

UNIVERSITY OF CAPE COAST

ENVIRONMENTAL SANITATION MANAGEMENT AND  
SUSTAINABLE DEVELOPMENT: EVIDENCE FROM THE  
CATCHMENT AREA OF BENYA LAGOON IN THE KOMENDA-EDINA-  
EGUAFO-ABREM MUNICIPALITY, GHANA

BY

JUSTICE MENSAH

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Philosophy degree in Development Studies

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# DECLARATION

## Candidate's Declaration


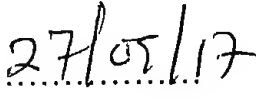
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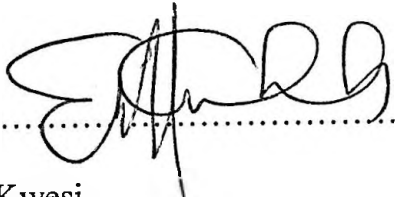
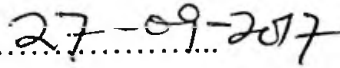
Name: Justice Mensah

## Supervisors' Declaration

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

Principal Supervisor's Signature.......... Date.....

Name: Prof. Patrick Kwasi Agbesinyale

Co-Supervisor's Signature.......... Date.....

Name: Prof. Francis Enu-Kwesi

## ABSTRACT

Environmental sanitation has become a topical issue in contemporary development discourse due to its implications for livelihood and sustainable development. This study explored the sanitation management practices in the catchment area of Benya Lagoon, Ghana. The objective was to examine the implications of sanitation management for sustainable development in the area. Employing the mixed methods and multi-stakeholder approaches, data were gathered from 479 household interviews, 53 indepth interviews, eight focus group discussions as well as observations and documentary reviews, and analysed using descriptive statistics as well as thematic and content analyses. The study found that, sanitation affected livelihoods and sustainable development through its implications for human, physical, financial and natural capitals; and that income and mental poverty, inadequate and poorly managed sanitation infrastructure, limited education, weak regulation management regime as well as weak collaboration among stakeholders, conspired to render sanitation management ineffective for sustainable development. It concluded that, until the stakeholders seriously committed and collaborated to address these issues through strategic management of infrastructure, education and regulation, improper sanitation practices would continue to constrain sustainable development in the study area, and by extension, Ghana. The onus in this regard, was on the government, as represented at the local level by the municipal assembly, to partner more effectively with the other key stakeholders for the maintenance of acceptable sanitation practices for sustainable development.

## KEY WORDS/PHRASES

Catchment area of Benya Lagoon in Ghana

Environmental sanitation

Livelihood

Sanitation management strategies

Stakeholder role

Sustainable development

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## DEDICATION

To my parents, Opanyin Kwesi Mensa and Madam Efua Akwantsenbew of  
blessed memory, wife and children

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## LIST OF ACRONYMS

CBO	Community-Based Organisation
CSO	Civil Society Organization
CWS	Community Water and Sanitation
DACF	District Assembly Common Fund
EDS	Elmina Development Strategy
EHSD	Environmental Health and Sanitation Department
EPA	Environmental Protection Agency
ESD	Environmental Sanitation Day
ESICOME	Expanded Sanitary Inspections, Compliance, Management and Enforcement
ESP	Environmental Sanitation Policy
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GoG	Government of Ghana
GPRS	Ghana Poverty Reduction Strategy
GSGDA	Ghana Shared Growth and Development Agenda
HDR	Human Development Report
IYS	International Year of Sanitation
JMP	Joint Monitoring Programme
KEEA	Komenda-Edina-Eguafo-Abrem
KEEAMA	Komenda-Edina-Eguafo-Abrem Municipal Assembly
KVIP	Kumasi Ventilated Improved Pit
MDAs	Ministries, Departments and Agencies



MDGs	Millennium Development Goals
MLGRD	Ministry of Local Government and Rural Development Ministries
MMDAs	Metropolitan, Municipal and District Assemblies
MTDP	Medium Term Development Plan
MTDP	Medium Term Development Plan
MTDPF	Medium-Term Development Policy Framework
NDPC	National Development Planning Commission
NESP	National Environmental Sanitation Policy
NESPoCC	National Environmental Sanitation Policy Co-ordination Council
NESSAP	National Environmental Sanitation Strategy and Action Plan
NGOs	Non-Governmental Organisations
SDGs	Sustainable Development Goals
SIDA	Sweden International Development Agency
SESIP	Strategic Environmental Sanitation Investment Plan
SFDCEHM	Strategic Framework for the Development of Capacity for Environmental Health and Management
SSNIT	Social Security and National Insurance Trust
TAMA	Tamale Metropolitan Assembly
T&CPD	Town and Country Planning Department
TMA	Tema Metropolitan Assembly
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme

UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
VIP	Ventilated Improved Pit
WCED	World Commission on Environment and Development
WHO	World Health Organisation
WTO	World Trade Organisation

# CHAPTER ONE

## INTRODUCTION

### **Background to the Study**

Development, as a concept, remains equivocal and debatable with regard to its meaning as the concept defies precise definition. However, in spite of its elusiveness with respect to definition and ambiguity in meaning, several authors (Bevan, 2006; Chambers, 2005; Redclift, 2005; Simpson, 1993; Thomas, 2004) as well as institutions and organisations (UN, 2010; UNDP, 2006; UNEP, 2011; UNICEF, 2008; World Bank, 2012) agree, at least in principle, that development should necessarily inure to the benefit and advantage of the people in a sustainable manner.

Development is sustainable when it meets the needs of the present without compromising the ability of future generations to meet their own needs [World Commission on Environment and Development (WCED), 1987]. As a visionary and forward-looking development paradigm, sustainable development emphasises a positive transformation trajectory anchored essentially on social, economic and environmental factors. However, notwithstanding its three-dimensional (social, economic and environmental) pillar, sustainable development is often conceptually compartmentalised as an environmental issue (Drexhag & Murphy, 2010; Thomas, Hoolbro, & Young, 2013) due to the overriding importance of the role of the environment in the development process.

Much as the environment is considered a key variable in the sustainable development equation, the sustainability of the environment itself is affected by

several factors, prominent among which is sanitation management. Environmental sanitation management (ESM) in this context, refers to the principle and practice of ensuring a clean, safe, pleasant and livelihood-supportive physical environment, particularly in human settlements. Poor ESM, with particular reference to defecation and waste disposal practices, pollutes the environment and pre-disposes the human population to avoidable diseases, which exact a great toll on human health (Shaw, 2011; Tanle & Kendie, 2013) as well as productivity and livelihoods (Ohene-Budu, 2012), and consequently, sustainable development. Articulating the relevance of ESM for sustainable development, George (2008; 72) stated as follows:

*People with decent sanitation suffer fewer diseases and take fewer days off work. They do not bear unnecessary funeral costs of their children dead from cholera, dysentery and other sanitation-related diseases. They spend less on medicine and the state also saves because it is not providing expensive medical care. Every US dollar spent on sanitation, yields an average return of seven US dollars in health costs averted and productivity gained..... Globally, if sanitation for all were achieved, it would cost 95 billion US dollars but it would save as much as 600 billion US dollars.*

Although George's (2008) statement sounds like a socio-economic theory, a Cholera outbreak in Peru in 1991 lent credence to it. The government of Peru, in that circumstance, incurred about a billion-dollar cost in containment measures when prevention would have cost a hundred million dollars (Bradford & Suarez,

1993; George, 2008; Tickne & Gourveia-Vigeant, 2005). Moreover, during the first ten weeks of the epidemic, losses from agricultural revenues and tourism were three times greater than the total expenditure on ESM during the previous decade (George, 2008; Mara, 2003; Oti, 2012). Based on this state of affairs, it cannot be gainsaid that the socio-economic cost, livelihood and sustainable development implications of environmental sanitation, make it imperative to treat ESM as a crucial development issue.

Minh and Nguyen-Viet (2011) reinforce George's (2008) revelation by opining that, Cambodia, Indonesia, the Philippines and Vietnam lose about US\$9 billion per year, or approximately 2% of their combined Gross Domestic Product (GDP) due to poor ESM. This translates to a per capita loss of US \$22.20. Similarly, according to the Water and Sanitation Programme of the World Bank (2012), Ghana's economy loses 290 million US dollars annually, which is equivalent to 1.6 per cent of the country's GDP due to poor ESM; with open defecation alone costing the country as much as US\$79 million per annum (EHSD-MLGRD, 2012; GSS, 2013) cited in Nimoh (2016).

Furthermore, the sustainability of water bodies, including the sea and the lagoon as natural capital, and their associated livelihoods such as fishing and salt production is threatened by poor ESM practices (USAID, 2013). For livelihood sustainability reasons, Goal 14 of the Sustainable Development Goals (SDGs) has been geared towards ensuring sustainable use of the oceans, seas and marine resources. According to Spalding (2016), this goal recognises that over three billion people depend on marine and coastal biodiversity for their livelihoods and,

therefore, allowing poor ESM to endanger the livelihoods of this population is unacceptable. It is deducible from the foregoing that ESM contributes to sustainable development through improved livelihoods, however, proper ESM depends on the management of sanitation infrastructure, education and regulation by the stakeholders.

Owing to the implications of ESM for livelihoods and sustainable development, there is an increasing global call on stakeholders in all countries to improve ESM through proper management of sanitation infrastructure, education and regulation. As argued by the World Health Organisation [WHO] (2010), with almost 884 million people without access to potable water and approximately three times that number lacking basic sanitation globally, there was an urgent need for stakeholders to ensure proper ESM practices to achieve the Millennium Development Goal (MDG) on sanitation. In spite of WHO's (2010) emphasis on ESM, target 10 of MDG7, concerning the reduction of the proportion of people without access to sanitation by half by 2015, was not achieved, culminating in the renewed emphasis on ESM in the new global development agenda known as the SDGs, which have been scheduled to be achieved between 2015 and 2030.

Realising that about 2.4 billion people in the world still lacked access to basic sanitation after the MDGs in 2015, Goal six of the SDGs has been directed at ensuring availability and sustainable management of water and sanitation for all (Hedberg, 2015: WHO/UNICEF, 2015). Target 6.2 of Goal Six of the SDGs aims to achieve by 2030, access to adequate and equitable sanitation and hygiene for all, and end open defecation. In Ghana, the proportion of people with access to

improved sanitation, which stood around 15 per cent in 2015, was far below the country's 54 per cent MDG target (UNDP, 2015), hence the need for stakeholders to strive harder to improve sanitation in all communities in order to achieve the SDG sanitation target.

While Tsibo and Marbell (2004), Tsai (2007) as well as Huitteman and Majjerinl (2009) assert that ESM is a key driver of sustainable development, the UN (2011) endorses the assertion by arguing that, prioritising environmental sanitation is socio-economically worthwhile as it keeps people healthy and productive. Moreover, the UN (2010: 2013) considers proper ESM as a precondition for sustainable development and, therefore, recognises access to basic sanitation as a human right. The UN (2013) is of the conviction that, by promoting livelihood activities, proper EMS allows for a more secure future for the population, which is the quintessence and epitome of sustainable development. Proper sanitation also enhances human dignity and promotes tourism as tourists are not only concerned about their health but also the aesthetic appeal of the physical environment (Aboagye, Frempong & Eshun, 2013; Tizser, 2010).

The relevance of ESM as well as how sanitation can be improved for livelihood and sustainable development is grounded in a number of theories, including the systems theory (Ackoff, 2010). This theory, not only touts the importance of environmental sustainability for sustainable development but also advocates a holistic approach for addressing environmental challenges, including ESM, using both hardware and software strategies (Ige & Adetunji, 2014;

Kaminsky & Javernick-Will, 2013; Hutton, Haller & Bartram, 2007). According to Kaminsky and Javernick-Will (2013), hardware in this sense, refers to physical sanitation infrastructure, including facilities and technologies, while software (Pearl, Evans, van der Voorden, 2010) relates to the application of knowledge through education complemented by regulation of people's attitude, behaviour and practices, principally through enactment and enforcement of laws.

The essence of, and pathways to proper ESM for sustainable development are also embedded in the theories of behavioural change (Bandura, 1977; DiClemente, 2007), participation (Arnstein, 1969; Stoker, 1997) and sustainable livelihoods (Carney, 1998; Chambers & Conway, 1992). While theories of behavioural change assert that, inducing positive change in ESM practices calls for transformation of individual and societal behaviour through education and regulation (Bandura, 1977), participation theory advocates the involvement of stakeholders in ESM endeavours for meaningful and beneficial outcomes for enhanced livelihood and sustainable development (Stoker, 1997). On the other hand, sustainable livelihoods theory emphasises using capacities and assets to make a living in a manner that can cope with stresses and shocks and enhance livelihood now and in the future (Carney, 1998). Additionally, the common-pool resources theory (Agrawal, 2003; Li, 1996) holds that variations in forms of property rights make a difference in resource management outcomes, with particular reference to environmental resources, including the sea, lagoon, forests and their biodiversity.



In line with the global recognition of sanitation as a human right and a necessity for sustainable development, Ghana has been making efforts to improve ESM through a number of strategies. ESM was accorded due prominence in the Ghana Poverty Reduction Strategy (GPRSII, 2006-2009) by National Development Planning Commission (NDPC) [2005; 2008] as well as the Medium-Term Development Policy Framework (MTDPF) [2010–2013]. While the NDPC prioritises ESM as a key requirement for improving livelihoods and quality of life, the Ministry of Local Government and Rural Development (MLGRD, 2010), through the Environmental Sanitation Policy (ESP) of Ghana, also categorises ESM as part of essential services in the country.

Furthermore, Ghana enjoins ESM stakeholders, including relevant Ministries Departments and Agencies (MDAs) and the private sector to ensure proper ESM practices in all communities (NDPC, 2008), especially the coastal and tourist attraction communities. This is because tourism and other economic activities such as fishing and salt production, which are carried out mostly in coastal communities, contribute to sustainable development through job opportunities, income generation, food security and foreign exchange (Hamenoo, 2011; Lai & Nepal, 2000).

As argued by the World Bank (2008), economic activities associated with tourism and coastal resources such as the sea and the lagoon have a multiplier effect on local and national economic development. It is imperative, therefore, that best ESM practices are maintained in coastal communities, especially those ones that have the potential for promoting activities related to these resources

(Kwadjosse, 2009). The communities in the catchment area of Benya Lagoon in the Komenda-Edina-Eguafo-Abrem (KEEA) Municipality, Ghana, hold a huge promise for contributing to livelihood and sustainable development through tourism and water-based livelihood activities such as fishing and salt production (Dorkenoo, 2013).

The significance of the study area, especially Elmina, is historical and socio-economic. Historically, it is a prominent tourist centre of both national and international repute owing to its special association with the colonisation of Africa, the Trans-Atlantic slave trade as well as the presence of ancient monuments. Elmina Castle, for instance, is one of the few treasured world heritage sites and, therefore, attracts both local and international tourists daily. In this connection, Arthur and Mensah (2006) have emphasised the need for proper ESM practices to promote tourism for sustainable development in the area. On the local front, the area is one of the most important fishing areas in Ghana with arguably the biggest traditional fishing port in the country, which contributes to the local and national economic development (KEEA & Doortmont (2003). The area also has an appreciable number of small scale salt firms, which when developed, could reduce unemployment, improve livelihoods and contribute more meaningfully to Ghana's Gross Domestic Product (GDP).

Improper ESM practices could jeopardise the growth of the fishing, salt and tourism industries in the study area and wreak dire consequences on sustainable livelihoods and development (Annepu & Themelis, 2013) in the area. It would increase unemployment, migration of the youth to other places in search

of jobs that may be non-existent, increase perennial flooding with its associated displacement and homelessness, increase health problems and most importantly, threaten the sustainability of livelihoods (Khadka, 2015). Hence, the need for proper ESM for enhanced livelihoods and sustainable development in the catchment area of the Benya Lagoon, which is the heartbeat of socio-economic activities in the KEEA Municipality, cannot be overlooked.

As alluded to in some of the previous paragraphs, within the catchment area of the Benya Lagoon can be found some famous world heritage monuments, which attract lots of tourists and other visitors from all walks of life from all over the world. The lagoon itself serves as a habitat for fish and, therefore, needs to be free from all forms of pollution and contamination to save the ecosystem and biodiversity. The lagoon also serves as the berthing or landing site for fishermen (KEEA & Doortmont, 2003) and is earmarked for a modern fishing harbour.

In addition, water from the lagoon serves as raw material for salt firms located in the catchment area of the Benya lagoon. Thus, improper sanitation practices, particularly open defecation and indiscriminate dumping of refuse and sewage in the lagoon, have implications for the lagoon, sea and their aquatic resources such as fish and salt as well as tourism, with their attendant implications for livelihood and sustainable development in the area in particular, and Ghana by extension.

### **Statement of the Problem**

Environmental sanitation has become a topical development issue at the local, national and global levels due to its relevance to sustainable development.

Key messages from the International Year of Sanitation (U N, 2008; UNICEF, 2008) stress that environmental sanitation is vital for human health, dignity, livelihood and sustainable development and so more efforts need to be made to improve ESM. The MDGs, various editions of Human Development Report (HDR) [UNDP, 2006; UNDP, 2015] as well as the SDGs acknowledge the livelihood implications of ESM for sustainable development and, therefore, urge all countries to focus on policies and programmes that bring ESM to the centre stage of their development agenda to ensure sustainable socio-economic transformation. However, according to the UN (2015) MDGs Report on Ghana, “while the country’s attainment of the target of improved access to safe drinking water is commendable, overall progress towards environmental sustainability is undermined by weak performance in sanitation,” hence the need for the country to improve ESM in all communities during the implementation of the SDGs.

Cognizant of its environmental sanitation challenges and their possible or likely implications for sustainable development, and also in line with the global emphasis on ESM, Ghana has been focusing attention on environmental sanitation issues as articulated in the background to this study. However, in spite of the efforts, ESM still remains a huge developmental challenge in Ghana, culminating in the country being rated as one of the top ten poorest in the world in terms of ESM, according to the July 2015 edition of the Joint Monitoring Programme (JMP) Report of the WHO/UNICEF.

Although poor ESM, especially with regard to waste disposal and open defecation practices, is virtually a general phenomenon in Ghana, most studies in this respect have concentrated on solid waste management in the cities or

metropolises such as Accra, Kumasi, Sekondi/ Takoradi, Tamale and Cape Coast (Acheampong, 2010; Addo, 2010; Adubufour, 2010; Adu-Buahen, 2012; Puopiel, 2010). While it cannot be disputed that the sanitation challenges in the cities are enormous and, therefore, deserve attention, it is also undeniable that the concentration of studies mainly on the cities, has thus far, been done to the virtual neglect of ESM in other equally important municipalities, districts and communities that also have huge sanitation challenges (Alderwish & Dottridge, 2013; Amfo-Otu, Debrah, Adjei & Akpah-Yeboah, 2012), which are constraining their contribution to both local and national development efforts, as well as progress towards the attainment of the SDG on sanitation.

Communities in the catchment area of Benya Lagoon, Ghana, typify the non-city ones being constrained by sanitation challenges to unearth their local and national socio-economic development potential, especially in the areas of tourism, fishing and salt production and their associated livelihoods. Arthur and Mensah (2006) have found that, the indiscriminate defecation and waste disposal practices in the catchment area of the Benya Lagoon, constrain not only opportunities for good health but also livelihood activities such as tourism, salt mining and fishing. Further to Arthur and Mensah (2006), Dorkenoo (2013) cites the Elmina Castle in the area as one of the tourist sites in Ghana which is located in an environment where the prevailing sanitary conditions constrain the promotion of tourism for sustainable development. Furthermore, Dorkenoo maintains that, notwithstanding the economic potential of the heritage monuments and the large numbers of tourists who visit the Elmina Castle, ESM around this

prestigious colonial edifice leaves much to be desired and calls for urgent attention since it could have dire consequences not only for tourism but also the fishing and salt industries, and for that matter, livelihoods and sustainable development.

The ESM challenges in the catchment of Benya Lagoon tend to question the relevance of the systems theory (von Bertalanffy, 1968) participation theory (Arntein, 1969) and behavioural change theory (Bandura, 1977) in relation to ESM and its implications for sustainable livelihood (Chambers & Corway; 1992; Carney, 1998) and development. While the behavioural theory acknowledges that sanitation challenges are mainly behavioural or attitudinal, the system theory suggests that the problem is mainly attributable to hardware and software aspects of ESM.

Although the availability of different strategies for improving ESM is not doubted, both theoretical and empirical literature demonstrate a preponderance of the application of sanitation education, infrastructure and regulation management as the most prominent and effective ones (Acheampong, 2010; Kirunda 2009, Mazeau 2013; Spencer, 2012). While education management is expected to address awareness and attitudinal issues and infrastructure management is expected to address access to sanitation facilities, law enforcement is expected to regulate sanitation behaviour by exacting compliance with the sanitation laws.

The pertinent issue relates to how sanitation infrastructure, education and regulation are being applied by the various stakeholders as complementary

strategies to solve the problems of waste disposal and defecation practices in the catchment area of the Benya Lagoon for improved tourism, fishing and salt production and their associated livelihoods. This is relevant because if the causes are not identified and strategies are not mapped up for proper management of sanitation, the possibility of the sanitation situation getting worse with its attendant negative implications for livelihoods is high (Mensah 2003). It could affect the livelihood capacities and assets (Chambers and Conway, 1992) in the area. That is, it could weaken the human, natural and financial capital base (Carney, 1998) of the people by constraining opportunities for good health, employment and income, and also jeopardise economic activities such as tourism (Addo, 2011; Tizser 2010), salt mining and fishing, which are at the centre of livelihood empowerment in the study area.

There is a sanitation policy in Ghana, which mandates the local authorities to enact and enforce by-laws to regulate sanitation behaviour. The policy also enjoins MMDAs to provide sanitation services including provision of infrastructure, education and regulation to ensure proper ESM in all communities counting on the participation of relevant stakeholders in the sanitation management chain (MLGRD, 1999: 2010). The issue here related to how the stakeholders are carrying out the public education, regulation and infrastructural management within the legislative and institutional framework of the policy to ensure that the overarching policy objective of achieving environmental cleanliness for sustainable development is achieved.

The philosophical curiosity about the study area's ESM situation is that, it smacks of either a misapplication of the tenets of the systems, behavioural and participation theories in the sanitation management efforts or a mismatch between the theories on the one hand, and what obtains in ESM practice on the other. In view of the confusion and uncertainty regarding either the apparent misapplication of theory or a mismatch between theory and practice of ESM and its implications for livelihoods and sustainable development, this thesis set out to address the following objectives and research questions.

