4&dq=solid+waste+types+and+degenerative+time&source=bl&ots=Z2v85WHmrX&sig=fSF5I7d3ZPaOVsSG6foqI&hl=en&sa=X&ei=4APtUbyJ4OXhQeF04DYDw&ved=0CDIQ6AEwAg#v=onepage&q=solid%20waste%20types%20an>
- Razavi, S., & Miller, C. (1995, February). From WID to GAD: Conceptual shifts in the Women and Development Discourse. *Occasional Paper 1*, p. 29.

- Reddock, R. (2000). Why Gender? Why Development? In J. L. Parpart, M. P. Connelly, & V. E. Barribeau (Eds.), *Theoretical Perspectives on Gender and Development* (pp. 28-29). Ottawa: International Development Research Centre.
- Reeves, H., & Baden, S. (2000). *Gender and Development: Concepts and Definitions*. Brighton: Institute of Development Studies.
- Ritzer, G. (2008). *Modern Sociological Theory*. New York: McGraw-Hill.
- Roeter, A., Van Der Lippe, T., & Kluwer, E. S. (2010). Work Characteristics and Parent-child Relationship Quality: The Mediating Role Temporal Involvement. *Journal of Marriage and Family*, 72, 1317-1328.
- Sanoff, H. (2000). *Community Participation Method in Design and Planning*. New York: John Wiley & Son Inc.
- Sarantakos, S. (1997). *Social Research* (2nd ed.). New York: Palgrave.
- Sarantakos, S. (2005). Feminist Research Chapter 3. In *Social Research* (3rd ed.). Retrieved on August 2, 2013 from www.palgrave.com/_sociology/sarantakos/docs/chapter3.pdf
- Scheinberg, A., Muller, M., & Tasheva, E. (1998). Integrating Gender into Community Waste Management: Projects Insight and Tips. *Gender and Waste*, 21, 32-62.
- Sen, G., & Grown, C. (1987). *Development, Crises and Alternative Vision*. New York: Monthly Review Press.
- Shortell, T. (n.d). Weber's Theory Social Class. New York, United States of America. Retrieved on September 21, 2013 from <http://www.brooklynsoc.org/courses/43.1/weber.html>

- Stanley, L., & Wise, S. (1993). *Breaking Out Again: Feminist Ontology and Epistemology*. London: Routledge.
- Sustainable Sunshine Coast. (n.d.). Inorganic Waste. Retrieved on June 24, 2013 from <http://www.sustainablesunshinecoast.com.au/do-and-know-mores-final-version/inorganic-waste>
- Taboada-Gonzalez, P., Aguilar-Virgen, C., & Ojeda-Benitez, S. (2010). Household Solid-Waste Characteristics and Management in Rural Communities. *The Open Waste Management Journal*, 3, 167-173.
- Tadesse, T. (2004). Solid Waste Management. University of Gondar. Retrieved on August 26, 2013 from http://www.cartercenter.org__resources/pdfs/health/ephtibrary/lecture_notes/env_occupational_health_students/ln_solid_waste_final.pdf
- Tchnobanoglous, G., Theisen, H., & Eliassan, R. (1977). *Solid Waste-Engineering Principles and Management Issues*. Kogakusha: McGraw-Hill Series.
- Tsiboe, I. A., & Marbell, E. (2004). *A look at Urban Waste Disposal Problems in Accra, Ghana*. (Master's dissertation). Roskilde University. Retrieved on July 21, 2013 from http://bitmnstresrudar.ruc.dk/bitstream/1800/322/1/A_Look_at.pdf
- Tsikata, D. (2001). *Gender Training in Ghana*. Accra: Woeli Publihing Services.
- Twifo-Ati Mokwa District Assembly. (2012, August 10). *District info: Twifo-Ati Mokwa District Assembly*. Retrieved on September 25, 2013 from Twifo-Ati Mokwa District Assembly Web site: http://thld.ghanadistricts.gov.gh/?arrow atd&_=59&sa=2057