### **Objectives of the Study**

The general objective of the study was to examine environmental sanitation management practices and their implications for sustainable development in the catchment area of the Benya Lagoon. The specific objectives were to:

1. Explore the implication of sanitation management practices for the main livelihood activities - fishing, salt production and tourism - in the study area;
2. Examine the application of sanitation infrastructure, education and regulation management as strategies for improving environmental sanitation; and
3. Examine the role of stakeholders in environmental sanitation management

### **Research Questions**

The study sought to answer the following questions:



1. What are the implications of environmental sanitation management practices for the main livelihood activities in the study area?
2. How are sanitation infrastructure, education and regulation being applied as strategies for managing environmental sanitation?
3. How are the key stakeholders managing environmental sanitation for sustainable development?

### **Scope of the Study**

As far as coverage of issues is concerned, the study dealt with issues relating to sanitation infrastructure, education and law enforcement as they affected defecation and waste disposal practices and for that matter sustainable development of the study area. Attention was given to the implications of ESM practices for fishing, salt production and tourism as livelihood and poverty reduction economic activities as well as stakeholders' roles in environmental sanitation management.

In terms of geographical scope, the study covered ESM practices in the catchment area of the Benya Lagoon. As far as units of study were concerned, the study focussed on households, individuals, groups and institutions. At the institutional level, the study focused on relevant Ministries, Departments and Agencies (MDAs) responsible for ensuring sanitary urban environment as well as private sector organisations connected with sanitation management in the study area with regard to their roles, capacities and challenges in managing environmental sanitation.

## **Significance of the Study**

The study is significant at the micro or local, meso or national and macro or international levels. At the local development level, the study will inure to the benefit of the affected communities through improved environmental health, increased productivity and growth in livelihood activities associated with tourism, salt production and fishing and ultimately better standards of living.

From the national development point of view, the study contributes to Ghana's poverty reduction efforts by providing information to reduce the ramifications of environmental pollution of important water resources such as the sea and the lagoon. The sea and the lagoon are important natural resources for livelihood activities, including fishing and salt production. In addition, tourism, which is one of the major contributors to Ghana's economy, will be given a further boost if sanitation improves in the area since the area is one of the most important tourists attraction sites in Ghana. Furthermore, the study provides information on best practices in ESM, which could be useful for other fishing, salt producing and tourist attraction communities, especially in the coastal areas of Ghana as well as other areas that have similar socio-economic potential and characteristics as the study area.

From the widest development perspective and standpoint, the study contributes to quickening Ghana's pace towards the global sanitation agenda as enshrined in the Sustainable Development Goals, leading to an enhancement of the country's image among the comity of nations. Above all, the study contributes to literature and knowledge about ESM.

## **Organisation of the Study**

The study is organised in eight chapters. Chapter one is the introductory chapter detailing the background to the study, statement of the problem, the objectives and research questions of the study. Other issues that are addressed in chapter one include the scope and significance of the study as well as chapter organisation. The second and third chapters are devoted to review of related theoretical and empirical literature respectively, while chapter four presents the overview of study area and methodology employed for the conduct of the research. In chapters five, six and seven, analyses of data and presentation of the results of the study are dealt with while chapter eight captures the summary, conclusions and recommendations based on the study

## CHAPTER TWO

### THEORETICAL LITERATURE REVIEW

#### Introduction

Literature review as a summary, synthesis and analysis of the central arguments in the existing body of literature (Krathwohl, 1988), provides a general understanding of the phenomenon under study, fits current research into the existing body of knowledge and supports the results and discussions, findings, conclusions and recommendations based on the study (Hart,1998: Wanjohi, 2012). While the purpose of literature review in general is to have an overview of significant literature published on a particular topic, theoretical literature review in particular, focuses on the theoretical and conceptual foundation of the study, thereby enabling the researcher to learn lessons from the theories and key concepts relating to the subject or topic

Against this background, the chapter deals with the theoretical and conceptual issues related to the study. In regard to theories, the systems, behavioural, participation, sustainable livelihood and common-pool resource theories are reviewed. The key concepts on which literature is reviewed include sustainability or sustainable development, environmental sanitation management (ESM), ESM practices, stakeholders of ESM, sanitation education, sanitation infrastructure and sanitation regulation as well as sanitation and livelihood, and their relevance or implications for sustainable development. The review starts with the theoretical underpinnings of this study, followed by the conceptual issues.

## **Theoretical Underpinnings of Environmental Sanitation Management (ESM) and the Sustainable Development Nexus**

The thesis is underpinned by five main theories. As mentioned, they are the systems, behavioural, participation, sustainable livelihoods as well as the common-pool resource management theories. These theories are reviewed in the next four sub-sections of this chapter as the theoretical foundation of the thesis.

### **Systems Theory**

According to Miller (1978), systems theory is an encompassing theory for interdisciplinary study of systems in general in order to identify and explain the principles that apply to different systems in various fields of research. Macy (1991) on the other hand, sees systems theory as an investigative framework for exploring a given phenomenon in a holistic manner, using ontological and epistemological approaches.

The main tenets of the systems theory border on taking a holistic view of a system to ensure that all of its components work to make the whole system function effectively and efficiently (von Bertalanffy, 1968). In this connection, Checkland (1981) has argued that, the theory recognises complementarities of efforts, methods, designs and models to achieve specific objectives in order to attain a common goal. This, according to Persson (2010), is predicated on the theory's conviction that, phenomena in the observed world are usually too complex to be understood by modelling all their parts and interactions and so some form of simplification is not only necessary but also inevitable.

Banathy (1989) observes that in terms of structure, the systems theory sees a system as a divisible whole but functionally as an indivisible unity with emergent properties. Flood (1990) perceives emergent property as being marked by characteristics portrayed wholly, but not by the components in isolation. According to Flood, there are two aspects of emergent properties. First, they are lost when the system breaks down to its components. The property of life, for example, does not exist in organs once they are removed from the body (Laszlo, 1996). Second, when a component is removed from the whole, that component loses its emergent properties (Flood, 1990; Laszlo, 1996); (Lilienfield, 1978); for example, a leg severed from the body cannot kick. It can, therefore, be argued from this standpoint that the notion of emergent properties connotes synergy, suggesting that, the system is more than the sum of its parts (Bowler, 1981).

The systems theory has relevance for the environment and implications for ESM. In systems theory, environment as a concept is defined as the set of all objects, a change in whose attributes affects the system as well as those objects whose attributes are changed by the behaviour of the system (Ackoff, 1981; Flood 1995). According to Flood (1995), in performing a systems analysis, systems thinkers start from the problem, not from a preconceived model so that once the manifestations of the problem are identified, they proceed inward to the sub-systems and then outward to the environment. The implication for ESM is that once sanitation has been identified as one of the factors that affect the sustainability of the environment and for that matter livelihood activities, there is

the need to proceed to address sanitation challenges by way of improving the health of the environment for sustainable development.

As regards the application of systems theory for research, Miller (1978), Checkland (1979: 1981) and Benathy (1993) have noted that, the systems theory identifies three distinct approaches. These, according to Miller(1978), Benathy (1993) and McCormick (1995) are hard systems approaches such as what are used in engineering and soft systems approaches as used in humanistic psychology as well as mixed systems approaches such as those employed in operations research, all of which aid decision-making. Philosophically, this classification suggests that, hard systems relate to positivism while soft systems relate to interpretivism with mixed system being consistent with pragmatism.

In relation to ESM, hard and soft systems can be likened to hardware and software aspects of sanitation management respectively (Hutton, 2012). As argued by Tsinda and Abbott (2012), while hardware in this sense refers to sanitation facilities, software relates to regulation of sanitation behaviour through education and law enforcement. The implication is that the main tools or strategies for managing environmental sanitation are public education, sanitation laws and physical sanitation infrastructure.

The systems theory holds much promise for the study of ESM due to its adaptability and flexibility as a framework. McCormick (1995) notes that the idea of complementarity under systems theory calls for the use of different actors and strategies to solve a problem. The principle of complementarity fits into this study since sanitation management entails complementary activities or strategies,

including infrastructure, education and regulation management as well as different actors, including individuals, households and institutions (Acheampong, 2010).

Furthermore, the systems theory extols the open social systems as a mode of inquiry (Capra, 1982), which recognises that humans live in social systems that are inextricably linked with the environment and so it is important to ensure environmental justice through a number of ways, including proper environmental sanitation practices. The open systems thinking provides for the future, taking cognizance of the dynamics that govern sustainable systems (Flood & Jackson, 1991), including environmental governance and sustainability.

Although the system theory has been criticised for not mimicking reality, especially in the soft sciences (Frantz, 1975; Lilienfeld, 1978; McCormick, 1995), it has relevance for ESM through its lessons on how parts of a whole affect each other and the system as a whole. In Lilienfeld's view, the application of the systems theory helps to gain an understanding of the complementarities among ESM strategies such as infrastructure, education and regulation management. This also implies that, the systems thinking is important for ensuring interaction, collaboration, co-operation, co-ordination and networking among sanitation stakeholders in order to bring about desired outcomes (Dzwairo, Otieno & Ochieng, 2010) in environmental sanitation management.

In spite of the varied views expressed by the various theorists and authors about the systems theory, they all purport, according to Tukahirwa (2011), that ESM using the systems thinking idea demands that the actors are brought together to address the challenges of environmental sanitation. Implicit in this



statement is that, sanitation, as an important variable in the sustainable development equation, has several dimensions and stakeholders and, therefore, the approach to managing the environmental sanitation challenge must be holistic and participatory (Frantz, 1995; Hutton, 2012; Pisano, 2012) in order to induce and engender the desired sanitation behaviour change.

### **Behavioural Change Theory**

An important theory in relation to changing attitude and behaviour is the behavioural change theory (Bandura, 1977; Smith & Stoker, 2009; Web, 2007). The behavioural change theory holds that an individual usually considers the consequences of a behaviour before engaging in it (Hardeman et al, 2002; Jekins & Scott, 2007; Johnston & Praterelli, 2011; Rutter & Quine, 2002) and that attitude influences behaviour. Impliedly, attitude and behaviour as concepts, are related but not necessarily the same.

According to Sutton (2005), an attitude is a disposition that could be the result of social norms or the desire for social approval. Shove (2010), on the other hand, perceives attitude as connected in a meaningful way to a specific situation and so serves as a basis for a reaction in that situation, which then becomes a behaviour. Bringing this logic to bear on ESM, it can be argued that since attitude is connected with behaviour, how an individual feels about environmental sanitation, that is one's attitude, influences one's sanitation behaviour, which is demonstrated in the one's ESM practices.

Fishbein and Ajzen (1975) indicate that, thinking and beliefs shape attitude, behaviour and action towards environmental management. In an

exposition on knowledge-attitude-behaviour change model, Matthews and Riley (1995) stated that an increase in knowledge could lead to attitudinal change and subsequently influence behaviour. Linking Matthews and Riley's claim to sanitation management, it is expected that an increase in environmental sanitation knowledge would deepen the understanding of people on sanitation issues and positively influence their attitude and behaviour for the maintenance of acceptable sanitation practices. However, an increase in sanitation knowledge could be achieved principally through appropriate messaging in sanitation education (Heimlich & Ardoin, 2008), thus, making education an important tool for ESM.

Several authors (Armitage, Connerajzen & Madden, 1986; Oldfield, 2006) have indicated that behavioural change theories are viewed as a good guide in ESM, especially with respect to designing programmes that require attitudinal or behavioural change. In this regard, designers of public education programmes on ESM are advised to include messages that can result in positive change in attitude to ESM (Tsinda & Abbott, 2012), including the implications of sanitation for health, productivity, dignity and income for sustainable livelihood. Similarly, behavioural change theories can be applied in regulating people's behaviour towards ESM through the application of sanitation laws (Bandura, 1977; Ekane, 2013).

Addressing the issue of poor public attitude to ESM has been a challenge to society and has often been tackled from the hardware point of view. In relation to this, Lindsay and Strathan (1997) have observed that improving sanitation is not only about installing physical facilities and technological systems, but also about

managing the sanitation behaviour of the people through public education and regulation. This is alluded to under the systems theory as the software of environmental sanitation management (Onda, LoBugilio & Bartram, 2012).

The rationality principle (Bamoul, 1959; Simon, 1972) under behavioural theory suggests that, people behave within the limits imposed by given conditions and constraints. Diclemente (2007), on the other hand, argues under the behavioural change theory that, behaviour can be influenced through rewards and punishment and that reinforcement plays an important role in this influence. Sharma and Romas (2012) have waded into this debate by contending that rewards are essential for ensuring the repetition of desirable behaviours, while punishments are necessary for discouraging unacceptable behaviours.

With regard to exacting compliance through reward and punishment, Michie, Johnston, Francis, Hardeman and Excels (2008) referred to reward as any event or action that increases the likelihood of a response to occur again and punishment as an event or action that reduces the chances that a response will occur again. However, contributing to this issue, Mosler (2012) asserted that, whether from reward or punishment point of view, education is key because it helps people to learn about the consequences of their actions and change their behaviour accordingly.

According to Armitage, Connerrajzen & Madden (1986), the principle of rationality under behavioural theory acknowledges that one of the influential elements for behavioural change is an individual's perception of social norms and also what people who are important to the individual do or think about a

particular behaviour. The principle posits that, certain individuals act as agents of behavioural change by influencing the norms in their community. This is in line with the theory's assertion (Bandura, 1986) that people serve as models of human behaviour and that some people who are significant others are capable of eliciting behavioural change in certain individuals, based on the individuals' value system (Elder, 2001; Michie, Johnston, Francis, Hardeman & Eccles, 2008).

In Oldfield's (2006) submission, if unacceptable sanitation management practices are discouraged by parents, opinion leaders and law enforcement agencies, other members of households and communities are not likely to engage in them. This, according to Roma and Jeffrey (2010) as well as Mosler (2012), is the import of influencing behaviour through punishment argument as espoused by the behaviour change theory. It implies that good ESM practices can be ensured by influencing people's behaviour through education and law enforcement. However, efforts at achieving this require the co-operation and participation of stakeholders and therefore needs to be underlain by the participation theory.

### **Participation Theory**

Participation theory, according to Stoker (1997) as well as Brownwill and Darke (1998) relates to the idea of empowering stakeholders of a development endeavour to be actors rather than passive subjects in taking decisions, managing resources and undertaking other activities that improve the lives of the people. The theory is premised upon the assumption that change agents are only there as catalysts, but the ultimate beneficiaries of a development intervention must be at the centre of the development efforts (Chambers, 1994).

The main tenet of the participation theory (Brydge, 2012) is that, it is difficult for meaningful success to be achieved in addressing a development challenge without effective participation of the key stakeholders.

Arnstein (1969) classified different levels of participation using a ladder (Figure 1). Arnstein’s ladder of participation describes a continuum of increasing citizen or stakeholder involvement from weak to strong forms of participation. It features eight rungs of participation, namely manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control.

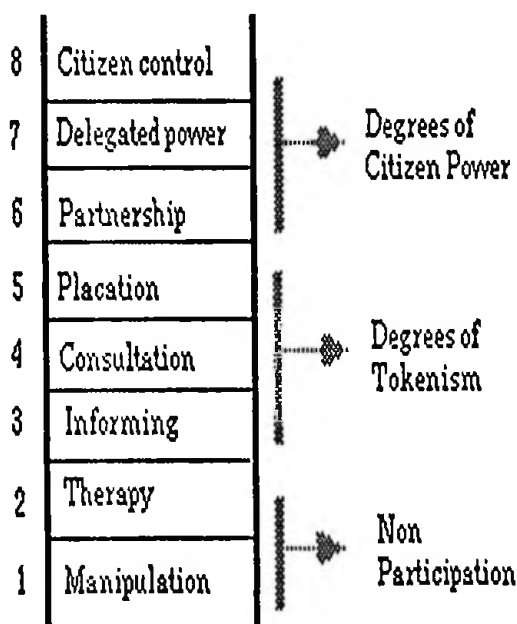


Figure 1: Arnstein’s ladder of citizens’ participation

Source: Arnstein (1969)

Although Arnstein’s ladder of participation has been subjected to varied interpretations, the basic tenets of the model remain unchanged. According to Brownwill and Darke (1998) as well as Skelcher (1993), the first two bottom rungs of the ladder, manipulation and therapy, describe non-participation because

the aim at this level is to enable power holders to educate or 'cure' the participants or citizens but not to enable them to participate in the planning and implementation of the project.

Rungs 3, 4 and 5, that is, informing, consultation and placation, progress to levels of "tokenism" that allow the have-nots to have a voice (Hart, 1992). Farrington (1988) opines that the informing level is the first step to legitimate participation but essentially, the emphasis here is on a one-way flow of information, where there is no channel for feedback and so there is no assurance of changing the status quo. In Rowe and Frewer's (2000) opinion, consultation as the next step to legitimate participation is characterised by meetings and public enquiries, but this is just a window dressing ritual.

According to Atkinson and Cope, (1997). rung 5, placation, is simply a higher level of tokenism because the ground rules allow have-nots to advise, but retain for the power holders the continued right to decide. For example, stakeholders may be represented at the committee level to advise but the power holders retain the right to judge the legitimacy or feasibility of the advice. Further up the ladder of participation are partnership, delegated power and citizen control, which mean real power to the citizens with increasing degrees of decision-making clout (Hart, 1992). The sixth level, namely partnership, enables the citizens to negotiate and engage in trade-offs with traditional power holders (Brownill & Darke, 1998: Tukahirwa, Mol & Oosterveer, 2010). Brownill and Darke explain that, at this level, power is re-distributed through negotiation between citizens and the power holders for purposes of planning and decision-making.

Furthermore, at the topmost rungs of delegated power and citizen control, Burns and Taylor (2000) claim that, the have-not citizens obtain the majority of decision-making seats. The public or citizens now have the power to ensure probity and accountability of the system. At the level of rung 8, full managerial power is gained by the citizens and, therefore, citizens handle the entire job of planning, policy making and managing the system (Sibanda, 2011) Thus, while indirect manipulation or pseudo-participation characterises the bottom rungs of the ladder, real power and control by the citizens or the ordinary stakeholders of a development effort or enterprise is found at the top three notches, namely partnership, delegated power and citizen control (Chambers, 2007; Creighton, 1993; Mansuri & Rao, 2013; Townsend & Angel, 2011).

Following Amstein's participation model, Ashby (1986), Biggs (1989) and Rowe and Frewer (2000) have come out with modes or models of participation. Their classification shows modes of participation with increasing levels of interaction and the characteristics of each level and mode as in Table 1. The implication of this participation model for ESM is that, the higher the level, the more intense and effective the interaction, and the better the results that the stakeholders are likely to achieve with respect to environmental sanitation management. For example, merely informing the stakeholders about policies without consulting them to make input to the policies is not likely to achieve the desired sanitation results.

Table 1: *Levels and Modes of Stakeholder Participation/Interaction*

Level	Mode	Characteristics
1	Informative	Top-down communication. One way information flow in which the recipient has passive role
2	Contractual	Minimal involvement on the basis of service or resource provision.
3	Consultative	Two-way information flow with small stakeholder input mainly regarding value-laden issues but less on technical aspects
4	Collaborative	Stakeholders interact closely and continuously with intense two-way information flow. Stakeholders actively participate, share and incorporate each other's plans and ideas
5	Collegial	Continuous open dialogue. Stakeholders see themselves and their activities as complementary and mutually dependent. Characterised by mutual confidence, transparency and accountability.

Source: Adapted from Ashby (1986), Biggs (1989) and Rowe and Frewer (2000)

Although the participation theory has been criticised for its associated complexities such as dimensions of power, which Mukherjee (1998) and Stoker (1997) refer to as paradox of empowerment that can result in some stakeholders becoming disinterested, other authors (Heillich & Ardoin, 2008; Sabinda, 2011; MacFarlane, 1993; Townsend & Angel, 2011), argue that the idea of participation is good. Sibanda (2011), for instance, has indicated that the theory has attracted considerable attention in the contemporary development debate because it helps to garner public support for development efforts. Further to



Sabinda's claim, Townsend and Angel (2011) have claimed that, utilising a participatory approach allows stakeholders to own the development project, adding that for a successful ESM, the principles of participation must be felt inward and lived outward.

Furthermore, Luthi and Parkinson (2011) as well as Brydge (2012) have observed that different stakeholders have different perspectives and expectations about engaging in participatory approaches and that this becomes evident in any multi-stakeholder planning process. For this reason, these authors have advocated stakeholder participation in every development intervention, including sanitation-related ones. On the contrary, however, Massie and Webster (2013) caution that studies from the water and sanitation sector have shown that increased participation in planning and implementation of sanitation projects may not automatically lead to improved sanitation practices unless it is complemented with other measures such as effective public education and regulation management.

### **Sustainable Livelihoods Theory**

The sustainable livelihood theory relates to the ability of a social unit to enhance or maintain its livelihood on a sustainable basis, using its assets and capabilities in the face of shocks and stresses over time (Arce, 2003; Chambers, 1984). The theory seeks to identify key livelihood assets and the nature and impacts of environmental, economic and social shocks and stresses upon these assets (Carney 2002; Chambers, 1995; Olaniyan & Okemakinde, 2008).

According to Chambers (1987) as well as Chambers and Conway (1992), livelihood refers to means of living. Carney (1998) takes a further look at the definition of livelihood by adding a resource dimension to it. Thus, Carney defines livelihood as comprising the capabilities and assets required for a means of living. In Carney's (1998) view, a livelihood should be sustainable, and it so when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. In line with Carney's conception and definition, the DFID (1999) developed a framework for analysing sustainable livelihoods using the vulnerability context, livelihood assets, structures and processes, livelihood strategies and livelihood outcomes as captured in Figure 2.

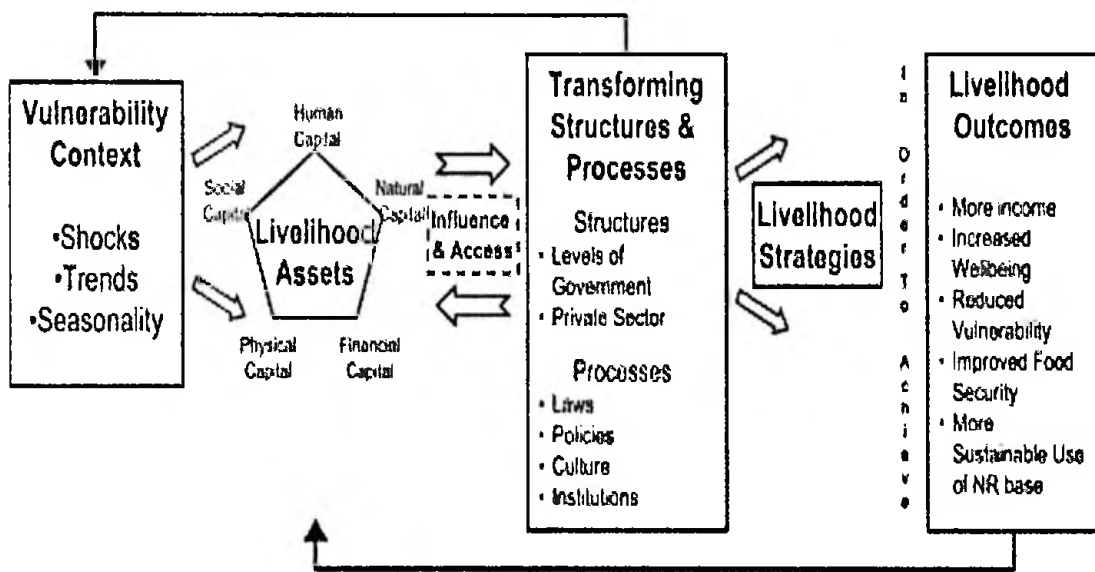


Figure 2: Sustainable livelihoods framework

Source: Department for International Development (DFID), [1999]

The DFID (1999) sustainable framework presents a number of factors that impact on livelihood assets and also emphasises relationships among these factors. Central to the framework is a pentagon of livelihood assets that can be utilised for achieving livelihood outcomes by households and communities through strategies that reduce the vulnerability to shocks and stresses (Borrini-Feyerabend, Kothari & Oviedo, 2004:

According to Hussein (2002), the framework identifies five assets or capitals for sustainable livelihood. These are natural, social, human, physical and financial in nature. The natural capital refers to the natural resources useful for livelihoods such as land, water, wildlife, biodiversity and environmental resources, social capital refers to the social resources including networks, relationships of trust, access to wider institutions of society upon which people draw in pursuit of livelihoods (Hinshelwood, 2003). Roe and Elliott (2004) and Olaniyan & Okemakinde (2008) add that human capital refers to the skills, knowledge and health, which are important for pursuing different livelihood strategies while physical capital refers to the basic infrastructure and the production equipment or means, which enable people to pursue their livelihoods. Financial capital, on the other hand, refers to financial resources, which enable people to pursue different livelihood options (Banathy, 1996: Fortman, 2008).

Chambers (2007) sees access to the capitals as being influenced by transforming structures and processes, which are seen by the DFID to be contributing factors to the vulnerability of people's livelihoods. While the structures refer to government, private sector or civil society, the processes

include laws, policies, institutions and power relations (Ashley & Carney 1999; Banathy, 1989; Cattermoul, Townsley & Campbell, 2008; DFID: 1999).

Other authors, including Bebbington (1999) and Ellis (2000), have also provided their frameworks of sustainable livelihoods. Bebbington's framework differs from the others in terms of linearity. Rather cyclical as it is, Bebbington's livelihood framework places the individual and household assets at the centre of five slightly modified capitals, namely produced, human, social, natural and cultural capitals. These are influenced by the state, market and civil society organisations and other actors to enhance livelihood. In contrast to the earlier authors' views, social capital is seen by Bebbington to be a particularly important asset in providing access to other assets and actors, and for that matter, opportunity for sustainable livelihoods and development.

Ellis (2000), on his part, looks at the concept of livelihoods from the perspective of diversification for rural household survival. For Ellis, these are based on five assets, to which access is modified by social relations, including institutions such as rules and customs, as well as organizations or institutions, including non-governmental organisations and local and state governments in a context of trends and shocks that affect livelihood. The livelihood strategies are composed of a variety of natural and non-natural resource-based activities that ultimately have effects on livelihood security and environmental sustainability. Ellis and Allison (2004) see diversification as a means or strategy for reducing vulnerability and poverty, while maintaining local natural resources for sustainable livelihoods.

As argued by Cattermoul, Townsley and Campbell (2008) all the perspectives of the sustainable livelihood framework are pillared on the relevance of poverty reduction and sustainable development. Furthermore, the goal of these frameworks is to understand local livelihoods in order to influence livelihood strategies and outcomes to reduce household and community vulnerability to stresses and shocks in order to increase wellbeing (Scoones, 2009) It can be discerned from this that the sustainability of the local environment is important so as not to undermine the livelihoods of future generations; and the role of ESM in ensuring that sustainability, is critical.

Although the sustainable livelihood theory is criticised for not attaching enough importance to the vulnerability context (Murray, 2001: 2002), the theory offers a framework for analysing issues that impact on people's livelihoods (Arce 2003: Koziell, 2001: Hoon, Singh & Wanmali, 1997). Chambers (2007) calls for analyses of livelihoods of the poor from their own perspectives. Coastal resources such as the sea and lagoon have been shown to have substantial impact on local people's livelihoods. As maintained by Fortman (2008), the sustainable livelihood theory provides a guide for environmental management, which can lead to increased fish catches and tourism development for improved livelihoods through increased employment and income generation but the analyses of impact of environmental management on livelihoods must be done from the perspectives of the people. However, one key issues in analysing the perspective of the people environmental management including ESM is property rights which is often guided by the Common-Pool Resource Theory.

## **Common Pool Resource Theory**

Pervasive concerns about environmental sustainability have triggered growth of literature on common-pool resources and common property (Agrawal, 2003; Young, 1994). According to Agrawal (2003), the common-pool resource theory holds that variations in forms of property rights make a difference in resource management outcomes and that the variations affect outcomes by shaping incentives of users and managers. Due to failures of state management and market-oriented policies, community involvement in the management of common properties or resources have gained attention in the policy making discourse (White & Runge, 1994). Lessons learned from common-pool resource management theories have influenced the management of environmental and natural resources such as forests, sea, lagoon and their associated livelihoods, including lumbering, salt production and fisheries (Langton, Rhea & Palmer 2005; Leach, Mearns & Scoone, 1999; Li, 1996).

For commons theorists, property rights institutions are best seen as sets of rules that define access, use, exclusion, management, monitoring, sanctioning, and arbitration behaviour of users with respect to specific resources (Schlager & Ostrom 1992). In the view of Agrawal (2003), this is based on the realisation that people tend to misuse resources that do not belong to them as private individuals or institutions. This implies that, for livelihood resources such as the sea and the lagoon which are not individually owned but belong to the general public or community, people are not likely to bother about their proper use and maintenance, and this could have implications for the sustainability of the

livelihood benefits derived from these resources, such as salt mining, fishing, tourism and recreation.

In investigating the impact of different institutional structures on resource management, common resource theorists have shown the importance of both formal and informal institutions as an influence on human behaviour, particularly with regard to resource management (Bates, 1989; Libecap, 1990; North, 1990) . According to Knight (1992), this has produced evidence on the role of informal norms in influencing human actions on environmental sustainability. The implication of this role for both the private sector and government in ensuring the maintenance of proper ESM practices for common-pool properties such as the sea, lagoon and the castles and their associated livelihoods – fishing, salt production and tourism – is of paramount importance.

Scholars of commons have concentrated primarily on producing case studies of successful community management of coastal fisheries, forests, pastures and water resources (Bromley, 1992; Oakerson; 1992; Ostrom, 1990; Tang, 1992). These works and others on participation and indigenous knowledge have encouraged resource co-management by stakeholders. In the views of Peters (1994) and Ascher (1995), the role of stakeholders in communal management of common resources have made discussions of decentralisation of environmental management interesting, calling on the state to act appropriately by co-operating with the stakeholders and also using control and command tools where necessary.

Due to the fact that resources that form part of the public goods are regulated by the government, co-management often involves vertical linkages and shifts in rights and responsibilities from government to local resource users (Berkes 2002). However, forms of co-management have been attempted with varying degrees of success, for example, in fisheries management (Lim et al. 1995), in coastal zone management (Sandersen & Koester 2000) and in watershed management (Berkes, & Jolly, 2002 : Ravnborg & Guerrero, 1999).

Ostrom (1990) has opined that many countries around the world have now begun to involve Community-Based Organisations (CBOs) in decision-making regarding managing the environment for sustainability. These new policy trends are based on the recognition that, the state alone cannot manage the environment for sustainable development. In addition, it has been realised that stakeholder involvement achieves better results in common resource management than either private actors negotiating through market-based exchanges, or state actors regulating through command and control policies (Agrawal, 2003). It implies that, individuals need to act as citizens and through market exchanges, while civil society acts through collective action.

In most instances, stakeholders' collaboration is often characterized by high levels of social capital, which permit them to undertake collective tasks far more efficiently in comparison to state bureaucracies, and also do so more equitably than market based solutions. The realisation has led common-pool theorist to draw lessons from social capital for environmental resource management (Putnam, 1993). Advocates of common resource pool, therefore,



have begun to examine the extent to which common property institutions are based upon stocks of social capital and how they enhance the networks through which social capital is generated (Katz, 2000; Muldavin, 2000; Robbins, 2000; Wade, 1994).

Vulnerabilities now and in the future, have strong social elements because both are a function of adaptive capacity, which is in turn dependent on social capital, institutions as well as resources and their distribution (Ostrom, 1990). Adaptive capacity is akin to capital asset but can only be put into play through appropriate institutions (Oakerson, 1992). According to Tang (1992), these institutions need legitimacy and harmony with wider social goals if adaptation is to be sustainable. In effect, sustainable resource management requires government structures that are empowered to make collective decisions (Bromley, 1992; Brown 2002). Against this backdrop, stakeholders of ESM are expected to cooperate, co-ordinate and network to share information on their respective management strategies for holistic and effective solutions for sustainable development

### **Conceptual and Terminological Issues**

From the objectives of the study and review of theories, some key concepts and terminologies are derived and identified as relevant to the study. These include sustainability, sustainable development, environmental sanitation, environmental sanitation management, sanitation practices, sanitation stakeholders/actors as well as livelihood. The rest are environmental sanitation

strategies including sanitation infrastructure, education and regulation. These concepts or terms are defined or explained and expatriated on as follows.

### **Sustainability and Sustainable Development**

Sustainability and sustainable development have gained considerable prominence in the development discourse and have been quite impactful in changing the orientation of development (Adams, 2001; Chambers, 2005). Their prominence, however, has also bred different meanings and definitions. In a rudimentary literal sense, sustainability refers to the capacity to maintain some entity, outcome or process over time but in its increasingly common use, the concept connotes ways in which environmental factors support or affect the economic, ecological and social systems (Friedmann, 1992; Persson, 2010; WHO/UNICEF, 2010).

Although the concept of sustainability has many facets, the central idea in developments discourse is that resources must be used in ways that will be beneficial to human now and in the future. The United Nations (UN, 2010; 2013) sees the concept of sustainability in terms of environment and in relation to activities that support livelihoods and human development. Sustainability as related to ESM, is meaningful when EMS practices continue to provide opportunities for human development benefits over time (Baum, Luh & Bartram, 2013; Mushuku, 2014; Szanto et. al., 2012).

Different views about sustainable development continuously feature in contemporary development debates. While Redcliff (2005) sees the concept as a means, the UN (2011) sees it as an end in itself. Sustainable development as a means, according to Redcliff, refers to the orientation behind the different ways in which interventions or undertakings of any nature for development purposes are

made. In this sense, sustainable development presents an ideology upon which development-related activities are initiated and implemented. On the other hand, sustainable development as an end, according to UN (2011), can only be tested and proved by the future generations; whether those generations can meet their needs and also carry on the sustainable development legacy left behind by the generations that came before them.

Most conventionally, sustainable development is conceptualised as connoting development that is sensitive to the future generations' needs, while resources are being used to meet the needs of the present generation (Beavan 2006; WCED, 1987; Smith & Sterling 2010; Tsai, 2006). Implicit in this conventional conception of sustainable development is that development is sustainable only when it inures to the benefit of today's generation without compromising the ability of future generations to enjoy similar or even better benefits from the system. In a similar vein, Bisnath (2011) perceives sustainable development as creating a better life for all people in ways that will be as viable in the future as they are at present. It is noteworthy from the foregoing that all the perspectives about sustainable development are predicated on the principle of sound husbandry of resources in order to benefit human now and in the future.

Considering the emphasis placed on the present and the future regarding the debate on the concept of sustainable development, it is admissible to be curious about whether the concept is time-bound, but in Smith's (2007) and Shaw's (2011) views, the time dimension implied in the concept is not finite. Shaw states that, once change for the better has resulted, that trajectory of change

must either be maintained or enhanced. By implication, if the people slip back into a situation where they have to rely on unimproved sanitation system, then investment in sanitation infrastructure, education and regulation has been wasted (Sabur, 2013).

Although several issues are inherent in the concept of sustainable development, at the core of all the issues is the environment and its sustainability (Scheinberg, Spies & Simpson, 2011). Crucial in ensuring this sustainability is the role of environmental sanitation and its management (Shove, 2010; SIDA, 2012).

### **Environmental Sanitation and Environmental Sanitation Management**

Oldfield (2006) defines environmental sanitation as controlling all the factors that affect the physical environment, which may have an impact on human health. Similarly, Adu-Buahen (2012) sees environmental sanitation as maintaining a clean and pleasant physical environment in human settlements but Jumpah (2012) defines the concept by stating the activities entailed in it. According to Jumpah, environmental sanitation involves the maintenance of sanitary infrastructure, public education and legislation to control the pollution of the environment. Annepu and Themelis (2013) on their part, claim the concept implies controlling the aspects of waste that may lead to the transmission of diseases. However, in spite of the fundamental variations in conceptualization, all the authors agree that, the essence of improving ESM is to ensure environmental justice and sustainability for sustainable development.

Environmental sanitation management as a concept has been defined in several ways. While Baabereyir (2009) sees it as the collection, storage

transportation and disposal of waste material at appropriate sites, McConville (2010) refers to the concept as the process of disposing of human excreta and other forms of solid and liquid waste in a manner that protects public and environmental health, Similarly, Konradsen (2010) sees the concept as controlling of solid and liquid waste that may lead to the transmission of diseases, while Kamistky (2013) conceptualises it as the proper control of the generation, storage, collection and disposal of waste in a sanitary and aesthetically acceptable manner. Although the authors differ in their definitions of the concept, they all agree that ESM goes beyond the physical aspects of handling waste to also include preparing policies, enforcing regulations, providing access to sanitation facilities and educating people on best sanitation practices.

It can be summarised from the foregoing definitions and conceptualisations that, ESM is the principle and practice of protecting the environment from the polluting and contaminating effects of waste and filth in order to safeguard public health and the natural environment for enhanced livelihood and sustainable development. According to Brain (2004) and Huitema and Maijerink (2009), improving sanitary conditions involves managing waste properly so that the environment does not get polluted so as to pose health hazards to human beings with all their ramifications for livelihood and sustainable development. Arguably, the two main issues for consideration in order to make this happen are defecation and waste disposal practices (Sabur 2013).

The priority of the sanitation management enterprise must be the provision of services, which help to maintain the health and safety of the citizens and their

environment (Evans, van der Vooden & Pearl 2009). In Massie and Webster's (2013) view, achieving this entails structures and processes. While the broad structures are the government and the private sector, the main processes are the policies, laws, institutions and culture. However, virtually all sanitation management practitioners as well as researchers agree that ensuring proper standards in ESM depends very much on the various sanitation actors who succinctly, are collectively referred to as stakeholders as dilated on in the next subsection

### **Stakeholders in Environmental Sanitation Management**

Dealing with challenges that transcend several domains such as ESM challenges, has been identified as being dependent on the participation of different actors who are perceived to have stakes in the domains (Gray, 1985: Freeman 1984) but the issue of defining who a stakeholder is, is one that raises contentions and confusion. The explosion of research into the stakeholder concept, has led to a plethora of definitions. While the various definitions help extend the theorizing of the concept, the definition of a stakeholder as being "any group or individual who can affect and is affected by the achievement of the organizations objectives" is seen as a broader and balanced way of understanding the concept (Freeman 1984: Kooiman, 2000)

The interconnected nature of the ESM activities, comprising infrastructural, educational and regulation management, coupled with respective actors' interests, influence, responsibilities and capacities, poses a difficult coordination task to the ESM enterprise (Cairncross, 2003: Davids, Theron,

Maphunye & Kealeboga, 2009). However, according to Cairncross, it allows for opportunities like innovation, partnerships, networking, collaboration and alternative funding arrangements. In this sense, the importance of identifying strategic stakeholders is a key element in ESM. Adams (1999), Chudger (2010) as well as Adubofour, Obiri-Danso & Quansah, (2013) maintain that a careful analysis of sanitation stakeholders provides valuable information on stakeholder roles in ESM.

In relation to ESM, Fening and Edoh (2008) define stakeholders as a wide range of actors who perform various functions to help maintain a clean physical environment in human settlements in order to protect the health of the environment and the population. Key issues regarding stakeholder involvement in ESM are their co-operation, collaboration and partnership to find solutions to sanitation problem. The idea of collaboration connotes an implied acknowledgement and recognition that, the ESM challenges facing society cannot be unilaterally dealt with by a single body (Gray, 1985; Dalal- Clayton & Bass, 2009), hence, there is the need for coordination and interaction among and/or between the many different stakeholders in society to address them. Fried (2010) adds, however, that this also depends on the strengths and weaknesses of the stakeholders regarding their capacities in terms of logistics, equipment, funds, human resource as well as legal and institutional arrangements.

In addition to the above definitions of stakeholders in ESM, Movik and Mehta (2010) have taken a further look at the concept by identifying a host of

stakeholders and broadly categorising them into four. These categories are the public sector, the private sector; local community and its representatives, which is referred to as community-based organisations (CBOs) and other not-for-profit organisations popularly known as non-governmental organisations (NGOs). Even before this categorisation by Movik and Metha (2010), Tukahirwa, Mol and Oosterveer (2010) had categorised the sanitation stakeholders into three namely, the government, private sector and civil society.

With respect to government as a stakeholder in sanitation management, Ivan (2011) identifies two levels namely, the central and local government. Ivan defines central government as the state and local government as specific institutions or entities that are created by the state or national constitution to deliver a range of specified services to a relatively small geographically delineated area. However, in Ghana and most other countries, while the central government is responsible for national sanitation policy issues, local governments are empowered by the central government to enact by-laws to regulate sanitation behaviour and practices at the local level (Adu-Buahen, 2012).

In McConville's (2006) statement, the central government, through the local authorities are expected to ensure that households have domestic toilets, and public toilets are available for the transitory population and at places where public gatherings take place including, markets and transport terminals. In addition, Murray and Rai (2010) advocate the enforcement of building regulations by local authorities so that all houses have approved sanitary facilities and the houses are



not built in water-ways and other unapproved places. Furthermore, the local authorities are to ensure private participation in franchised sanitation services such as waste collection and disposal as well as facilitate sanitation sensitisation programmes and infrastructural development (Abdul-Barik, 2012: Addo, 2011: Atuahene, 2010: MLGRD, 2010: Oteng-Ababio, 2012 )

As observed by Shah (2011), while the public sector is composed of organizations that are owned and operated by the government, the private sector is usually composed of organizations that are privately owned. The private sector's role in ESM in most countries, including Ghana, according to Appiah-Boamah (2011), includes solid and liquid waste collection and management subject to the supervision by the government. Others are cleansing and maintenance of designated areas and facilities such as streets, market places, lorry parks and drains under agreements covering sanitation management. In the view of Brydger (2012) and Hedger (2007), the participation of the private sector in sanitation management accords with the participation theory and is expected to bring about efficiency, accountability and transparency in ESM.

Another stakeholder in environmental sanitation management is the Community-Based Organizations (CBOs). Ahmed (2003) defines CBO as an informal organisation that is formed by members of a community to address a need. Onda, LoBoglio and Bartram (2012) on the other hand, see CBO as an organisation that provides social services at the local level and whose activities are based primarily on volunteer efforts.

Specific to ESM at the local community level in Ghana, the main role of CBOs, including the traditional authorities and youth groups is to ensure that the communities are clean (Oteng-Ababio, 2010 ). Chudger (2010) strengthens the point by adding another dimension to it, opining that CBOs are expected to do this in a number of ways, including participating in communal labour for environmental cleaning, participating in public education/sensitisation, and acting as watch-dogs and reporting sanitation offenders to appropriate authorities for sanctions. Furthermore, CBOs are expected to take part in the observance of Environmental Sanitation Day instituted by the MLGRD.

Faith-based organisations (FBOs) are another set of stakeholders in sanitation management. Drawing on experience of Tearfund Partners in Burkina Faso, Madagascar and the Democratic Republic of Congo, Carter and Rwamwanja (2006) have indicated that local churches have a great potential to facilitate innovative community-led sanitation activities and can be useful partners to local government and other NGOs in this process. According to Webster (2007) the crucial role of churches and other faith-based organisations (FBOs) has been recognised in some community development endeavours since they demonstrate a close integration in their communities at the grassroots level.

In Bäckstrand's (2006) view, FBOs have the flexibility to adapt to new challenges and so if they are made part of government planning processes, they can be important partners in addressing development issues, including the provision of sanitation services. In this connection, Bandy and Crouch (2008), have observed that some donors are beginning to recognise FBOs., especially the

churches, and so are increasing their engagements with FBOs, considering them as partners in development.

Added to the list of actors or stakeholders in environmental sanitation management is Non-Governmental Organizations (NGOs), which is defined by Bayne-Smith, Mizrahi and Garcia (2008) as voluntary and non-profit-motivated citizens or groups operating at local, national or international level. Rodrigues (2012) on the other hand, defines NGOs as civil society organizations that are formed independently of the state but register voluntarily under specified laws in order to gain official recognition to pursue purposes that are not self-serving but oriented towards public benefit. Although several other definitions have been provided for NGOs, what is discerned as common to most of the definitions is that, NGOs operate voluntarily and are not profit-motivated.