- UN-HABITAT. (2010). *Solid Waste Management in the World's Cities*. London and Washington D.C: UN-HABITAT.
- United Nation Environmental Program. (2012). India's Presentation on 'Mapping Needs and Activities on Waste Management' in the Asia Pacific. *Workshop on 'Global Partnership on Waste'*.
- United Nations. (1999). *UN General Assembly: Health and Environment in Sustainable Development: Five Years After the Earth Summit*. New York: United Nations.
- United Nations Development Fund for Women (UNDFW). (1998). *Gender and Telecommunications: An Agenda for Policy. A Document Prepared for United Nations University for New Technologies (UNU/INTECH) and the United Nations Fund for Women (UNIFEM)*.
- Vijayamohan, P., Ponnuswamy, B., & Asalatha, B. (2009). Women in Development: Dissecting the discourse. *Munich Personal RePEc Archive Paper No. 13119*. Retrieved on September 11, 2013 from <http://mpa.ub.uni-muenchen.de/13119/>
- West Africa Health Examination Board. (1991). *Waste disposal and Environmental Hazard Control*. Ibadan: Calveriniu Press.
- Women, E. (n.d). Women, Environment and Sustainable Development: Making the Links. Retrieved on November 14, 2013 from <http://www.unep.org/civilsociety/Portals/24105/documents/publications/Women%20and%20the%20environment/ChapterTwo.pdf>
- Women's Environment and Development. (2002). The Millennium Development Goals and the Plan of Implementation. Retrieved on November 14, 2013 from www.johannesburgsummit.org

- World Bank. (2012). *World Development Report: Gender Equality and Development*. Washington D.C.: The World Bank Group. Retrieved November 14, 2013 from http://econ.worldbank.org/WBSITE/EXTERNAL/EXEC-JHNNAA_/KFNHJH5465bsgsresearchbookdws
- World Commission on Environment and Development. (1987). *Our Common Future*. Oxford: Oxford University Press.

APPENDICES

APPENDIX A

Interview guide for households and key persons (assembly men and traditional leaders)

Date of Interview.....

Time of Interview.....

Background of respondents

1. Age
2. Sex
3. Level of education
4. How many years have you lived in your present community?
5. Hometown
6. Religion

Perceptions of solid waste management practices

1. What do you consider as waste?
2. What activity generates the most waste within the household and community? Who is responsible?
3. What do you think about the present waste management situation in your community?
4. How you think the geographical location of your community plays a hindrance towards proper solid waste management?
5. Will you prefer door to door collection to personally transporting your waste to the final disposal site? Why?

6. How does unmanaged solid waste affect your daily activities?

Rules in solid waste management

1. What are the standard patterns of behaviours concerning solid waste management?
2. What are the laws concerning solid waste management?
3. Which kinds of people make these norms and laws?
4. Who enforce this norms and laws?
5. How do these norms and laws affect your daily activities and relationship with others?
6. Do you want these norms and laws to be changed? Why?
7. What sanctions are prescribed for any breach of these rules?

Roles in solid waste management

1. What are the expectations of women in terms of solid waste management? Why?
2. What are the expectations of men in terms of solid waste management? Why?
3. What challenges do you face in attempt to meet these expectations? Probe.
4. How do you address these challenges? Probe.
5. Who decides on the roles to be performed? Why?
6. How will you describe the attitude of other people toward you when discharging your solid waste management duties? Probe?

7. What other issues do you consider as challenge to your solid waste management duties? Probe?
8. What is the role of your district assembly in solid waste management?

Solid waste management process

1. How do you handle your solid waste in terms of collection?
2. How do you handle your solid waste in terms of storage?
3. How do you handle your solid waste in terms of transportation?
4. How do you handle your solid waste in terms of treatment?
5. What are major the constituent of your solid waste (biodegradable/non-degradable)?
6. Do you separate your solid waste? If yes, how?
7. How does your involvement in solid waste affect your relationship/interaction with others?
8. What experiences can be shared?

People involve in solid waste management

1. Who actually manage solid waste within your household? Why?
2. How are roles assigned? Who does what and why?
3. Who manages solid waste in the public space such as parks/street/lorry station? Why?
4. Which kinds of people are involved?
5. Which services are paid for? And by who?
6. Are you willing to pay for such services? Why?

7. Do you receive any solid waste management services? If yes who provide the service and what kind of service do you receive?