Willets, Carrard, Pedi, Powell and De Lacy (2008) have identified the roles of NGOs in the ESM based on their survey of NGOs in 10 countries across Southeast Asia and the Pacific, including Timor and Vietnam. According to these authors, the various roles played by NGOs in ESM include facilitation of service delivery, community education, promoting networking among stakeholders, capacity building for local government service providers, civil society groups as well as households and communities. NGOs also undertake research and piloting of innovative and locally adapted technologies, policy dialogue and advocacy. Achiro (2012) concurs with these authors and adds that through these roles, NGOs help to improve sanitation for sustainable community development

However, it argued that, while NGOs can contribute significantly to ESM in many respects, it is also true that they can at times play potentially detrimental roles, sometimes through good intentions (Carrard, Pedi, Willetts & Powell, 2009). In Figueroa's (2015) view, this occurs when NGOs are not sufficiently engaged with the sanitation sector in a given locality and, therefore, fail to coordinate, collaborate and network with other actors effectively, where they lack sufficient technical expertise for the work required or where they, like others, have concentrated mainly on hardware aspect, without sufficient attention to the software aspect in their ESM approach.

Per the principle of complementarity inherent in the systems and participation theories, the essence of existence of several stakeholders in the sanitation management enterprise is to ensure complementarities of efforts and strategies in ESM practices (Ackoff, 2010). As observed by Bird and Avoka (2007) as well as Cochran et. al (2010), the strategies to influence these practices relate to management of sanitation infrastructure/facilities, education and regulation of sanitation behaviour as identified by the systems, behavioural and participation theories. These are broadly captured as hardware and software ESM strategies as elaborated (on) in the next sub-section.

### **Environmental Sanitation Management Practices and Strategies**

Fried (2010) sees the concept of ESM practices as relating to defecation and waste disposal habits or actions that influence the cleanliness of a given geographical environment. Konradsen (2010) on his part, refers to the same

concept as actions or inactions by or of the individuals, households, communities and institutions, which affect the cleanliness or otherwise of the physical environment. Similarly, Bisnath (2011) asserts that ESM practices are concerned with the manner in which solid and liquid wastes are disposed of. All the three authors converge in opinion, however, that ESM practices generally involve waste disposal and defecation management, and that such practices should be managed in a holistic manner to ensure that they are socially desirable, economically viable and environmentally friendly.

With regard to solid waste disposal, the management practices include burying, incineration, throw-it-anywhere, house-to-house collection, communal container, recycling and /or reuse of waste (Agyepong, 2011; Sudgen, 2003). Others are open dump systems such as crude dumping in the bush and water bodies. While some of these practices, such as use of communal containers and house to-house collection systems are approved, others, including open dump methods such as dumping in the water bodies, by the roadside as well as throw-it-anywhere are not approved (Hutton, 2012; Nissinen, . & Vanninen, 2012). Global best practices in ESM also stress a move-away from the conventional practice of collection-haulage-dumping to more modern systems of waste management that integrates waste reduction, sorting, reuse, recycling and treatment. In Hutton's view, such practices are considered economically prudent, environmentally friendly and more sustainable.

As far as defecation management practices are concerned, Sheikh (2008), WHO (2010) and Meeks (2012) maintain that, the use of water closet (WC), pit

latrine, pan or bucket latrine, polythene bags and open defecation are some of the available options. However, global best practices in ESM, according to WHO, indicate that, while the use of some of these facilities such as water closet is approved, the use of others such as pan/bucket and open defecation are unapproved. According to UN (2013), in most developing countries, including Ghana, persistent use of unapproved options retarded the progress towards the attainment of the MDG on environmental sanitation.

Additionally, as stressed by Bhuiyan (2010), possible factors that could influence sanitation practices include affordability of sanitation facilities, preference for the facilities, accessibility in terms of distance to the facility and knowledge about the best practices. Oosterveer and Spaargaren (2010) add that, whatever the case is, it is possible to devise strategies to influence the management practices to bring them to acceptable standards for sustainable development.

According to Flood (1990), sanitation management strategies refer to plans and devices for maintaining proper sanitation practices, while Sabur (2013) sees the concept as connoting a way of influencing sanitation behaviour in conformity to acceptable standards. However, there is a convergence of views between Flood and Sabur that, although there are several strategies or tools for ensuring the maintenance of proper sanitation practices, they can be broadly captured under hardware and software management tools or strategies.

Sanitation hardware refers to technical options for optimisation of sanitation delivery (Beyer, 1987; Kaminsky, 2013). According to the authors, these are physical tools that can be seen and touched such as toilets, refuse dumps, dust bins, refuse containers and other logistics, the access to and proper use of which improve environmental sanitation. On the other hand, Bisnath (2011) refers to sanitation software as intangible instruments or means to change the behaviour, attitudes and practices of different actors to optimise the sanitation system.

In Rosensweig and Derko's (2010) submission, the sanitation management software strategy includes sanitation education and regulation, which are divided into different categories. The first relates to creating a functioning framework for sanitation management, the second relates to the strategy to raise awareness to influence attitudes of people's to maintain acceptable sanitation practices while the third has to do with regulation, which refers to command and control tools such as laws and rules. Baskovitch (2011) endorses Rosensweig and Derko's view and adds that these tools help to change the unacceptable sanitation practices or behaviour because people would want to avoid punishment for non-compliance with the laws or rules.

It has been argued that people may not easily change their attitude and behaviour and so command tools only work when they are enforced and offenders are punished (Frias & Nilanjana, 2005), For this reason, Ackoff (2010) has advocated sanitation management policies that take account of complementarities between the hardware and software tools as explained under

the systems theory. In this connection, Ackoff has underscored the importance of three main strategies that could make impact on ESM. These strategies, without prejudice to other forms of intervention, are sanitation education, infrastructure and regulation management, which are the subjects of review in the next three sub-sections of this chapter.

### **Sanitation Education as a Sanitation Management Strategy**

Hardi (2000) as well as Hutton, Haller and Barttram (2007) maintains that sanitation education, which refers to sensitising people, especially the masses on sanitation issues, raises the consciousness of the people on ESM. Hutton et al.(2007) describe raising awareness and increasing knowledge of people through public education on ESM as central to solving the sanitation management challenges. Further to this, Nhamo and Inyang (2011) have extolled public education on sanitation as important for promoting proper ESM practices, stressing that it helps to change people's sanitation behaviour. Nhamo and Inyang, therefore, urge that public education on sanitation should be given priority and taken seriously by sanitation stakeholders.

Sharing similar views with Hutton, Haller and Barttram (2007) on sanitation education, Abdul-Barik (2012) states that sanitation education relates to sanitation awareness campaigns aimed at equipping the masses to know not only the importance of ESM but also what should be done to improve sanitation for environmental justice and sustainable development. Like Nhamo and Inyang (2011), Abdul-Barik is of the conviction that sanitation education is an



indispensable tool or strategy for changing people's attitudes towards poor ESM practices and, therefore, should not be downplayed in ESM endeavours.

As further argued by Spencer (2012) sanitation education instills in individuals ethics, values, attitudes and behaviour consistent with proper sanitation management. This is in line with the behaviour change theory as seen by Andreason (1995) who has argued that, in order to achieve the desired results in ESM, certain indicators are important and need to be considered. The indicators include the content of the education, with particular emphasis on relevance of the message, coverage of issues, target audience in terms of their level of education, beliefs and perceptions. Mansuri and Rao (2013) concur with Andreason, regarding the consideration of these indicators in sanitation education but add that the media and language through which the education is given are equally important.

Following Andreason (1995) and Mansuri and Rao (2013) on the issue of sanitation education, Baum, Luh and Battram (2013) have emphasised the need for the involvement of schools, churches, youth, traditional authorities, government and non-governmental organizations in sanitation sensitisation programmes in order to achieve the desired outcomes. Baum, Luh and Battram are convinced that although the content of public education is important, if the message is not delivered by the right people or institutions, the desired results may not be achieved.

As asserted by the MLGRD (1999) of Ghana, environmental sanitation education should be an integral element of ESM activities as it is complementary

to sanitation infrastructure and regulation. In recognition of this, Ghana has instituted an Environmental Sanitation Day to create awareness about sanitation, and for people to participate in environmental cleaning as part of observance of the day (MLGRD, 1999; 2010). All this accords with the tenets of systems (Flood,1995) and participation (Stoker 1997) theories. The tenets implicitly endorse different but complementary approaches to addressing issues. Underneath the principle of complementarity is the implicit acknowledgement that, although sanitation education is necessary, it is not sufficient unless it is complemented with other strategies, key among which is sanitation infrastructure management. The next sub-section of this chapter, therefore, captures a review of sanitation infrastructure as an environmental sanitation management strategy.

### **Sanitation Infrastructure/Facilities as Sanitation Management Tool**

The systems theory (Flood, 1990; 1995) identifies hard and soft systems. The hard systems can be likened to sanitation hardware, which is an important aspect of ESM. According to Ileasanmi (2006) as well as Kaminsky and Javernick-Will (2013), sanitation hardware management borders on the provision and maintenance of sanitation infrastructure such as toilet facilities, refuse dump site, drainage system, vehicles for transporting waste to the dump site, dust bins and other tools and equipment for sanitation management. The availability, adequacy, affordability, location and quality of these facilities, according to Kaminsky & Javernick-Will (2013: 2015), ESM practices, especially with regard to defecation and waste disposal practices.

Basically, access to sanitation is measured by the percentage of the population using improved sanitation facilities (McFarlane, 2008a; Mugaga, 2006; UNICEF, 2012; WHO, 2012). Improved sanitation, that is, toilet facilities, ensure hygienic separation of human excreta from human contact and include flush/pour flush (to piped sewer system, septic tank, pit latrine), ventilated improved pit (VIP) latrine, pit latrine with slab, and composting toilet (WHO/UNICEF 2012). On the contrary, unimproved sanitation facilities do not ensure hygienic separation of human excreta from human contact and include pit latrine without a slab or platform, bucket latrine, open defecation in fields, bushes, bodies of water or other open spaces. While WHO (2012) opines that the state of sanitation remains a powerful indicator of the state of human development, Water-Aid (2013) and McFarlane (2008b) see access to improved sanitation as an indicator of community development.

An important consideration in sanitation infrastructure management, according to Hobson (2000) and McConville (2006; 2008), relates to the determinants of access to sanitation facilities. In this connection, Sbrana (2009) analysed the determinants of sanitation access in Yemen using the country's Demographic and Health Survey (DHS) dataset for the 2003 and regression model. The outcome showed that, income had significant influence on the probability of having access to improved sanitation facilities. Similarly, the results of Abdu, Adewara and Oloni's (2013) study on determinants of toilet facilities in rural Nigeria showed that, gender, education, wealth index and residential locations were significant determinants of households' access to toilets.

In a cross-sectional study of the impact of geographical and socio-economic disparities on access to improved sanitation facilities in Indonesia using Indonesia Family Life Survey data and multivariate binary regression model, Praisetyoputra and Irianti (2013) concluded that both geographical and socio-economic disparities affect access to improved sanitation facilities in Indonesia. Similarly, Mahama (2013) found that the significant factors that influenced access to improved toilet facilities in low income areas in Accra were education, income, location and gender.

Furthermore, while Li, Gao, Miao and Chen (2014) found income and education as major determinants of improved sanitation coverage in rural China, Igea and Adetunji (2014) established that, although there were variations among various socio-economic factors in regard to household sanitation techniques, none of the factors was significant in influencing household sanitation in Ekiti State of Nigeria. Similarly, Rheingans, Anderson, Luyendijia and Cumming (2014) have alluded to asset indices and rural-urban differences having significant effects on sanitation access in Bangladesh, India, Malawi, Kenya and Tanzania.

Other important variables of sanitation infrastructural management are options of facilities available to users, the preference for the options and the use of the sanitation facilities (Spencer, 2012). According to Spencer, experiences in many developing countries across the globe have shown that, it is possible that a sanitation facility will be provided but may not be the preferred one and so the intended users may not use it but rather use the unapproved options. Abdul-Barik (2012) consolidates the assertion by stating that the preferences and use are also

influenced by perceptions, norms, beliefs and knowledge of the intended beneficiaries of the intervention.

In recognition of the potency of sanitation infrastructure as a tool for ESM, the Environmental Sanitation Policy (ESP) of Ghana (MLGRD, 1999: 2010) has outlined a number of services and underlined some of them as mandatory and, therefore, charges the MMDAs to see to their enforcement without any compromise. Key among these services is promotion of domestic waste collection and disposal, which requires the availability of dustbins in every house and promotion of access to domestic toilet, which implies that every house must have a toilet facility. Furthermore, according to Abdulai (2011) as well as Appiah-Boamah (2011), the policy requires every house to have a toilet facility and that in heavily used areas such as markets and lorry stations, there should be toilet facilities for the transient population or people in transit.

Additionally, global best practice in sanitation management indicate that in communities where door-to-door collection of waste is not appropriate, the local authority should designate communal storage sites where solid waste can be discharged into movable containers for collection (Hernandez-Sancho, Molinos-Senantea & Sala-Garrido, 2010; McConville, 2006). In this connection, Annepu and Themelis (2013) advise that, while the container should be readily available to those dumping waste, the collection and removal of waste from individual premises or communal storage sites are to be effected at frequencies sufficient to prevent undue accumulation and decomposition of waste.

A major determinant of use or patronage of communal waste container relates to the distance residents have to travel to access the communal container (Owusu-Sekyere, Bogah & Quansh 2015; Oteng-Ababio, 2010). Studies by Ali (2010) and Wilson (2007) have established that there is a maximum travel threshold within which households will voluntarily access the central containers and once this is exceeded, utilization tends to reduce considerably. These researchers have established that, the longest journey residents have to make to access a communal waste container should not exceed 200 meters and that anything beyond this serves as a deterrent to the households and so they look for alternative dumping sites, which are closer to their living place, whether approved or not.

Other sanitation management facilities, including drainage infrastructure such as drains and gutters as well as equipment and logistics such as vehicles, compactors, wheel barrows and shovels are also important for ESM. In McConville's (2010) opinion, the procurement, maintenance and proper use of these pieces of infrastructure are crucial in ensuring acceptable sanitation standards in the community. However, Achiro (2012), writing on constraints and prospects of law enforcement for improved sanitation in Uganda contended that, environmental sanitation education and infrastructure provision alone may not be enough to ensure the desired standard of sanitation so there is the need to complement them with regulation management, hence, the devotion of the next sub-section to the review of regulation as environmental sanitation management strategy.

## **Regulation as an Environmental Sanitation Management Strategy**

Regulation as a ESM tool or strategy refers to control of sanitation behaviour and practice usually by means of rules (Ackoff, 1981). According to Ackoff, this entails the imposition of restrictions by an authority on the execution of an action in relation to ESM. The National Environmental Sanitation Strategy and Action Plan (NESSAP) of Ghana as well as the ESP of Ghana has indicated that sanitation regulation management entails a lot of activities to be undertaken by stakeholders. These activities, according to MLGRD (2012), include the provision of laws and by-laws to regulate people's sanitation behaviour, an inspection system for checking compliance, sanctioning mechanisms for failure to comply and a system for conflict resolution

The principle of complementarity under the systems theory endorses the use of regulation as a complementary strategy or activity to others such as education and provision of infrastructure in sanitation management (Achiro, 2012). The major issue under regulation of sanitation behaviour or practices as far as ESM is concerned is the application of the law (Ekane, 2013; Hedberg, Pardo & Frontini, 2015). Crucial in achieving this, as learnt from universal best practices, is enactment and enforcement of sanitation laws.

While the effectiveness of sanitation laws is measured by people's compliance with it, compliance is also affected by perceptions, beliefs, social pressure or influences, which the sustainable livelihood theory terms as the social capital, as well as the workability and reasonability of the law (Chudger, 2010). Chudger has identified other important determinants of compliance with the law

to include the consequences of compliance or non-compliance, that is, rewards for compliance and punishment or sanctions for non-compliance, which the behavioural change theory captures under the principle of reinforcement. In Persson's (2010) view, although compliance is an indicator of effectiveness of the law, in another context, it can be regarded as a concept or variable which can also be measured. Concurring with Pissano, Ekane (2013) opines that compliance in this case is measured by the percentage of the population concerned that obey(s) the law.

As argued by Yardley (2010), awareness about sanitation laws is important because some people may go contrary to the law not because they are disobedient but because of ignorance, although ignorance about the law may not be accepted as an excuse for breaking it. In addition, Onda, LoBuglio and Bartram (2012) observe that the co-operation of the households, communities, institutions and the general public is considered necessary in ESM and so they advise these units to co-operate and collaborate with the law enforcement agencies. In this regard, Sharmila and Murthy (2013) opine that the willingness of the public to report sanitation offenders as well as the courts and other law enforcement agencies to deal fairly and promptly with sanitation offenders is of paramount importance.

In Ghana, the ESP of the country (MLGD 1999), enjoins every community to have a collective responsibility to establish community ESM norms in line with the national ESP. Residents are obliged to engage in neighbourhood cleansing on dates fixed by the District Assemblies. According to Acheampong (2010) the policy also requires all citizens to participate in observing national



environmental sanitation day once every year on a date to be fixed by the government. However, with the appalling sanitation situation in Ghana, this was revised by the government of President John Mahama to take place once every month (Suna, 2015). The essence of all these regulations is that compliance with them would ensure proper ESM for sustainable livelihood and development.

### **Environmental Sanitation and Livelihood Activities/Resources**

In Chambers and Conway's (1992) view, livelihood relates to means of living, or means of getting food, income and assets and other things for survival. A livelihood should be sustainable and it is so when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets without undermining the natural resource base (Scoones, 1998).

Farrington, Carney, Ashley and Turton (1999) on their part, define livelihood as a way of making a living and livelihood activities as economic ventures that people undertake in order to make a living. The authors contend that, in order to make a living, one needs to own or have access to the relevant assets or resources. Like Scoones (1998), Salafsky and Wollenberg (2000) also assert that, livelihood activities should be sustainable and they are so when and where it is possible for people to engage in those activities to maintain or even enhance their way of living on an on-going basis with the assets or resources available to them. However, the debate has centred on whether ESM practices affect coastal livelihood activities (Roe & Elliot, 2004) such as fishing, salt production and tourism and for that matter the lives of the local people. While the basis for this debate relates to the dependence of local people's livelihoods on

local natural, physical, financial capital or resources, Fisher (2005) and Tyler (2005) have intimated that, coastal rural and peri-urban people's livelihoods depend much on the local natural and physical environment and so environmental sustainability issues such as ESM are very important

The relevance of, and relationship between ESM and livelihood activities, particularly tourism, fishing and salt production, is seen in the implications for health, productivity, employment income and sustainability of their related activities/resources (Navarro, 1994; UNEP/WTO, 2005). With regard to tourism, Tizser (2010) observes that though tourists are interested in aesthetic appeal and recreation, they are also conscious about their health and, therefore, are concerned about the sanitary conditions of tourist sites. While the United Nations Environment Programme (UNEP) and the World Tourism Organization (WTO) encourage all countries or communities to promote tourism to help accelerate development in their respective countries or communities, they also advise that policies to promote tourism should take proper ESM into account (Aboagye, Frempong, & Eshun, 2013; Addo 2011; ).

According to Elliot et. al (2007), coastal resources, including the sea and lagoon contribute to livelihood empowerment through food security, employment creation and income generation. However, Lattemann and Hoepner (2008) have observed that overburdening the coastal resources through poor ESM practices could affect the sustainability of these resources and the livelihood empowerment they provide. This is because poor sanitation could contaminate the fish stocks and result in subsequent loss of food security. In Zanzibar, marine ecosystem

services account for 30 per cent of GDP, a substantial percentage of which is from coastal tourism (Lange & Jiddawi, 2009). Although tourism alone accounted for about 25 per cent of GDP in 2007 in Zanzibar, it was observed that improper ESM practices, specifically uncontrolled release of waste-water from Zanzibar towns into the coastal zone was a threat to tourism and fisheries sectors.

Writing on poor sanitation and its consequences, Sessey (2007) concluded that the effects of poor ESM included reduced fish production, lower patronage of tourist sites and revenue from fisheries and tourism. Contributing to the debate on ESM and tourism promotion, Simpson (2007) stressed the need to improve coastal tourism by improving coastal ESM. Aboagye, Frimpong and Eshun (2013) added their voice to the advice by making reference to the importance attached to tourism in Ghana by the Ghana Shared Growth and Development Agenda (GSGDA) and Medium Term Development Plan (MTDP) [2010-2013]. The agenda, which encourage(s) the development of the tourism industry for increased revenue generation and enhanced livelihoods, see(s) improvement in ESM as key in achieving its objectives and calls on all stakeholders to participate fully in ESM efforts for the promotion of tourism.

Studies on community-led total sanitation (CLTS) and household-centred sewage system (HCSW) in Malawi, Bangladesh, Natal and Brazil have demonstrated that ESM has implications for livelihoods. According to Ahmed (2003) the impacts of improved ESM on livelihoods at the household level include reduction in diseases, savings from buying medicine and visiting doctors, increase in labour hours due to reduction in sickness, increase in income and

improvement in school attendance. The impact of ESM on community level livelihood include better general health in the community, ecological sustainability and sustainability of livelihood resources such as water bodies - the sea, lagoon, lakes and rivers (Schertenleib & Morel, 2003)

Furthermore, Chambers and Conway (1992) have opined that there is the need to focus on people as the centre of concern, and in particular on peoples' assets and capabilities to undertake innovative sanitation activities to improve their lives. That is, it is important to highlight the role of the people in improving their livelihoods through ESM. This is the essence of the CLTS idea. According to Cavill, Cotton and Sohail (2001) the sanitation-livelihoods linkage implies that governments alone cannot provide the sanitation needs of the people and so self-initiatives from the people are necessary in the context of decentralization. Local governments, NGOs and CBOs are also needed for mobilisation, advocacy and facilitation (Agrawal, 2007; Robinson, 2008) for ESM. This ultimately leads to a two-way benefit where proper ESM helps to enhance livelihood, while enhanced livelihoods also help to improve ESM.

### **Summary of chapter**

In this chapter a review of related theoretical literature has been carried out by identifying, defining and explaining the key concepts and indicators for the study based on five underlying theories, namely systems, participation, behavioural and sustainable livelihood and common-pool resource management theories. All put together, the theories suggest that ESM should be holistic, drawing on the participation and complementary roles of relevant stakeholders to

influence sanitation attitudes, behaviour and practices for sustainable livelihood and development.

Related key concepts distilled from the review are sustainability, livelihood, stakeholders and ESM strategies, including infrastructure, public education and regulation. While infrastructure management indicators include availability, access, affordability, preference, adequacy and quality of the facilities, key issues regarding public education management include awareness, channels or media for sensitisation as well as targeting and messaging. In regard to regulation the main concepts and indicators identified are law enforcement, monitoring compliance and monitoring, sanctions, rewards and willingness of people to contribute to ESM. The stakeholders that have been identified through the theoretical literature review as having key roles to play in ESM include households, community-based organisations, non-governmental organisations, private sector organisation and the government structures, namely the central and local government structures.