Resources

1. What are the resources used in solid waste management in terms of labour and equipment?
2. What are the resources used in solid waste management in terms of land and money?
3. What are the resources used in solid waste management in term of information, and political will?
4. Who mobilizes resources needed for household and community solid waste management? Probe? Why and how?
5. Who allocates these resources? Why?
6. What is actually used?
7. Who control relations/interactions within your household/community in terms of solid waste?

Knowledge of effects of unmanaged solid waste

1. Do you know the final disposal site?
2. What are some of the effect(s) of poorly or unmanaged solid waste?
3. What do you think should be done to improve the waste disposal practice in your community?
4. What role do you see for yourself in attempt to improve solid waste management in your community?

5. What roles do you see for other stakeholders to complement your effort?

Conclusion

Are there any issues that we may not have discussed that you would like to include?

APPENDIX B

Interview guide for the staff of organisations (to be answered by environmental health officers, and solid waste management workers)

Date of Interview.....

Time of Interview.....

Background of respondents

1. Age
2. Sex
3. Level of education
4. Number of years of working experience
5. Hometown
6. Religion
7. Position/title

Perceptions of solid waste management

1. What do you consider as waste?
2. How will you describe the attitude of other people towards you when discharging your solid waste management duties? Probe.
3. How will you describe the attitude of other people towards your organization and your services? Probe?
4. How does unmanaged solid waste affect your daily activities and organisation?
5. What experiences can be shared?

Rules in solid waste management

1. What are the policies and laws of your organisation on solid waste management?
2. Which kinds of people make these policies and laws?
3. Who enforces these policies and laws?
4. How do these policies and laws affect your daily activities and relationship with others?
5. Do you want these norms and laws to be changed? Why?

Roles in solid waste management

1. What are the expectations of women in your organisation? Why?
2. What are the expectations of men in your organisation? Why?
3. What challenges do you face in attempt to meet these expectations? Probe.
4. How do you address these challenges? Probe?
5. Where you ever invited by the districts assembly to discuss solid waste management situation in your community.
6. What is the role of your district assembly in solid waste management?

Solid waste management process

1. How does your organisation manage solid waste in terms of collection?
2. How does your organisation manage solid waste in terms of storage?
3. How does your organisation manage solid waste in terms of transportation?
4. How does your organisation manage solid waste in terms of treatment?

5. What are the major constituents of your solid waste (biodegradable or non-degradable)?
6. What kinds of solid waste management services do you provide as an organisation?
7. Who pays for these services?
8. From where do you collect waste mostly?
Households/Streets/commercial institutions
9. What other logistical, and technical issues do you consider as challenge to your work? Probe.
10. Does your involvement in solid waste management practice affect your relationship/interaction with others? How?
11. What experiences can be shared?

People involve in solid waste management

1. Who actually manage solid waste within your organisation solid waste in your in terms of collection, storage, transportation and treatment?
Why?
2. How are roles assigned? Who does what and why?
3. Who decides on the roles to be performed? Why?
4. Who/which kinds of people make decisions in your organisation?
Why?
5. Who manage solid waste in the public space such as parks/street/lorry station? How and Why?
6. Which kinds of people are involved? Probe

7. What are the expectations of men and women from the communities in terms of collection, transportation and treatment of solid waste?
8. Why did you join this organisation?

Resources

1. What are the resources used in solid waste management in term of labour, equipment, land, money, information, and political?
2. Who mobilizes resources needed for solid waste management in your organization? Probe?
3. Who allocate these resources?
4. What is actually used?
5. Who control relations/interactions within your organisation?

Participation outcomes

1. Who decide on issues such as how much to be spent within your households? Why?
2. What have you been able to achieve personally after your employment?
3. How do you use your earnings and free times? Why?
4. How do manage your domestic duties and SWM work?

Knowledge of effects of unmanaged solid waste

1. What are some of the effect(s) of poorly or unmanaged solid waste?
2. What do you think should be done to improve the waste disposal practice in your community?

3. What role do you see for organisation in attempt to improve solid waste management in your community?
4. What roles do you see for other stakeholders to complement your effort?

Conclusion

Are there any issues that we may not have discussed that you would like to include?