The foregoing presupposes that ESM has some implications for sustainable development and that with the stakeholder participation and collaboration in ESM, proper environmental sanitation standards could be maintained for sustainable livelihood and development. However, the consolidation of these theoretical arguments and/or assertions needs to be supported and consolidated with empirical literature, hence the devotion of the next chapter to the review of related empirical literature.

## CHAPTER THREE

### EMPIRICAL LITERATURE REVIEW

#### Introduction

This chapter is devoted to review of related empirical literature. As noted by Hart (1998), empirical literature review deals with review of similar studies done by other researchers and identifies gaps in previous studies with the aim of filling them. According to Wanjohi (2012), this helps to avoid duplication of research and provides a context for the current research as well as basis for comparing findings and conclusions of the present study and other studies.

Against this backdrop, the review in this chapter takes into account the purpose of the study, the research approach or design, population and sampling, data collection instruments and methods, analytical procedures as well as the key findings and/or conclusions of each study. The chapter also presents a summary of the literature review in the form of lessons learnt from literature and discusses the conceptual framework that guided the study.

#### Review of Related Empirical Environmental Sanitation Management Studies

For his Doctor of Philosophy (PhD) degree, Navarro (1994) studied on improving sanitation in coastal communities with special reference to Puerto Princesa, Palawan Province, Philippines. The objective was to analyse sanitation conditions in the coastal communities to identify the important considerations for the provision of sanitation systems in the communities and determine feasible sanitation options. Two out of nine communities were chosen as case studies. These were the Barangay Matahimik and Barangay Pagkakaisa communities.

The Barangay Matahimik community was chosen because it had the largest population with the highest waste concentration, while Barangay Pagkakaisa, was selected because it was the most congested and had the worst living conditions among the nine communities. Based on a quota of five (5) per cent, 26 out of 297 households were sampled for interview in Barangay Matahimik, and 17 for Barangay Pagkakaisa, which had 297 households using structured questionnaire. Besides, local government officials and planners were also interviewed on the existing environmental sanitation conditions and plans to improve the sanitation condition for improved livelihoods and better living standards, using an in-depth interview guide. Additional data were collected through observations using a checklist. The study used more qualitative data than quantitative and data were analysed descriptively.

The study revealed that, human waste was directly disposed of into the lagoon, canals and sea for eventual dilution, or in the tidal mudflat to await the tide; although these water bodies were their resources for livelihoods in terms of fishing, salt production and recreation. Despite the organised systems for garbage collection by the local authorities, throwing garbage into the water bodies was still prevalent due mainly to inadequate sanitation infrastructure, low public education and weak regulation mechanisms. In Barangay Matahimik, only one of the respondents with private toilets had a septic tank while in Barangay Pagkakaisa, two did. The individual toilets of the rest were simply makeshift overhung toilets with human waste directly disposed into the bay. The study concluded that, critical to ESM in coastal communities is the need to educate the

community members about the implication of improper ESM for health and environment, and that it is only when they understand the implications and consequences of the unsanitary conditions for their livelihoods that they will be willing to change their poor ESM habits.

In a similar study to that of Navarro (1994), Kyangwa and Odongkara (2005) carried out a study on sanitation, fish handling and artisanal fish processing within the fishing communities of Lake Victoria, Uganda. The objective was to assess the influence of socio-cultural practices among fishing communities on the levels and use of sanitary facilities, fish handling facilities and artisanal fish processing techniques.

A total of 507 households were selected from the fishing communities using the random sampling technique. Other fishermen, fish traders and processors were purposively included. Additional information was obtained from the Fisheries Department, Fisheries Resource Institute and Fish Science and Technology Institute. Structured questionnaire was used to collect quantitative data, while indepth interviews and FGDs were used to gather qualitative data and these were supplemented with structured observation, using a checklist. Quantitative data were analysed using frequencies, percentages and pie charts, while the content analysis approach was used for the qualitative data.

The study found that most of the households in the fishing communities did not possess and use approved waste disposal and toilet facilities and most did not agree that the appalling sanitary conditions and fish handling practices had implications for fish. The study established that unknown to some of the residents,



their waste disposal and defecation practices had fish quality implications as seepage from these sources could contaminate the aquatic environment with fish spoilage bacteria. Additionally, while community leaders could not inspire the people to take collective action to improve sanitation and artisanal practices in the area, the local government officials were also reported to be only interested in collecting taxes but had little interest in ESM,

Pardeshi, Shirke and Jagtap (2008) studied the management of total sanitation campaign in the Yavatmal District of Maharashtra, India. The main objective of the study was to assess the strengths and weaknesses of the Total Sanitation Campaign (TSC) in the district. The mixed method approach was used to gather data for the study. House-to-house surveys were conducted in four treatment villages and four control villages. The treatment villages were selected by simple random sampling using the lottery method from the list of nine villages. The control villages were also randomly selected from communities with similar characteristics. In the treatment villages, 416 out of 490 households were selected while in the control villages 535 out of 620 households were sampled.

Data on waste disposal and defecation practices were collected from stakeholders such as members of the Total Sanitation Cell and key village informants using interview schedules and FGD guide with women groups. Transect walks were conducted for on-field observations and discussions held with the villagers at selected transect points. The transect points were individual household latrines, community latrines, school latrines, sullage and solid waste disposal facilities.

While analysis of the quantitative data was done by calculating proportions or percentages, the qualitative data were analyzed textually. The results showed that 84 percent of the treatment group had individual household latrines, while 16 per cent of the households were using community latrines and so the four communities were free of open-field defecation. In the control villages, only 18 per cent of the households had individual household latrines while 83 percent were practising open-field defecation.

The strengths of the campaign were innovations in education and, motivation through incentives, competitive spirit, active participation and partnerships, involvement of women and universal coverage. The main weaknesses of the programme were poor maintenance of facilities, weak monitoring and a temporary focus of the campaign approach. There was an opportunity to tap additional resources and learn from interactions and experiences of other stakeholders. A change in local leadership and loss of priority and interest needed to sustain the interventions were the possible threats to the programme. The study concluded that building sanitation facilitates and sensitising people about the importance of sanitation helped to change sanitation behaviour and the role of key stakeholders was key in these respects.

In a study related in terms of objective to that of Pardeshi, Shirke and Jagtap (2008), Carrard, Pedi, Willetts and Powell (2009) researched into stakeholder engagement in ESM with particular reference to non-government organization (NGO) engagements. The purpose was to examine the contribution

of stakeholders to the sanitation sector in developing countries and explore the potential of its enhancement. The study focused on 10 countries purposively selected across Southeast Asia and the Pacific, including Timor and Vietnam.

The research was primarily qualitative in nature with data collected from semi-structured interviews, an online questionnaire, workshops and a desktop review. Thirteen Australian-based NGOs and 73 in-country NGOs were consulted with an additional 50 NGOs responding to the online questionnaire. Interviews were also conducted with 14 Australia Aid (AusAID) staff. Questions focused on NGO roles, existing sanitation activities and approaches used as well as links to other actors such as government officials and CBOs.

A qualitative analysis of the study using the thematic and content approaches revealed that the sanitation sector was characterised by complex institutional settings in which multiple actors had a stake in providing and maintaining sanitation services. Government was found to be responsible for the creation and implementation of policies and regulatory systems and service provision, while private sector actors played an important role as direct service providers and financiers. At the local level, CBOs were found to be critical stakeholders as end users of sanitation interventions and were also active in the design, construction and maintenance of sanitation infrastructure or facilities.

The NGOs were found to have taken on functions as interface agents between national level agencies and local level service providers. In addition to playing intermediate level roles, NGOs in the sanitation sector also played a more

direct role in service provision and/or engaging directly with end users at the community level providing sanitation education and stimulating user access to sanitation service. The study concluded that NGOs could make a unique contribution to the sanitation sector when they were supported

Baabereyir (2009) undertook a study on urban environmental problems in Ghana. The purpose of the study, which used Accra and Sekondi-Takoradi as the study sites, was to examine the solid waste situation in Ghana. The study which was underlain by social and environmental justice theory used the mixed method research design. Data for the study were collected from residents of communities residing close to waste disposal facilities, municipal waste departments, public institutions such as Environmental Protection Agency (EPA), Town and Country Planning (T&CPD) and Metropolitan Assemblies. Other respondents were selected from private waste management companies and informal waste collectors, businesses operators as well as commercial vehicle drivers and hawkers.

In the absence of a sample frame for households in the selected communities and the fact that some residents were unwilling to participate in the survey, the study combined the willingness of householders to participate with a roughly even spatial selection of households in each community to administer 590 interviews, 450 in Accra and 140 in Sekondi/Takoradi. The residential areas were categorized into high, middle and low income areas guided by information from the Town and Country Planning Departments of the respective metropolitan assemblies. Other respondents such as officials from government departments

were purposively involved, while accidental sampling was applied to select respondents such as street hawkers and commercial vehicle drivers.

The instruments were designed to capture both qualitative and quantitative data on issues relating to waste disposal, available services for waste removal, payments for the service and respondents' perception of the sanitation situation in the cities. The quantitative data were analysed using descriptive statistics such as frequencies, percentages, mean, mode and median, while the qualitative data were analysed manually by summarising the views of the respondents under broad themes.

The study discovered that, resource scarcity including finance, logistics, personnel and planning data were fundamental problems militating against efforts to improve sanitation in the study areas. Additionally, the waste sector was found to be characterised by low salaries and poor conditions of service, which discouraged experts from taking employment in the sector. The study showed that poor public attitude resulting from inadequate public education and weak enforcement of laws was responsible for poor waste handling culture among the population. Above all, the study revealed that, the national and local government stakeholders had low level of commitment to waste management and this proved to be the root cause of the sanitation problem in the communities.

Kirunda (2009) examined the prospects and challenges of sanitation management in Kira Town Council in Uganda. Like Baabereyir (2009), Kirunda used a combination of quantitative and qualitative designs but Kirundi's study was dominated by the qualitative aspect. Through the lottery method, three wards

namely Kireka/Naalya, Kirinya and Kyaliwajala were selected from six wards in the Kira Town Council. The procedure for reaching the individual respondents to make up the sample for this study was based on convenience sampling since there was no reliable data base. Data were collected from those respondents that were willing and had some time to spare to answer the questions using interview guide for the households, indepth interviews for the key informants such as Town Council Officials and FGDs for the traders and market vendors.

As an improvement on Baabereyir's (2009) study, Kiruda (2009) collected data on sanitation issues regarding stakeholder participation and willingness to contribute to sanitation management. Like Baabereyir, descriptive statistics such as frequencies and percentages were used but in addition to these, cross tabulations were used to analyse the quantitative data. Baabereyir analysed the qualitative data manually under broad classification of themes against results from literature review. The results indicated that both the Town Council Officials and members of the public acknowledged the importance of legal instrument in the management of solid waste but the laws were not being enforced. Kirunda's study further corroborated Baabereyir's finding that inadequate education on ESM did not make a lot of people appreciate the fact that sanitation affected sustainable development.

There was almost a unanimous agreement among the respondents that it would be prudent to pay for waste collection in future. It also emerged from the Kirunda's study that, the level of public participation in sanitation management in Kira Town Council was low because the structures did not allow for a synergistic

relationship between the public and the Town Council authorities. The Town Council was pre-occupied with infrastructural projects leaving the sanitation management issue less attended to and with fewer resources for the venture. The study concluded that the future of sanitation management in the Town Council was bright but only so if the potentials of the people to participate was purposively tapped.

Guided by the behavioural and participation theories, Acheampong (2010), undertook a study similar to that of Kirunda (2009) on environmental sanitation management in Kumasi with the objective of examining the causes and effects of poor environmental sanitation in Kumasi. The study used the mixed method approach to collect both quantitative and qualitative data. Similar to Kirunda's (2009) study as well as that of Baabereyir's (2009), the units of observation for Acheampong's research were households from six suburbs in the metropolis, namely businesses at the Central Business District (CBD) of Kumasi, institutions such as the Waste Management Department, the Town and Country Planning Department, the Metro Environmental Health Unit, the Regional Environmental Health Directorate and five Private Waste Management Companies.

In contrast to the studies by Baabereyir (2009) and Kirunda (2009), Acheampong employed the stratified sampling technique to group the suburbs in each of the then ten sub-metros in Kumasi into three sectors namely, the high cost housing sector, the tenement sector and the indigenous sector based on housing characteristics. Using simple random sampling technique, two suburbs were selected from each of the housing sectors. The sample of 156 households was selected from the population (5827) using the formula  $N/1+N(\alpha)^2$  where  $n$ =sample size,

N=sample frame, which is the total number of houses (5827) and  $\alpha$  represented the margin of error which was 0.08 with confidence level of 92 percent.

An interview guide was used to obtain primary data from the respondents on access to toilet facilities, methods of waste disposal, knowledge and awareness about environmental sanitation regulations and assessment of prevailing environmental sanitation condition. Analyses of data were carried out using simple statistical tools, including frequencies, percentages bar charts and pie charts.

The study revealed that about 77 percent of the respondents in the tenement sector who were not accessing house-to-house waste collection services expressed the desire for this mode of waste collection. Additionally, 66.7 per cent suggested that, environmental sanitation offenders should be made to pay a heavy fine while 25 per cent suggested that, offenders should be made to do community service such as sweeping public places or dredging gutters for some time.

Furthermore, Acheampong found that the Environmental Health Department (EHD) of the Assembly lacked logistics such as vehicles to enable them to monitor ESM activities in the metropolis. It also lacked adequate data to help them to identify priority areas and to plan for such areas. For instance, developers got the permit to construct building, stores and offices without making adequate provision for sanitation facilities, which invariably put pressure on public sanitation facilities. The study concluded that, provision of sanitation facilities, sensitisation and law enforcement played crucial role in ensuring good environmental sanitation conditions.

With the main objective of examining the underlying factors responsible for the poor state of environmental sanitation in the Cape Coast Metropolis,



Addo (2010) examined the solid waste management practices in Cape Coast. Like most of the studies reviewed, the mixed method approach was employed to gather both quantitative and qualitative data for the study. Using population figures and classification of income and residential status by the Ghana Statistical Service, the 79 settlements in the metropolis at the time of the study were divided into low, middle and high income classes. The multi-stage sampling technique was applied to generate the sample for the study. In this regard, the Metropolis was divided into five zones as demarcated by Kendie, Gharthey and Akantapulsi (1997).

In order to keep within the demands of scientific enquiry, a normal distribution curve of the population was assumed with a 95 per cent confidence level and an error tolerance level of 0.05. The sample size was determined using the formula:  $N = \frac{z^2}{e^2} p(1-p)$ ; where: N= sample size, Z= standard score at 95 per cent confidence (1.96), e= proportion of sampling error of (0.05), p= estimated proportion of incidence of cases (44.6%) . The confidence level of 95 percent was an improvement over Acheampong (2010) who used a confidence level of 92 per cent. Using the formula, 380 respondents were supposed to be sampled but because of financial constraints 240 respondents were sampled.

Purposive sampling was employed to sample officials from institutions such as the Metropolitan Chief Executive and the Head of the Metropolitan Environmental Sanitation Unit, the Sanitary Superintendent of University of Cape Coast Sanitary Department, a worker of EPA, five Assembly Members and two Market Queens and the Regional Supervisor of Zoomlion Ghana Limited. The study used interview schedule for the households and interview guide for the key

informants which were supplemented with data from secondary sources provided by the institutions that were contacted for data.

Specific issues captured included availability of sanitation facilities such as dust bins, volume of garbage generated, storage of waste and methods of waste disposal and law enforcement. Others were willingness of residents to pay for sanitation services and the municipal assembly's capacity to manage environmental sanitation. Most of these were measured against income and educational levels of respondents.

The Statistical Product and Service Solutions (SPSS) software was used to generate descriptive statistics in the form of frequencies, percentages and cross-tabulations and supported by documentary analyses. Among the key findings of the study was that most residents (92.5%) were of the view that the waste management problem in the metropolis was due to inadequate attention being paid to logistical and financial considerations by the Metropolitan Assembly.

Like Baabereyir (2009) and Acheampong (2010), Addo discovered that the sanitation problems within the metropolis were caused mainly by lack of effective monitoring and law enforcement by the metropolitan assembly. In conclusion, Addo advocated privatisation of waste management in the metropolis as the best way of solving the environmental sanitation problems since this would allow the private contractors to bring in more logistics, expertise and commitment to manage the sanitation situation.

Further to Addo's (2010) study, Puopiel (2010) studied the solid waste management situation in Tamale Metropolitan Area (TAMA), Ghana with the aim

of examining the factors affecting effective ESM. The target population for the study, which used the mixed method approach were women aged 20 years and above. Women were targeted because culturally they are mostly in charge of sweeping and gathering of all sorts of domestic solid waste in homes and disposing of them. Data on women in the study area were obtained from the Ghana Statistical Service. Using the same formula as Addo (2010), with a margin of error (0.08) and population of 8059, one hundred and fifty-six (156) women were sampled for the study.

Firstly, the study area was zoned into three clusters namely, Central Sub-Metro, North Sub-Metro and South Sub-Metro. Secondly, purposive sampling was used to select 12 areas from the three sub-metros. The selected areas were further stratified into low, middle and high class residential areas in the metropolis and six selected from low class while three each were selected from the middle and high class respectively. Due to lack of census data for the female population of each listed area, the sample size of 156 was divided equally among the 12 selected areas. This gave a sub-sample size of 13 for each selected area..

Furthermore, systematic sampling technique was used to select houses in each selected area. Because most of the houses in the selected areas were not well planned with serial numbers, a serpentine movement was used to select every 13th house starting from the direction of the first point of contact with any house in the selected area. With this approach a respondent was interviewed in each relevant house until the required sample of 13 women was obtained in each area.

While the accidental sampling method was used to select household respondents, purposive sampling was used to select stakeholders such as Assemblymen, Tamale Metropolitan Budget Officer, Land Fill Manager of Waste Management Department of TAMA and the Assistant Regional Operations Supervisor of Zoomlion Company Limited. Face-to-face interviews were conducted with the key informants using an interview guide while FGD guide was used to gather data from the women on issues such as availability of disposal sites, skips and bins, mode and frequency of waste collection, methods of managing waste, and payment for collection services. Additionally, issues of availability of resources for waste management and challenges of managing waste were captured. The quantitative data were analysed using frequencies, percentages and charts while qualitative data were transcribed and analysed thematically.

The study revealed that, the commonest method of storing waste was the skip (37.8%) followed by dustbins (21.8%). In the high class residential areas, dustbins were commonly used by the households with the dustbin-to-household ratio of 1: 3 as compared to acceptable standard of 1:1 according to best practices. The study further revealed that waste management infrastructure such as waste bins, communal containers, obuafo tricycles were inadequate. For example, while 200 'oboafo' tricycles were needed by the WMD for the door-to-door collection, about 100 tricycles were available. The study concluded that for effective ESM, the stakeholders should ensure provision of adequate sanitation infrastructure.

Rodrigues (2012) did a study titled “reassessing stakeholders’ involvement in environmental sanitation planning and provision in East Africa” using Uganda and Kenya as the case. The aim was to explore and compare approaches to environmental sanitation that had stronger component of stakeholders’ involvement and analyze the strength and limitations of the modes

The three cases were household-centred environmental sanitation (HCES), product development and social marketing of urban waste management (PDSM) and strong services providers (SSP) for better services for all. The study which was purely qualitative, used purposive sampling to select key informants and institutions. The key informants were selected from Water and Sanitation Services Regulatory Board, Water Services Providers Association, Athi Water Services Board, National Environmental Management Authority, Ministry of Public Health and Sanitation as well as NGOs in sanitation management in Kenya and Uganda.

The data collection instruments captured issues relating to community participation of stakeholders in ESM .Face-to-face interviews were conducted but in cases where the key informants could not be reached personally, the interviews were conducted via Skype. Descriptive analyses using the thematic approach were carried out from the transcribed data on planning and implementation of projects, power relation and interactions among stakeholders as well as the strengths and weaknesses of these. It was revealed that for HCES projects, more emphasis was placed on the planning process rather than on the delivery of sanitation facilities and that while the Kenyan project was most concerned with

infrastructure delivery and capacity building, the Ugandan project focused more on awareness raising campaigns.

The study found that both the Kenyan and Uganda projects had stakeholders' inclusion and community participation as important features and the NGOs and the government officials interacted with local stakeholders to develop local structures such as project committees in order to bridge the community and external partners for proper sanitation management. With regard to weakness, it emerged that the public sector had minor participation in the three cases since the planning and urban development departments co-operated and collaborated only when they had to provide site or authorize construction work for sanitation infrastructure.

The HCES case, like the SSP counted on the creation of a committee by the civil society to represent community interests and both cases also demonstrated good ability to network with other stakeholders. Apart from the SSP case, which had as its strategy the strengthening of local service providers, the private sector in the two other projects continued to play a limited role. They had little involvement in planning activities and acted merely as providers.

In a research on the application of public-private partnerships (PPPs) in sanitation management in Delhi and Manila metropolises, Saei (2012) made insightful contributions to sanitation management. The study was carried out to explore the possibility of an alternative model for managing the sanitation system in these metropolises. This study was purely qualitative in design. It employed

purposive sampling to select experts who had either published extensively in the relevant field or were directly involved in sanitation management. The interviewees were the Executive Director of National Solid Waste Association of India, the Executive Director of National Solid Waste Association of Philippines and the Head of Department of (Eawag) Swiss Federal Institute of Aquatic Science and Technology, and the Department of Water and Sanitation in Developing Countries

The study used an interview guide to gather primary data. The issues captured in the instrument, bordered mainly on current sanitation management practices in the metropolises with regard to challenges and solutions. The interviews were conducted on phone and recorded with the consent of the interviewees. The data were transcribed and qualitatively analysed under emergent themes and the report written in prose format.

The study revealed that the inefficient delivery of sanitation services in the metropolises was caused by factors such as deficiency in institutional and technical capacities in the public sector, limited community participation, limited political will to enforce the sanitation laws and the fact that sanitation was not given a priority by the municipal authorities.

The study also identified lack of proper planning of sanitation programmes in the municipality and lack of cooperation and coordination among the stakeholder as key factors militating against ESM. In this regard, it was observed that different departments blamed each other for inadequacies and inefficiencies.

Additionally, the study revealed corruption among the sanitation actors, especially in the award of contracts at the metropolitan level. The study concluded that, until all key stakeholders were involved in the ESM process, a successful ESM system was not possible.

Another sanitation management research with an aim similar to that of Saei (2012), was undertaken by Spencer (2012). The purpose of the research was to examine the sanitation preference and practices in the peri-urban townships in Prampram in the Greater Accra Region, Ghana. In contrast to that of Saei, which was purely qualitative in design, Spencer adopted the quantitative approach.

Four communities in Prampram namely, Kley, Olowe, Lower West and Lower East were involved. Out of 651 households in the Lower East community, 100 households were sampled; While 50 out of 326 households in Lower West were sampled, in Olowe, 56 out of 366 households were sampled. Furthermore, 57 out of 368 households in Kley were sampled. Each area was oversampled by 20 per cent to compensate for households that would decline to be surveyed. The interview schedule covered issues on access to and satisfaction with sanitation options, familiarity with sanitation promotion messages, latrine and solid waste disposal habits.

Logistic regression and percentages were used for the analyses. The dependent variables of satisfaction with home defecation options, satisfaction with away defecation options, owning a personal sanitation facility and open defecation practice were modeled using logistic regression. Independent risk factors assessed included gender, community and education level. The majority



of the respondents (61.0%) reported that they defecated in the bush and beach followed by public toilet (11.1%). The most common reason that respondents gave for choosing open defecation was that it was the only option they had (40.05%).

Ownership of a personal sanitation facility was found to be associated with community and education level. Respondents that had completed junior secondary school were more than 2.5 times as likely to own a toilet or latrine, increasing to seven times as likely for senior secondary school graduates and twenty five times as likely for residents that completed university undergraduate studies or higher. The study concluded that, with high (61%) level of dissatisfaction with open defecation option and other unimproved sanitation facilities or locations, there was demand and a potential market for improved sanitation in Prampram and that personal sanitation ownership was associated with education level and the community.

Gandip (2013) did a study on environmental management and sustainable tourism development in the Annapurna Region, Nepal. The objective was to examine the impact of environmental management on the promotion of sustainable tourism for the welfare of the people in the area. The study used the qualitative research design. Specifically it used IDI guide to interview purposively selected tour operators and tour guides and tourists or visitors to the Annapurna Region, Data were analysed through the thematic approach.

The study found that garbage resulting from trekkers' littering of the environment was a bane of tourism promotion in the Annapurna Region. The study also found that educating people on proper disposal of waste would go a

way to reduce the environmental impact on tourism. To this end, health institutions, NGOs, schools and the local authorities were identified as crucial stakeholders in conducting environmental sanitation education to improve sanitation.

Staff of the tourism companies indicated that tourism was their main means of livelihood and so they abhorred the environment being littered with garbage, which tended to mar the unique features in terms of diverse physiographic and ecological attractions. This accorded with Dhital's (1995) statement that tourism was a major source of foreign exchange and employment for Nepalese, and so the tourism sector should be nurtured to continue to play an important role in the economy especially as a source of livelihood empowerment for the local communities. The study recommended that environmental volunteers in the schools, hospital and communities should be encouraged to look for ways of incorporating environmental awareness into their education in order to inculcate environmental citizenship in children so that they would grow to be friends of the environment

Figueroa (2015) did a study on stakeholder collaboration in sanitation management. The purpose of the study was to examine the role of collaboration among stakeholders in effective sanitation management. The study was underlain by the stakeholder theory as applied in business organisations or corporations. The study, which was qualitative in design, used the case study approach with CBOs and NGOs working in sanitation in Dar es Salaam, Tanzania as the case. All the target respondents were purposively sampled.

In-depth interview guide was used to interview traditional leaders, youth leaders and NGO leaders based in the community. FGDs and workshops involving CBOs and NGO members were also facilitated. The interviews centred on co-operation and collaboration among sanitation stakeholders for ESM. Observations were used to collect data through the researcher's participation in workshops with the stakeholders. With the consent of the participants, the interviews were recorded and the workshops video-taped. The recordings were transcribed and analysed qualitatively using the thematic approach.

This study revealed that, collaboration helped different actors such as local authorities, youth groups and local NGO to achieve better ESM results because it allowed for exchange of ideas and sharing of resources to undertake ESM activities. In addition, it was found that attributes to identify salience of stakeholders, namely power, legitimacy and urgency as well as stakeholder networking were relevant for environmental sanitation management. The study concluded that participation, co-operation, co-ordination and collaboration are key in sanitation stakeholder relations.

### **Lessons Learnt**

Guided by theoretical literature, all the empirical studies reviewed employed the positivist or/and interpretivist paradigm and, therefore used the quantitative, qualitative or mixed method design respectively. The lesson learnt from this is that although each of the paradigms and research designs has its advantages and disadvantages, the mixed method design provides a more holistic

approach to addressing most sanitation management issues since most of the issues do not lend themselves to one paradigm or design.

Furthermore, depending on the characteristics of the population in question, various sampling techniques were used by the various researchers in selecting the samples for the studies. While some used probability sampling methods such as simple random, systematic, stratified and multi-stage techniques to select the respondents, others employed non-probabilistic sampling techniques, including purposive and accidental sampling techniques. The lesson learnt from this is that, unique as each technique is, their application or applicability is dictated by the nature of the topic, the objective, the type of data and analyses that are envisaged to appropriately address the research questions.

With regard to data collection, the main methods employed by the various researchers were various types of interview, telephone conversation, focus group discussions, documentary review, observations, transect walk and participatory mapping. Depending on the type of data and the collection techniques envisaged by the researcher, instruments such as questionnaire, interview guide, FGD guide, observation guide, recorders, cameras and mobile phones were used to gather data from primary sources as appropriate. With the quantitative data, analytical tools such as percentages, frequencies, graphs, chi square and logistic regression were used.

In the case of qualitative data, analyses were done thematically but most of it did not demonstrate enough vividness with regard to projecting the sanitation realities on the ground. For example, there were very limited direct quotations for

emphasis or to support quantitative evidence in cases where the mixed method approach was used or where the research design was qualitative. Besides, there were limited photo illustrations to paint the actual sanitation picture in the study areas.

While the literature review revealed quite an extensive exploration of the ESM terrain, there were a number of theoretical, methodological and empirical gaps that needed to be filled. Theoretically, the studies demonstrated very limited complementarities among the concepts of infrastructure, education and regulation as strategies for sanitation management. Methodologically, the studies that used the mixed method were not clear in terms of the application of sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested or concurrent transformative design in data collection. Although in some cases one could infer or discern this from the presentation of the methodologies, in most cases it was not clear.

The empirical gaps bordered on the depth of coverage of issues. While it cannot be denied that a fairly wide range of issues were dealt with in the studies reviewed, issues of implications of ESM for livelihood assets, capacities, activities and their management were not adequately explored. Additionally, it was learnt that due to lack of knowledge, some fishermen did not see the problem of untreated faecal waste being directly thrown into the lagoon for the fish to ingest directly, however, measures to curb the phenomenon were not explored in depth.

Furthermore, quite a number of allusions have been made to availability of sanitation infrastructure such as toilet, yet their relationship with demographic variable such as education, income and residential location were cursorily explored. In addition, the role of stakeholders in ESM was theoretically hyped but empirically under-explored as the studies delved casually into the relevance of stakeholder participation but failed to intensively explore the level of interaction and collaboration among them for effective ESM for sustainable development.

### **Conceptual Framework of Environmental Sanitation Management and Sustainable Development**

Both theoretical and empirical literature indicate that the actions and/or inactions of the stakeholders in the processes to get the right policies, laws, institutions and infrastructure, are critical for maintaining acceptable sanitation standards for improved livelihoods and sustainable development. As already mentioned, theoretically, three different but complementary strategies are available to the stakeholders for holistic ESM as hinted by the systems theory. These include education management, infrastructural management and regulatory management.

In theory, provision of sanitary facilities through proper infrastructural management is expected to result in increased availability and access to preferred basic sanitation facilities, which in turn, is expected to promote acceptable ESM practices. Furthermore, education as a tool for behavioural change management is expected to result in increased knowledge or awareness of sanitation issues,

which in turn, is expected to induce acceptable sanitation attitude, behaviour and practices. Additionally, enactment and enforcement of sanitation laws through proper regulation management is expected to exact compliance with sanitation laws. The expected combined result of the application of these sanitation management strategies or tools with the participation of relevant sanitation actors, is improved environmental sanitation for sustainable livelihood and development as captured in the conceptual framework (See Figure 3).

The framework shows that ESM entails the participation of two main structures, government and private sector using policies, laws, institutions and culture to influence ESM through provision of infrastructure, education and regulation as theoretical literature has pointed out. It encapsulates the tenets of systems, participation, behavioural and livelihood theories that provide the theoretical foundation for the study.

The framework suggests that proper management of sanitation infrastructure would make the preferred sanitation facilities available, accessible and affordable to the users. The provision of the infrastructure is expected to be complemented by appropriate public sanitation education or sensitisation, dwelling on appropriate messages on sanitation to influence the knowledge, awareness and perception of sanitation issues. In order to make sanitation management holistic as dictated by the systems theory, infrastructure and education management need to be complemented with regulations in terms of adequate law enforcement, monitoring, sanctions and/or rewards to ensure conformity or compliance with acceptable or approved sanitation standards.

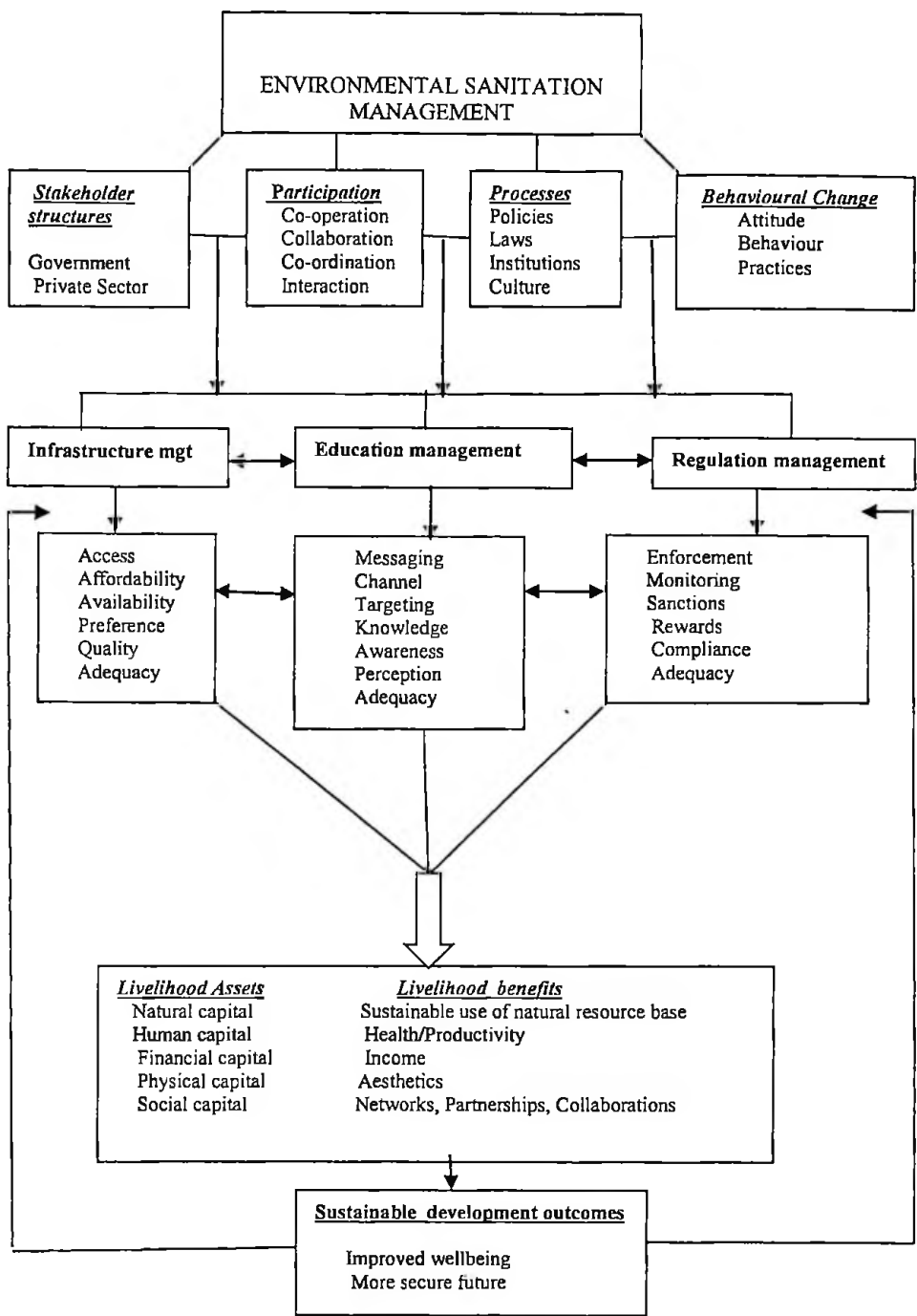


Figure 3: Conceptual framework of environmental sanitation management and sustainable development

Source: Author's construct, 2015 based on various sources (Bandura, 1977; DFID, 1999; Carney, 1999; Von Bertalanffy, 1968)



The framework expects that, with the full complement of the management strategies or activities, the desired sanitation attitude, behaviour and practices will be demonstrated by the individuals, households, communities and institutions. This is expected to influence human capital through improved health and productivity, financial capital through increased income and employment, physical capital through improved aesthetic appeal of the physical environment, and natural capital through sustainability of the natural resources such as the lagoon, the sea and their aquatic resources. It will also increase food and job security of tourism, fishing and salt production associated means of living as explained in the theoretical literature. All these will influence livelihood, which will ultimately lead to improved wellbeing of the people now and the future, hence sustainable development.

However, if with the active participation of all the relevant actors, the ESM strategies or tools are applied but the expected sanitation effect or impact is still either absent or minimal, then there is something wrong with either the application of the tools or there is a mismatch between the theories and practice of ESM as envisaged by this thesis. It implies that the feedback from the application of the ESM tools as dictated by the theories would tell whether the manner in which environmental sanitation is being managed by the stakeholders is questionable or the cause of the sanitation problem is attributable to a theoretical gap. With the summary of the literature review chapters provided in the form of framework, which encapsulates how the thesis is conceptualised based on the

theoretical and empirical underpinnings, the next chapter takes a look at the overview of methodological approach to the study.

## CHAPTER FOUR

### OVERVIEW OF THE STUDY AREA AND METHODOLOGICAL APPROACH TO THE STUDY

#### **Introduction**

This chapter presents the methodology employed to conduct the study. A study methodology is a set of methods, principles and rules regulating the conduct of a study, which is guided by a relevant philosophy (Easterby-Smith, Thorpe & Jackson, 2008). Glesne (2011) adds that a study methodology provides a logical and systematic guide for the conduct of a study in terms of what is to be done and how to do it.

Against this backdrop, the chapter starts with the study area, followed by the philosophical underpinning of the methodological approach to the study. The presentation continues by discussing the research and study designs, the population and sample for the study as well as issues relating to the data, with regard to their types and sources, instruments, procedure for collection and ethical propriety. The chapter ends with analysis of data for the study and a summary of the chapter.

#### **The Study Area**

The study was conducted in the catchment area of the Benya Lagoon. The area, which is sited mainly on the flood plains of the Benya Lagoon (Figure 3), is in the Komenda-Edina-Eguafo-Abrem (KEEA) Municipality in the Central Region of Ghana. The study area is located about 12 kilometres west of Cape Coast, the capital of the Central Region of Ghana.

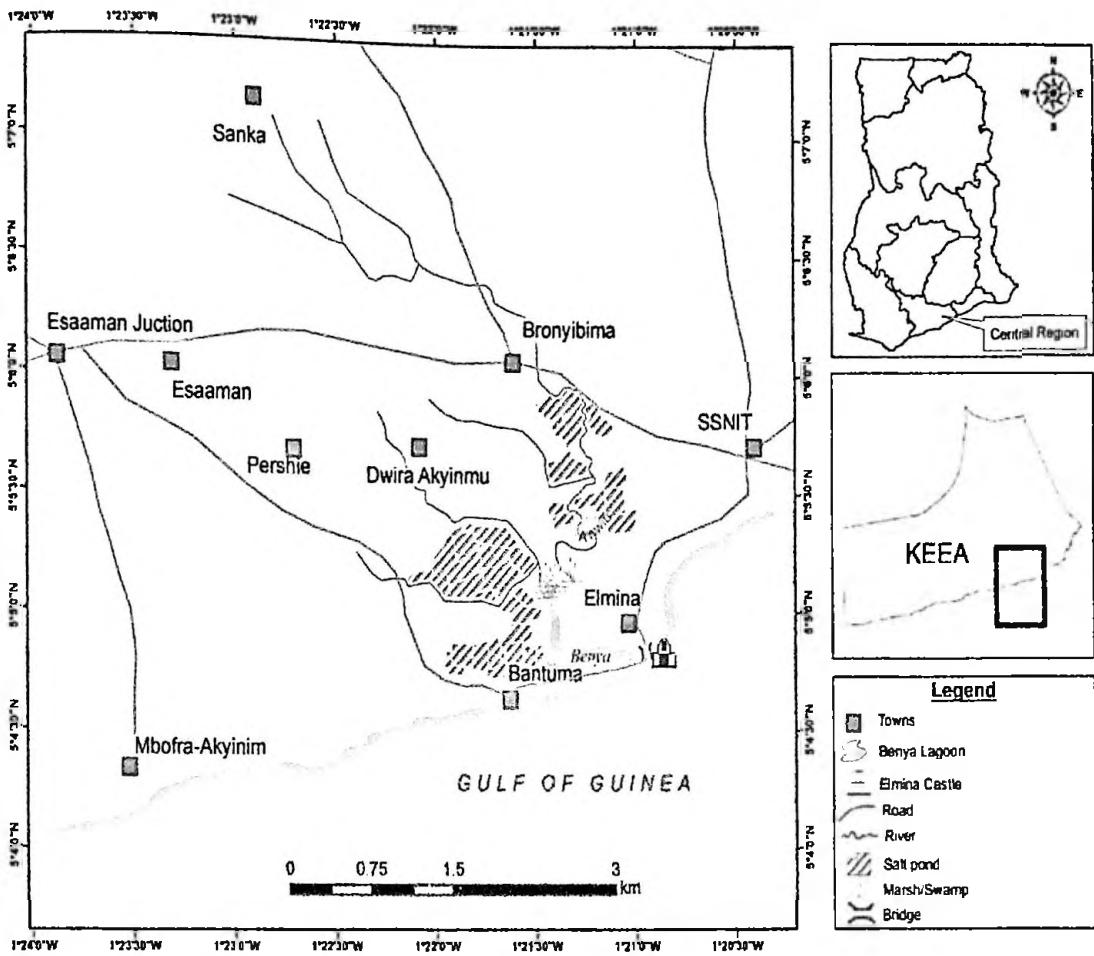


Figure 4: Map of the catchment area of the Benya Lagoon

Source: Cartography Unit of the Department of Geography and Regional Planning, University of Cape Coast, 2015

The communities that were involved in the study were Elmina, Bronyibema, Pershie, Essaman, Dwira Akyinim, Mbofra Akyinim, Bantuma, and Sanka. The area has a population of 38,563 according to the 2010 Population and Housing Census by the Ghana Statistical Service. About 48 per cent of the population are males while 52 per cent are females.

In terms of ethnicity, the 2010 census figures indicate that the largest proportion of the population in the area are Akans (93.4%) who are the indigenous people followed by Ewe (3.9%) while the rest consists of other ethnic groups. The catchment area of Benya Lagoon has a wide range of tourist attractions, which play an important role in the socio-economic development of the area in particular and Ghana as a whole (Mensah, 2003).

The most important tourist attractions are St. George Castle, Fort St. Jago, the Java Museum as well as the beaches and the Benya Lagoon. Both the Castle and Fort are listed as UNESCO world heritage sites. The St. George Castle in the area bears testimony to the infamous Trans-Atlantic slave trade and, therefore, features prominently in the itinerary of many international tourists who visit Ghana. Other sites of historic and tourist significance in the study area are the “asafo” posts, traditional shrines and remnants from the Dutch colonial period such as the Dutch Cemetery.

The area has two wet seasons, major and minor. The major rainy season occurs from May to July with the heaviest rainfall being experienced in June. The minor rainy season occurs in October. The rest of the period within the year is normally dry. The maximum, annual rainfall in the area ranges between 750 and 1,000mm. The area experiences a mean annual temperature of about 29°C. The predominant economic activities in the area include fishing, trading, salt production, a growing tourism and hospitality industry with over 75 per cent of the working population directly engaged in these activities (Arthur & Mensah, 2006). Crop and livestock farming are also carried out in the area but on a

relatively limited scale. As regards transportation, though the Accra to Sekondi/Takoradi road, which passes through the area, is the only first class road in the area, there are other second and third class roads which are in fairly motorable conditions.

The area also has a rich cultural heritage. It has one of the most popular annual festivals in Ghana, which attract people, including tourists from both far and near. The festival, known as the Edina Bakatue, which traditionally means fish hunting, is celebrated on the first Tuesday of July every year. Though all over the world, Christmas is celebrated on 25<sup>th</sup> December, the study area has a unique traditional Christmas, which is celebrated on 1<sup>st</sup> January every year. It must be emphasised that the above historical, geographical, economic and cultural profiles are worth highlighting because they have a bearing on sanitation, livelihood and development of the study area, and by extension the country as a whole.

### **Philosophical Underpinning of the Methodological Approach to the Study**

According to Datta (1994), two main philosophies, namely positivism and interpretivism underpin research methods. Positivism asserts that an objective reality is out there to be found, and epistemologically, this can be done with knowable degree of certainty using objectively verifiable scientific methods (Long, White, Friedman & Brazeal, 2000). Constructionism/interpretivism, on the other hand, according to Long, et al., (2000) has a relativist ontology implying that, everyone has his/her own reality. Epistemologically, the achievement of objectivity is rejected, and emphasis is placed on individual understanding of particular viewpoints. The positivist paradigm underlies quantitative methods,

while the constructivist paradigm is more related to qualitative methods (Shaughnessy, Zechmeister & Zechmeister 2008).