APPENDIX C

Focus Group Discussion Guide (to be answer by children, women and men)

Introduction

- Welcome participants and introduce self.
- Explain the general purpose of the discussion and why the participants were selected
- Explain the presence and purpose of recording equipment
- Outline general ground rules and discussion guidelines such as importance of everyone submission.

Perceptions of solid waste management

1. What do you consider as waste?
2. What activity generates the most waste within the household and community? Who is responsible?
3. What do you think about the present waste management situation in your community?
4. How you think the geographical location of your community plays a hindrance towards proper solid waste management?
5. Will you prefer door to door collection to personally transporting your waste to the final disposal site? Why?
6. How does unmanaged solid waste affect your daily activities?

Rules in solid waste management

1. What are the standard patterns of behaviours concerning solid waste management?
2. What are the laws concerning solid waste management?
3. Which kinds of people make these norms and laws?
4. Who enforces this norms and laws?
5. How do these norms and laws affect your daily activities and relationship with others?
6. Do you want these norms and laws to be changed? Why?
7. What sanctions are prescribed for any breach of these rules?

Roles in solid waste management

1. What are the expectations of women in terms of solid waste management? Why?
2. What are the expectations of men in terms of solid waste management? Why?
3. What challenges do you face in attempt to meet these expectations? Probe.
4. How did you address these challenges? Probe?
5. How does your involvement in solid waste affect your relationship/interaction with others?
6. What experiences can be shared?
7. How will you describe the attitude of other people toward you when discharging your solid waste management duties?
9. Who decides on the roles to be performed? Why?

10. What other issues do you consider as challenge to your solid waste management duties? Probe?
11. Do you receive any solid waste management services? If yes who provide the service and what kind of service do you receive?
12. Where you ever invited by the districts assembly/assembly man to discuss solid waste management situation in your community.
13. What is the role of your district assembly in solid waste management?

Solid waste management process

1. How do you handle your solid waste in terms of collection?
2. How do you handle your solid waste in terms of storage?
3. How do you handle your solid waste in terms of transportation?
4. How do you handle your solid waste in terms of treatment?
5. What are major constituent of your solid waste (biodegradable/non-degradable)?
6. Do you separate your solid waste? If yes, how?
7. How does your involvement in solid waste affect your relationship/interaction with others?
8. What experiences can be shared?

People involve in solid waste management

1. Who actually manage solid waste within your household? Why?
2. How are roles assigned? Who does what and why?
3. Who make decisions concerning household solid waste? Why?

4. Who manages solid waste in the public space such as parks, street and lorry station? Why?
5. Which kinds of people are involved?
6. Which services are paid for? And by who?
7. Do you receive any solid waste management services? If yes who provide the service and what kind of service do you receive?

Resources

1. What are the resources used in solid waste management in terms of labour and equipment?
2. What are the resources used in solid waste management in terms of land and money?
3. What are the resources used in solid waste management in term of information, and political will?
4. Who mobilizes resources needed for household solid waste management? Probe?
5. Who allocates these resources?
6. What is actually used?
7. Who control relations/interactions within your household?

Knowledge of effects of unmanaged solid waste

1. Do you know the final disposal site?
2. What are some of the effect(s) of poorly or unmanaged solid waste?
3. What do you think should be done to improve the waste disposal practice in your community?

4. What role do you see for yourself in attempt to improve solid waste management in your community?
5. What roles do you see for other stakeholders to complement your effort?

Conclusion

Are there any issues that we may not have discussed that you would like to include?

APPENDIX D

Observation record guide

Time started.....

Time ended.....

1. Where is the observation taking place?
2. Who collect and transport solid waste to dumpsite within household?
Describe the process?
3. Who collect and transport solid waste to dumpsite within private waste management organisation? Describe the process?
4. What are the resources used in solid waste management in terms of equipment?
5. Who allocates these resources?
6. How various solid waste transporters interact among themselves at the dumpsite?
7. What are the major constituent of your solid waste (biodegradable or non-degradable)
8. Number of men and women present.
9. Number of children present.
10. Who regulate activities at the dumpsite?
11. Who collect and transport solid waste in the public space such as parks, streets and lorry stations?