While some researchers are in favour of the positivist philosophy, others identify themselves with the interpretivist philosophy. Furthermore, while some argue that, the two major philosophical paradigms are incompatible, others are convinced that they are. Datta (1994) for instance, counters the incompatibility thesis. According to Datta, the philosophy of positivism believes in objective social reality, deductive logic and quantitative measurement, while the interpretive and the constructivist believe in multiple reality, subjectivity, qualitative measurement and inductive logic. On the other hand, pragmatism as a philosophy endorses practicability as the best approach to addressing a challenge and, therefore, combines the features and tenets of the two philosophies to ensure a holistic solution to a problem since going strictly by one of them may not comprehensively address the challenge (Alise & Teddlie, 2010; Smith & Davis, 2012).

Some authors, including Mason (2006) advocate pragmatic worldviews or philosophies instead of a one-sided ones. According to Mason (2006) as well as Shaughnessy, Zechmeister and Zechmeister (2008), pragmatism as a philosophical paradigm, stresses pluralistic approaches to knowing. This worldview is interested in approaches that work and rejects a forced choice between positivism and interpretivism. Thus, pragmatism presupposes that quantitative and qualitative methods are compatible (Azorín & Cameron, 2010)

and can be mixed in a study. According to Azorín and Cameron, pragmatism asserts that, truth is what works at any given time and is independent of the mind.

In the quest for proper sanitation management system, it is important that in line with the system thinking theory, which emphasises interaction among all key actors, a pragmatic paradigm of sanitation management, which is grounded in a practicability should be adopted (Kpolovie, 2010). It is important because, according to Tukahirwa (2011), ESM does not entail only fixing of tangible sanitation facilities but also the management of people's attitude and behaviour, hence the need for pragmatist approach. The thesis, therefore, was anchored on the philosophy of pragmatism, which allows for a hybrid of philosophical worldviews (Creswell, 2010), a hybrid theoretical framework, a hybrid conceptual framework and a hybrid research design to address challenges associated with managing sanitation for sustainable livelihood and development.

### **Research Design**

Following the respective tenets, arguments and orientations of the positivism, interpretivism and pragmatism as philosophies, there is no qualms about the assertion that a research may adopt quantitative, qualitative or mixed method design. Mason (2006) has noted that in quantitative research, data are captured in numerical form and analysed quantitatively. The philosophical foundation of quantitative design is grounded in the positivist epistemology, which places emphasis on quantification, objectivity and deductive logic (Easterby-Smith, Thorpe, & Jackson, 2008; Tuli, 2010). According to these authors, positivists believe that the social world is made up of facts which can be



studied like the natural world and, therefore, they push for the study of social behaviour using the logic and methods of the natural science.

One characteristic of quantitative research design, according to Wilson (2010) is that, it usually requires a relatively large sample size and a random selection of study respondents for meaningful analysis and applicability of generalization of the findings to the entire population. Another characteristic, according to Creswell (2012), is the requirement that the sample must reflect the attributes of the target population, which implies that in quantitative studies, representativeness is always crucial hence the use of strict probability sampling procedure in selecting the sample for the study.

Furthermore, in the views of Kpolovie (2010) and Tukahirwa (2011), the principal assumption under quantitative research design is that data is/are statistically measurable. By this, the authors mean the design is applicable when the data can be quantified and so by extension, quantitative research design is applicable to studies that lend themselves to quantitative analysis. Quantitative research has the advantage of providing objective results as compared to qualitative design, which can be value-laden (Ololube & Kpolovie, 2012: Wilson 2010).

Good though the quantitative design may be for research, the approach is not without challenges. One challenge of quantitative research design is that the researcher normally has to study a large sample to obtain reliable results (Easterby-Smith, Thorpe & Jackson, 2008: Yauch, 2003: Yin 2003). Another criticism that is levelled against quantitative study design is that social reality

cannot be defined objectively (Tuli , 2010) as advocates of this approach purport. Glesne (2011) adds that the overemphasis placed on quantitative measurement by positivists is unjustifiable for it cannot capture the real meaning of social behaviour as can be done with qualitative measurements. Glesne (2011), therefore, endorses a qualitative approach to research, which normally offers vivid explanations to issues. With qualitative research design, emphasis is placed on meanings, concepts, definitions as well as narratives, descriptions and explanations. Mason (2006) maintains that qualitative research design is underlain by the philosophy of constructivism or interpretivism, which believes in multiple realities and inductive logic.

The primary debate about quantitative and qualitative methods focuses on whether there is a connection between method-type and research paradigm that makes the different approaches incompatible. Firestone (1987) contends that quantitative methods are based on the assumptions of the positivist paradigm which holds that behaviour can be explained through objective facts and, therefore, quantitative design emphasises elimination of bias. Qualitative methods, on the other hand, are based on the assumptions of the interpretivist phenomenological paradigm that, there are multiple realities which are socially defined. Design in terms of instrumentation, data collection and analyses entail vivid description showing the researcher's immersion in the setting and giving the reader enough detail to "make sense" out of the situation. Although they appear or seem rhetorically different, the two research design are compatible and their results can be complementary (Driscoll, Appiah-Yeboah, Salib, . &

Douglas, 2007). However, in Pratt's (2008) view, qualitative research is more flexible in terms of sampling procedure and does not necessarily require a large sample size as compared to the quantitative approach.

In the view of Jick (1979), the advantage of qualitative research is that, it gives more detailed verbal or textual descriptions than the quantitative design. Furthermore, respondents are not restricted to a rigid pre-determined set of responses (Creswell, 2010: Miller & Brewer, 2003). However, qualitative research is criticised as being value-laden and subjective since the results are often based on the researcher's interpretations (Wolf, 2010: Kpolovie, 2011). Moreover, qualitative research can normally be subjected to inductive logic but hardly to deductive logic (Townsend & Angel, 2011).

In Campbell, Cook and Reichardt's (1979) view, the quantitative-qualitative divide may have been exaggerated and, therefore, they advocate methodological pluralism for social research. Reichardt and Rallis (1994) also endorse the use of mixed methods design, which combines features of both qualitative and quantitative approaches for achieving reliable research results. The philosophical underpinnings of this hybrid design are rooted in pragmatism, which is interested in the best practices and most practicable and comprehensive way to answer a research question and, therefore, combines the two main philosophical ideologies of positivism and interpretivism

The hybrid rationale behind the mixed method approach is anchored on the belief that going strictly by the tenets of either the qualitative or quantitative approach alone may not comprehensively address the issue (Howe, 1998: Teddlie

& Tashakkori, 2009). Mixed method approach according to Tukahirwa (2011), is applicable when either the quantitative or qualitative approach alone cannot fully address the research problem or question. That is, it is useful when integration of quantitative and qualitative techniques is necessary to provide a better understanding and analysis of the problem than either of the two alone.

Another advantage of using the mixed methods research design is the possibility of triangulation, which is the use of more than one method to examine the same phenomenon (Creswell, 2012; Kpolovie, 2011; Tashakkori & Teddie, 1998). Creswell holds the view that triangulation allows one to examine and analyse a phenomenon more accurately by approaching it from different vantage points using different techniques. On the other hand, Binaj and Suli (2013) view mixed methods research as particularly useful when one wants to validate or corroborate the results obtained from other methods or when one needs to use one method to inform another.

Maxwell (2012) has maintained that, quantitative research is weak in understanding the context in which people behave but qualitative research makes up for such weakness. Maxwell also sees qualitative research as deficient because of the potential for biased interpretations by the researcher and the difficulty in generalising findings to a large group but quantitative research has the strength to withstand these weaknesses. Thus, the mixed methods approach provides a more comprehensive understanding of the research problem than either quantitative or qualitative approach alone (Creswell, 2013; Kpolovie, 2011). However, in spite of its robustness, the mixed method approach is not immune to weaknesses,

prominent among which is the complexity in its design. Related to the issue of complexity in design is the challenge of ensuring that the two data collection methods complement but do not duplicate each other.

Creswell (2009: 2003) has identified six types of mixed methods design namely, sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested and concurrent transformative designs. According to Creswell, the sequential explanatory design involves the collection and analysis of quantitative data, followed by the collection and analysis of qualitative data. Priority is given to the quantitative data, and the findings are integrated during the interpretation or analysis phase of the study. Sequential exploratory design is characterized by an initial phase of qualitative data collection and analysis, followed by a phase of quantitative data collection and analysis (Driscoll, Appiah-Yeboah, Salib & Rupert, 2007; Smith & Davis, 2012).

According to Creswell (2010), the sequential transformative design is characterised by collection and analysis of either quantitative or qualitative data first, followed by the collection and analysis of the other and the results integrated at the interpretation stage. With concurrent triangulation design, Creswell (2003; 2011) states that only one data collection phase is used and quantitative and qualitative data collection and analysis are done separately, yet concurrently. The findings are integrated during the interpretation phase of the study and equal priority is usually given to both types of research.

In concurrent nested design, only one data collection phase is implemented, during which a predominant method, be it quantitative or qualitative, nests or embeds the other. (Miller & Brewer, 2003). This nesting may mean that the embedded method addresses a different question from the dominant method or seeks information from different levels. The data collected from the two methods are mixed during the analysis phase of the research (Binaj & Suli, 2013). Concurrent transformative design is characterised by the use of a theoretical perspective reflected in research questions of the study to guide methodological choices (Creswell, 2003; 2013).

This study used the mixed method design, combining aspects of both the concurrent nested and triangulation. That is, there was one data collection phase during which both qualitative and quantitative data were collected but the qualitative component dominated in terms of volume of data collected. The objectives of this study justified the use of mixed methods. The objectives and the philosophy dictated that both qualitative and quantitative data were collected and analysed in order to ensure a comprehensive address of the sanitation challenges and their implications for sustainable development. For example, as regards access to sanitation facilities, quantitative data were required, while attitudinal and perceptual issues bordering on sanitation management practices as well as stakeholder role in sanitation management, largely required qualitative data, hence the adoption of mixed methods design. The use of the mixed methods approach was also occasioned by the rationale to ensure that the weaknesses of

qualitative design were compensated for by the strengths of quantitative design and vice versa

### **Study Design**

A study design can be considered in several ways, one of which is to look at it from the time dimension point of view, particularly in terms of the period of data collection. In this case, two scenarios are distinguished, namely longitudinal and cross-sectional study designs. This study used the cross-sectional study design. Unlike longitudinal studies, which involve data collection at multiple points in time, cross sectional studies refer to one-shot studies in which data are gathered once during a period of time (Reichard & Rallis, 1994). The main feature of cross-sectional studies, according to Leedy and Ormrod (2010) is that, they are designed to look at how things are now without any sense of either there is a history or trend at work. According to these authors, a cross-sectional study design is applicable when the purpose of the study is descriptive since the basic aim is to describe a population or a subgroup within the population with respect to outcomes of interest at a given point in time.

The choice of this study design was guided by the objectives and research questions of the study as well as the lessons learnt from literature review. That is, the cross sectional approach was relevant because the purpose of the study was to explore, examine and describe the sanitation realities on the ground at the time of data collection and not to delve into the history of sanitation in the study area. Although cross-sectional studies are limited by the fact that they are undertaken at one time point and so give no indication of the trends of events over time, they are

credited with the advantage of describing and/or estimating the prevalence of outcomes of interest (Creswell 2013) during a specific period

### **Study Population**

Styron and De Vos (1998) define population as a total set from which the units of a study are chosen. The study used the multi-stakeholder approach targeting different categories of respondents from different population groups. It targeted 1,474 households comprising 1,209 from the low class residential area, 68 in the second class residential area and 197 in the high class residential area in the study communities for the survey component of data collection.

Apart from the households, the study also targeted individuals, groups and institutions. The individuals were an expert each in salt production, fishing and tourism. Other individuals were community-based opinion leaders, including assemblymen, youth leaders, religious leaders, traditional authorities such as chiefs, queen mothers and elders of the communities as well as key staff of tourism and hospitality firms, the chief fisherman and executives of Salt Producers Association. As far as institutions were concerned, sanitation-related key staff of MLGD, EPA, KEEAMA, NGOs and private sanitation companies operating in the study and such as the Zoomlion Company were targeted. The groups were market women, fishermen, fish processors, salt producers as well as canoe and boat builders.

### **Sample and Sampling Procedure**

According to Sarantakos (2005) a sample consists of carefully selected subset of the units that make up the population, while sampling refers to the



process and procedure for arriving at a sample. The size of the sample can be determined in several ways, depending on the research design (Larsen, Osnes Eidsaunet & Sandvik, 1985; Teddlie & Tashakkori, 2006). In qualitative studies, the size of the population is not always clear and so sample size determination is often a subjective judgement by the researcher. Since strict representativeness is not often required in qualitative studies because inferential analyses are not often required, the sample size is often small and requires less rigorous methods of determining it (Kirby, Gebesk, & Keech, 2002). However, Kirby and Keech maintain that in quantitative studies, the size of the population is usually known and representativeness is always required and so appropriate sample size can be determined from the known population allowing for a margin of error with some level of confidence.

One approach to the determination of sample size is the census, where the entire population is involved in the study as respondents. While this approach has the disadvantage of being expensive where the population is large, it has the advantage of avoiding sampling error and providing information on the entire population (Mioulis & Michener, 1976). Another way of determining sample size is to use the same sample size of similar studies conducted by other researchers (Cochran, 1963). In this case, a review of the literature on similar studies can provide guidance about typical sample sizes that are used. The inherent risk is the possibility of repeating errors that were made in determining the sample size for another study (Larsen, Osnes, Eidsaunet & Sandvik, 1985; Michie, Stralen & West, 2011)

A third approach to sample size determination is to rely on published tables (Krejcie & Morgan,1970), which provide the sample size for a given set of criteria. This saves time but might lose sight of other considerations. The fourth approach is calculation of the sample size by using a credible formula (Israel, 1992; Sudman, 1976). This requires precision level or sampling error and a confidence interval. The sampling error is the range in which the true value of the population is estimated to be, which is often expressed in percentage terms. The confidence or risk level is based on rationale behind the Central Limit Theorem (Israel 1992; Yamane, 1967). The Central Limit Theorem presupposes that when a population is repeatedly sampled, the average value of the attribute obtained by those samples is equal to the true population value. Furthermore, the values obtained by these samples are distributed normally about the true value. This thesis determined the sample size for the households by the calculation approach using the Israel's (1992) formula.

In consonance with the adopted mixed design, different methods were used for selecting the samples for the qualitative and quantitative data. For the quantitative data, the sample was drawn from households in the communities in the catchment area of the Lagoon, using the multi-stage sampling technique. In the first place, the profile of communities in the study area was obtained from the KEEMA, which showed that the communities had been classified into residential areas namely, low/third, middle/second and high/first class residential areas.

. The low or third class residential areas were the main Elmina Township (Elmina Old Town), Bantuma, Dwira Akyinim, Bronyibema Old Town, Essaman,

Mbofra Akyinim, Pershie and Sanka. There was only one middle or second class residential area, which was Bronyibema Extension or Estate. There seven first or high class residential areas were all in Elmina New Stie. They were Abinaserm, Carl Plotner (CP) Area, Social Security and National Insurance Trust (SSNIT) residential area, Zongo Extension, Marine, Nyiaye Junction, Police Headquarters and Elmina Estate. In order to match the number of middle class settlements, which was only one, one of the high or first class residential areas was selected. In this case the SNNIT Areas was randomly selected using the lottery method.

A separate sample was determined from each residential category using the same formula, with same confidence interval or margin of error so that adequate sample could be gotten from each residential area. Sample for the low residential area was taken from households that were estimated to be at most 200 metres away from the Benya Lagoon through a rough count of the houses that contained these households. The rationale for this is anchored on both theoretical and empirical foundations.

The theory of rational behaviour (Bamoul, 1956: Simon, 1972) indicates that individuals or organisations behave within the limits imposed by conditions and constraints. This implies that, household proximity to the lagoon increases the likelihood of defecating and/or disposing of waste into the Lagoon. Additionally, Wilson (2007) as well as Owusu-Sekyere, Bogah and Quansah (2015) have established that, there is a maximum travel threshold within which households will voluntarily access the central waste collection containers and once this is exceeded, utilization tends to reduce considerably. Wilson (2007 and

Owusu-Sekyere et.al (2015) have established that, the longest distance residents have to travel to access a waste container should not exceed 200 metres because beyond that threshold, households will be discouraged from accessing the facility. They will rather look for alternative dumping sites, which are close to their houses of residence, whether approved or not. This is also in line with Baabereyir's (2009) doctoral study on "urban environmental problems in Ghana" for which residents living in close proximity to the waste disposal facilities in Accra and Sekondi-Takoradi were sampled as respondents

It must be emphasised, however, that all efforts to obtain information on the number of houses or households in these residential areas proved futile and so the houses were counted by the researcher. A rough count of the houses in the low and middle class residential areas showed that there were 1209 and 68 houses in two residential areas respectively, while a count of the high or first class residential area indicated that there were 197 houses in this category of residential area. Thus, the total number of houses from which the households were selected was 1474. The sample size was then determined using the following formula as provided by Israel (1992).

$$n = \frac{N}{1+N(\alpha)^2}$$

Where;

n is the sample size

N is the total number of houses.

$\alpha$  is the margin of error (0.05)

Substituting the number of houses (1474) in the defined residential areas for the low (1209), middle (68) and high (197) class residential areas in the formula separately with an error tolerance level of 0.05 and a confidence level of 95 per cent, 301 households, 58 households and 122 household were sampled from the low, middle and high class residential areas respectively from as many houses. Lumping the three together for sampling would have resulted in the middle and high class residential areas being under-represented. Furthermore, the proportion-to-size approach was used to distribute the sample for the low class residential areas among the low class communities. The above calculations and considerations resulted in a total sample of 491 households (i.e a household from each selected house) for the whole study ( See Table 2).

Systematic and random sampling procedures were used to select the houses and households from the communities. This was done by first dividing the total number of houses in each community by its corresponding sample and then selecting the houses from the community concerned based on the quotient resulting from this arithmetic calculation. Since the third/low class residential communities were not well planned with streets and most houses were not serially numbered, a serpentine movement was used to select the houses starting from the direction of the first point of contact with any house in each community (Puopiel, 2010).

For the second/middle and first/high class residential areas, the communities were planned and the houses were numbered and so the systematic sampling method was used to select the houses in these communities. For

instance, in the first/high class residential community, the houses numbered one and two, four and five, seven and eight, ten and eleven in that order were selected until 122 houses out of 197 were obtained as the sample for this residential area. In the second class residential community, a similar procedure based on the quotient gotten for this community as described in the previous paragraph was used for the selection of the houses.

**Table 2: Sample Distribution of the Study Communities**

Residential Class	Community	Number of houses	Sample of houses (Household per house)
Low Class	Elmina Old Town	429	107
	Bantuma	123	31
	Pershie	95	24
	Bronyibema Old Town	103	26
	Essaman	168	42
	Dwira Akyinim	101	25
	Mbofra Akyinim	97	24
	Sanka	93	23
(Sub-total)		1209	301
Middle Class	Bronyibema Extension	68	58
High Class	SSNIT	197	132
(Total)		1,474	491

Source: Author's compilation, Mensah (2015)

In cases where there were more than one household in a house, the simple random sampling – lottery method – was used to select a household. In each household, the head was the one who was interviewed. Purposive sampling and

snowballing were used to reach the non household respondents such as the salt producers, fish processors, traders, key informants from the KEEAMA, EPA, MLGRD, Zoomlion, community-based opinion leaders such as the assemblymen, traditional authorities, religious leaders and youth group leaders.

### **Types of Data, Sources and Methods for Collection**

Two main types of data – qualitative and quantitative – were collected. These were collected from two main sources, namely primary and secondary sources. The primary data were obtained from fieldwork, while the secondary data were sourced from documents. The types and sources of data as well as the methods and instruments used in collecting them, are provided in Table 3.

. As can be seen from Table 3, field data were gathered from households, individuals, groups and institutions using interviews, focus group discussions. It must be noted that the figures in parenthesis in the Table are the actual numbers that were involved as respondents. For example, while 479 household respondents were interview, 17 traditional authorities were interviewed. Additionally, documents, including the Environmental Sanitation Policy of Ghana as well as the National Environmental Sanitation Strategic Action Plan were obtained from the Environmental Sanitation Division of the Ministry of Local Government and Rural Development, Accra, for review. Furthermore, the Water and Sanitation Action Plan of the KEEAMA and Elmina Strategy 2002-2015 were obtained from the Community Water and Sanitation (CWS) Department of the Komenda-Edina-Eguafo-Abrem (KEEA) Municipal Assembly for review.

Table 3: *Sources of Data, Collection Method and Instruments for Collection*

Source of data	Method	Instrument
Households (479 )	Household Interview	Interview schedule
Traditional authorities (17) Experts in fisheries (1), Expert in salt production (1), Expert in tourism management (1)	Indepth Interview Indepth interview	IDI Guide IDI Guide
Key staff of tourism and hospitality firms (2) Associations of fishermen (1) Association of Salt Producers (1) Youth leaders (3)	Indepth interview	IDI Guide
Zoomlion Company Staff (3) Fish processors/fishmongers (21),	Indepth Interview	IDI
Canoe and boat builders(6), Salt producers (16), Traders/market women (16), Fishermen (12)	FGD	FGD Guide
Assembly members (3), Religious leaders (9) KEEMA (5), EPA (1), MLGRD (1)	Indepth interview	IDI Guide
Accidentally sampled respondents e.g. Open defecators (4)	Indepth interview	IDI Guide
Documents (various)	Desk Review	Checklist
Physical sanitation infrastructure /scenes (various)	Observation	Camera and Checklist

Source: Author's compilation, Mensah (2015)



## **Data Collection Instruments**

Three main types of instrument were designed for the primary data collection. The instruments were the interview schedule, indepth interview guide (IDI) and focus group discussion (FGD) guide. While the IDIs and FGDs were designed to collect qualitative data, the interview schedule was designed to gather quantitative data. The interview schedule was developed for the household survey, the indepth interview guide for key informants' interviews, while the focus group discussion guides were designed for groups such as fishermen, fishmongers, fish processors and salt producers.

The development of the instruments was informed by the objectives of the study, research questions and the conceptual issues distilled from literature review. In consonance with the objectives of the study, the instruments were broadly structured to capture key issues relating to sanitation and livelihood, sanitation education, regulation, infrastructure management and stakeholder roles in sanitation management. The interview schedule was made up of both open and close-ended items to allow for elicitation of specific and detailed responses. In some cases, similar questions were asked in the three types of instrument for purposes of triangulation.

Checklists were developed to guide observation and documentary review. The observation guide covered issues of waste disposal and defecation practices. With regard to waste disposal, it covered issues of availability, location and conditions of sanitation infrastructure such as waste bins, drains/gutters, refuse dump sites. For the defecation practices, the checklist captured issues of

Table 3: *Sources of Data, Collection Method and Instruments for Collection*

Source of data	Method	Instrument
Households (479 )	Household Interview	Interview schedule
Traditional authorities (17) Experts in fisheries (1), Expert in salt production (1), Expert in tourism management (1)	Indepth Interview  Indepth interview	IDI Guide  IDI Guide
Key staff of tourism and hospitality firms (2), Associations of fishermen (1), Association of Salt Producers (1) Youth leaders (3)	Indepth interview (IDI)	IDI Guide
Zoomlion Staff (3), Chief Fisherman (1)	IDI	IDI Guide
Fish processors/fishmongers (21),	FGD	FGD Guide
Canoe and boat builders(6), Salt producers (16), Traders/market women (16), Fishermen (12)	FGD	FGD Guide
Assembly members (3), Religious leaders (9), KEEMA (5), EPA (1), MLGRD (1)	Indepth interview	IDI Guide
Accidentally sampled respondents [ Open defecators (3)]	Indepth interview	IDI Guide
Documents (various)	Desk Review	Checklist
Physical sanitation infrastructure /scenes (various)	Observation	Camera and Checklist

Source: Author's compilation, Mensah (2015)

availability, location and conditions of toilet facilities as well as the incidence of unapproved faecal wastes disposal options. The checklist for documentary review considered issues of existence and implementation of sanitation policy and laws as well as education and infrastructure management plans and programmes. It was also designed to look at stakeholder roles in the ESM enterprise. Above all, it was designed to capture the strengths and weaknesses in sanitation management and their implications for sustainable livelihood and development.

In order to ensure reliability, the instruments were given to other PhD students for peer review to check if the instruments captured and measured the concepts and constructs before they were given to the thesis supervisors for further scrutiny and comments, which were all incorporated in the instruments.

### **Pre-testing of Data Collection Instruments**

The instruments, specifically the interview schedule, indepth interview guide and the focus group discussion guide, were pre-tested at British Komenda and Dutch Komenda. These communities were chosen because they had similar characteristics as the study area in terms of being located in the catchment of another lagoon. This is in conformity with Creswell's (2013) view that the respondents for pre-testing must have similar characteristics as those for the actual study for reliability in terms of providing useful lessons for the actual or main field work.

The results of the pre-test demonstrated that, some of the items were not simple and easy enough to be understood by the respondents. For example, there was a question on who the public toilet was provided for. The response to this

question by all those interviewed during the pre-test was that, it was provided for the public or everybody. Meanwhile, the question was intended to find out whether the respondents were aware that public toilets were basically meant for the transient population since the residents were expected to have and use household toilet. After the pre-test, the question was re-constructed as “who is the public toilet primarily meant for” and options were provided to guide the elicitation of the expected responses. Such adjustments and modifications helped to make the items in the instrument more comprehensible for the respondents, thereby helping to elicit the right responses during the main data collection.

The responses from the pre-test were critically examined in relation to the objectives of the study and were also compared to check common understanding of items in the instruments. These measures improved validity and reliability of the instruments for the main data collection exercise.

### **Ethical Issues**

Ethical considerations were accorded an important place in the conduct of this study through informed consent, access and acceptance as well as confidentiality and anonymity. Robson (1993) has admonished that it is incumbent on the investigator to make it clear to research participants the objectives of the research and anything that will make the respondents elect to participate in the study on their own accord. This advice on informed consent was respected by making the objective of the study clear to participants and making them aware that not only was participation optional but also they could choose to respond or not to any questions in the course of the interview or

discussion. The literate respondents signed informed consent forms, while the illiterate ones thumb-printed the forms to indicate their free will to participate in the study as respondents.

Closely related to the principle of informed consent is the twin principle of access and acceptance (Ladder, 2001). This principle involves obtaining permission to carry out research in a community, institution or organisations. According to Ladder (2001), access and acceptance involve both allowing an investigator into a given physical space and also permitting him/her to conduct the investigation in a particular way. Following this principle, access to all premises including households, communities, institutions and organisations were duly arranged and negotiated beforehand; that is, during the reconnaissance survey.

Verbal self-introduction of enumerators to participants was supported with identity cards and a copy of an introductory letter from the Institute of Development Studies of the University of Cape Coast. As part of the pre-data collection training for the research assistants or enumerators, home, community, institution and organization entry approaches were stressed to them in order to avoid any action or inaction that would constitute an invasion or intrusion into participants' space and/or an infringement on their rights.

Participants were assured of confidentiality and anonymity. In keeping to the principle of confidentiality as well as keeping faith with the participants, no information provided by any of the respondents would be disclosed to anyone who was not part of the data collection team. Furthermore, for anonymity sake, names were not included in the design of the instruments. These rules out the

possibility to trace any information to a particular respondent. Above all, in presenting the result in the report, care was taken to avoid associating any information with the name of any particular respondent in a manner that would disclose the identity of the information provider or volunteer.

### **Data Collection (Fieldwork)**

Three research assistants were recruited and trained to assist the principal investigator to do the data collection. They comprised one Doctor of Philosophy candidate and two Master of Philosophy degree holders in social science. The training covered issues on the objectives of the study, translation from English to vernacular, ethical issues as well as the administration of the instruments.

The training was held on 11<sup>th</sup> and 12<sup>th</sup> November, 2014 and was followed by a pre-test of the instruments on the next two days. A reconnaissance survey was conducted from 17<sup>th</sup> to 19<sup>th</sup> November 2014. The purpose was to announce the researcher's intention, seek permission, book appointment and build rapport with the relevant stakeholders in order to prepare the way for the actual fieldwork.

The actual data collection was scheduled to start on 30<sup>th</sup> November 2014. However, it was delayed by a motor accident involving the principal researcher until 21<sup>st</sup> January 2015. All the different types of data were collected concurrently. In all 479 household interviews, 59 indepth interviews and eight focus group discussions were conducted between January 23 and May 29, 2015. Data collection took a relatively long time because, the Principal Investigator was a civil servant, while one of the field assistants was a student so the data collection exercise was sometimes combined with office work and lectures.

The interview schedule was administered on house-to-house basis. In each household, the head was interviewed but conscious efforts were made to include as many women as possible in the study because of the role of women in household sanitation. Puopiel (2010) has indicated that culturally, women are in charge of maintaining cleanliness in the house in Ghana, especially with respect to sweeping and disposal of waste. For this reason a mechanism was put in place to make sure that both males and females were adequately represented in the household survey. In this respect, the plan was that in every other house a female/woman would be interviewed with the consent of the husband if the man was the head of the household. This strategy did not work to perfection, but at least, made it possible for women or females to be adequately represented, although the males still dominated.

The interview guides and focus group discussion guides were interviewer-administered in the language that the respondents were comfortable with, be it in English or local language. However, English and Akan were the languages used throughout the data collection since the few non Akans could understand and express themselves in either English or Akan.

The FGDs and IDI were used to collect qualitative data from individual and group perspectives respectively. They FGDs were used for respondents such as fishermen/fishmongers/fish process, canoe/boat builders, salt producers and community based organisations. As already mentioned, indepth interviews were used to elicit data from key informants from EPA, MLGRD, Private sanitation Company (Zoomlion), Experts in the Fisheries, Salt Production, Tourism and

Hospitality Industry, Ghana Museum and Monuments Board and community-based opinion leaders such as traditional leaders, religious leaders, assemblymen and youth leaders. Two sanitary staff of a sanitation company (Zoomlion) Environmental Health Officers, two from KEEAMA and one from the MLGRD, Accra, a Planning Officer and a Municipal Engineer who was also with the Community Water and Sanitation department of KEEA as well as a Senior Environmental Specialist of EPA at the Regional Office in Cape Coast were interviewed. With the permission of the interviewees, the interviews were recorded but where permission was not granted, copious notes were taken. Data saturation for qualitative data collection was reached after conducting 53 IDIs and eight FGDs

Another technique that was used to gather data was observation. According to Yin (1982), an observation is a form of evidence that does not depend on verbal behaviour, and the method enables the investigator to observe the phenomenon under study directly. Miller and Brewer (2003) have categorised observation into ‘unobtrusive observation’ and ‘participant observation’ based on the degree of participation by the researcher, and into ‘covert’ and ‘overt’ observations based on the level of awareness subjects have of being observed.

The phenomenon under study, sanitation management, was one which lent itself to direct field observation. Thus, in addition to the FGDs and IDIs, field observations were conducted. This involved the observation of sanitation situations and other conditions that affected ESM in the study areas such as the layout of settlements and road access within residential communities, dust bins,



communal containers, drains, dumpsites, waste streams, public toilets as well as defecation and waste disposal practices.

The field observations were largely unobtrusive. The situations observed were mostly done in ways that did not usually attract attention but in some cases, the attention or participation of people was necessary. That is, observations covered mostly the effects of human action such as street litter and dump sites but in some cases, it considered the human action itself such as littering or and dumping of waste in which cases the reactive actions of people were mostly but not completely avoided. Where the observations covered human actions such as people throwing litter around or defecating in the open, the offenders were usually unaware they were being observed, but there were few instances where they later became aware because they were approached and interviewed after their actions. The researcher also stood at vantage points to observe people defecating in and around the lagoon and the beach and interviewed some of these after the act using the accidental sampling method. Photographs were taken during the field observations which were used to support the data and information gathered through interviews, focus group discussions and documentary review.

### **Data Processing and Analysis**

As already mentioned, following the dictates and tenets of the mixed methods design, both quantitative and qualitative data were gathered for the study. Data were cleaned and analysed. The quantitative data were processed using the Statistical Product for Service Solution (SPSS) Version 16 and Excel software. Based on the nature of data gathered and the intention to make the

report intelligible to any average reader, simple descriptive analytical tools such as frequencies, percentages, charts, graphs and cross-tabulations were used to analyse the quantitative data.

It must be stated that, where relevant, the chi square tests, specifically the Pearson's Chi square tests, were also run to test relationships between variables, particularly demographic variables such as income, location and educational level and access to home defecation option (toilet). The qualitative data (FGDs and IDIs) were transcribed in English, while hand-written notes taken during IDIs, FGDs and observations and from documentary review were typed up and analysed manually using the thematic approach. In this respect, summaries of notes from documents and the views of the respondents were made, analysed under broad themes based on the tenets and principle of Grounded Theory and presented in the prose or narrative mode.

Data analyses were guided by the objectives of the study. The units of analysis for objective one were individuals and groups. In this respect, views of residents, including fishermen, fish processors, canoe and boat builders, salt producers, and tourism and hospitality operators regarding the effects of ESM practices on fishing, salt production and tourism associated livelihoods were compared with experts' perspectives on same issues using thematic and content analyses and presented in the narrative mode. Such juxtapositions were done in order to analyse the convergence and divergence in views and opinions between experts and non-experts on the implications of sanitation practices for livelihoods associated with tourism, fishing and salt production.

Regarding the second objective and its corresponding research question, the units of analysis were households, individuals and groups. Statistical tools such as percentages, frequencies, graphs and cross tabulations were used to analyse the effectiveness of application of public education, regulation and infrastructure as tools/strategies for ESM. For instance, in the case of infrastructure management, data on access to home defecation option was analysed using frequencies and cross-tabulated with income and educational levels of respondents. In addition, the Pearson chi square analysis was also carried out to test relationships between variables. Other concepts and indicators for the second objective were analysed using pie charts, graphs and texts.

For the third objective concerning the role of stakeholders in ESM, virtually all the associated data analyses were done using the thematic and content analysis approach. The reason was that, by the demands of this objective, data for this component of the investigation did not lend themselves to meaningful quantitative analyses. The units of analyses for this objective were individuals and institutions.

In the course of the data gathering exercise, some documents were obtained from the MLGRD and the KEEAMA that were reviewed and analysed. The documents included the Environmental Sanitation Policy of Ghana, National Environment Strategic Sanitation and Action Plan (NESSAP), Elmina Development Strategy (EDS), KEEA Municipal Sanitation Action Plan 2010-2015 and the Vision 2040 Master Plan for Water, Sanitation and Hygiene Action Plan of the KEEA Municipal Assembly. The documentary review was in line with

the observation by Robson (1993) that documents are a good source to search for answers to research. Furthermore, Robson (1993) asserts that documentary sources can provide convincing answers to strengthen the evidence gathered using other tools once they are obtained from credible sources.

Additionally, using more than one documentary source allows for countercheck of the information, which is a form of triangulation. Baabereyir (2009) has also observed that there are many research questions and research settings that cannot be investigated adequately without the production and use of documentary or textual materials.

At the report writing stage, the quantitative, qualitative and documentary analyses were integrated mainly in line with the concurrent nested design but in some cases some triangulations were done. Relevant photographs and quotations from the qualitative analyses were used to support the quantitative and documentary analyses for purposes of illustration and emphasis. It must be pointed out that although most of the interviews and discussions were conducted and recorded in Akan, they were interpreted in English for the purpose of presentation at the report writing stage. The rationale was that English was more universal as a language than the vernacular and so it would make the report benefit a wider reading public in spite of the challenges and disadvantages of translation, which are acknowledged as a limitation to this study

Bryman (2006: 2007) has maintained that when mixed methods is used, there is the need to decide on how the quantitative and qualitative data will be presented at the report writing stage. In this connection, three options are

available to the researcher (Bryman, 2006; Dahlberg, Wittink, & Gallo, 2010). One option is to report on the two as separate studies and bring them together at the conclusion stage. Another option is to integrate the two throughout the writing process. The third option is to report on the two separately and then add a section in which they are integrated. In this study, the qualitative and quantitative data were integrated for the second objective, while data on objectives one and three were analysed qualitatively owing to the types of data collected for these objectives, which did not lend themselves to quantitative analyses.

### **Limitations to data collection**

In all, 491 households were targeted for quantitative data collection but not all were reached. The 491 households comprised 301 households, 58 households and 132 households from the low/third class, middle/second class and high/low class residential areas respectively. Although appointments were booked with the respondents during the reconnaissance survey, not all of them were available on the appointed days for the data collection.

In cases where the household respondents were not present, the enumerator came back another time or day. However, in some cases as many as three visits did not yield the expected results in terms of reaching the respondents for the interviews. As a result, a total of 12 respondents, comprising one from the low class, one from middle class and ten from the high class residential areas could not be reached for data collection. In terms of percentage, almost two per cent were not reached. Although attempts were made to replace them from a replacement list, success was not achieved in this regard. This, however, did not

significantly affect the study since the over 98 per cent success chalked was considered high enough for analyses and reliable results. Furthermore, as high as 20 per cent of the total household respondents did not indicate their incomes. Although some of these were students, retirees or unemployed, others were simply not willing to disclose their incomes.

### **Summary of chapter**

As stated under organization of chapters in chapter one and reiterated in the introductory paragraph of this chapter, this chapter has dealt with the methodological issues of the study. It has dealt with the study area, population and sampling, research and study designs, sources and types of data, methods of data collection, ethical issues and analytical procedures. Having done with the background to the study, relevant literature scoping and the methodological approach to the study in the first four consecutive chapters, the next in the structural scheme of the thesis is the presentation of results of the study. The next three chapters, therefore, comprise the results of the study, with each chapter devoted to a specific objective. The first of the three, which constitutes the subject matter of the next chapter, is titled “environmental sanitation management and livelihood” in accordance with the first objective of the study.

## **CHAPTER FIVE**

### **ENVIRONMENTAL SANITATION MANAGEMENT AND LIVELIHOODS**

#### **Introduction**

This chapter presents the results of the study with respect to its first specific objective, which relates to ESM practices and livelihood activities in the study area. In broad terms, three main issues are examined. They relate to ESM and its implications for the three main livelihood resources or activities in the study area, namely fishing, salt production and tourism. The analyses are carried out qualitatively using the content and thematic approach where broad issues are distilled, analysed thematically and presented in the narrative mode. As it is the case with the presentation of the results of most social science researches, the analyses start with socio-demographic characteristics of the respondents, before the real issues concerning ESM and the main livelihood activities in the study area are presented.

#### **Socio-Demographic Characteristics of Household Respondents**

The socio-demographic characteristics that were captured include educational level, household size, income, religion, sex, occupation and residential status of respondents. Some of these variables have been cross-tabulated with other variables to show their relationship and implications for ESM practices.

Guided by knowledge from the literature review (Addo, 2010; Baabeyire, 2009; Mahama, 2013; Sabra, 2009) that education can influence sanitation

attitude and practices, the educational levels of household respondents were ascertained. Analysis of the educational background of the respondents showed that the largest proportion (38%) of the 479 household respondents had basic education, while 22 per cent had post-secondary education, which is referred to in this study as tertiary education. The relatively high percentage of respondents with tertiary education is attributed to residents in the high and middle class residential areas who were also mostly civil or public servants. However, a closer look at the educational levels reveals that the average respondent had basic or primary education (Figure 5).

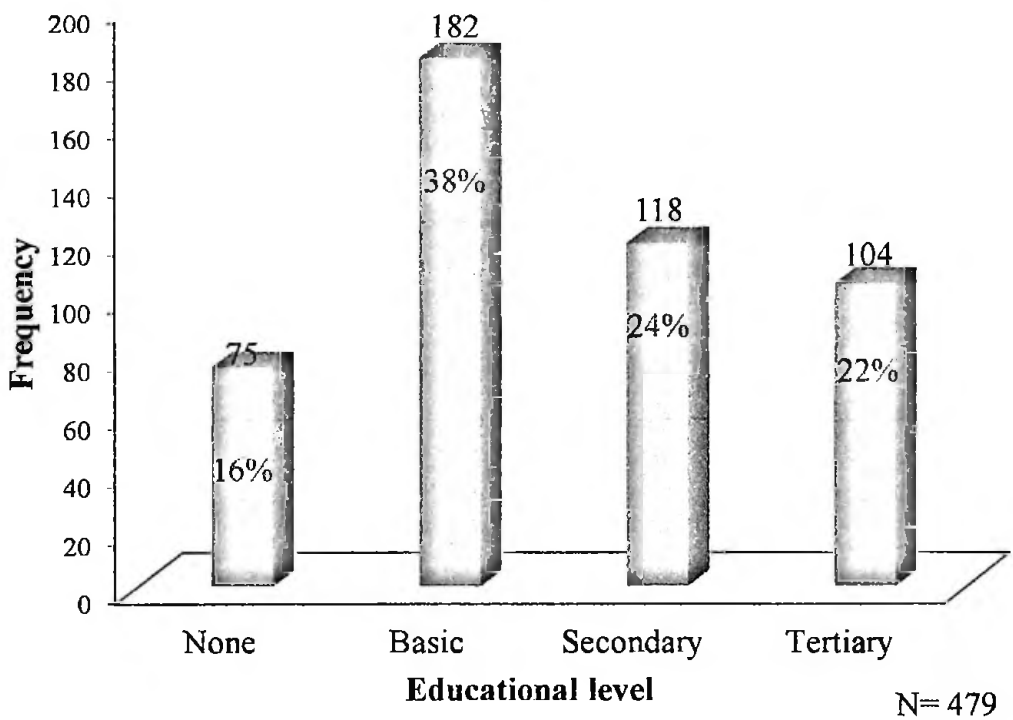


Figure 5: Educational level of household respondents

Source: Field Survey, Mensah (2015)



As observed by Baabereyir (2009), and Puopiel (2010), Abdu, Adawara & Oloni (2013), educational attainment among the population can affect the success of environmental awareness programmes aimed at improving ESM. Baabereyir argues that, since information about waste disposal, including labels on waste containers and educational campaign leaflets such as those issued by the EPA are usually transmitted in written form, literacy level is essential in order to understand information for the effective participation of people in ESM. In this thesis, educational level of household respondents is analysed against indicators such as access to sanitation facilities, awareness about sanitation issues and willingness to contribute to improving sanitation.

The analysis showed that the average household size was 4.1 as compared to 4.4 and 4.0 reported by the Ghana Statistical Service for the 2010 Population and Housing Census and the 2012/2013 Ghana Living Standard Survey respectively. Also, out of the 479 household respondents, 51 per cent were males, while the females accounted for 49 per cent. As far as religion was concerned, the results of the survey showed that the respondents were predominantly (92%) Christians, followed by Moslems (5%) while all others constituted 3 per cent

The occupational distribution of the household respondents showed that, a large proportion (44%) of them were traders or businessmen and women followed by civil and public servants (19%) [Table 4]. Although trading recorded the highest percentage in the occupational distribution of the respondents and so could be regarded as the most significant economic activity in terms of statistics, the trading activities were fuelled principally by the fishing, salt production and tourism activities in the area. It is also worth noting that, the relatively high

percentage of civil and public servants is attributed to the residents in the high and middle class residential areas. In a similar study by Addo (2010) in the Cape Coast Metropolis, 23 per cent of the respondents were found to be civil and public servants compared to the 18 per cent found in this study.

Table 4: *Distribution of Respondents by Occupation*

Occupation	Frequency	Percentage
Trading/Business	212	44.5
Civil/Public Servant	89	19.0
Fishing	61	13.0
Farming	52	11.0
Artisan	43	8.0
Salt producer	10	2.1
Retiree	5	1.0
Unemployed	5	1.0
Student	2	0.4
Total	479	100

Source: Field survey, Mensah (2015)

In line with the assertion by Abdu, Adawura:& Oloni (2013), Addo ( 2010), Addo (2013), Li, Gao, Miao & Chen (2014) and Sabra (2009) that there is a relationship between income and sanitation practices, especially with regard to access to household toilet, household respondents were categorised by their income levels. Following a similar classification method by Addo (2010) in a similar study in Cape Coast, three income brackets were distinguished. These were respondents with monthly disposable incomes of below One Hundred Ghana Cedis, those whose monthly disposable incomes ranged from One Hundred

Ghana Cedis and Two hundred Ghana Cedis); those with monthly disposable income of 200 Ghana Cedis or above. These income groups were referred to as the low, middle and high income earners respectively in this thesis in accordance with Addo's (2010) classification.

Analysis of the net monthly incomes by the above classification showed that out of 383 household respondents who disclosed their incomes, the majority (60.3 %) of them were in the low income class, while 20.4 per cent and 19.3 per cent fell within the middle and high income brackets. This was similar to Addo's (2010) finding about income classification in a similar study in Cape Coast, where the percentages of the respondents with similar net monthly incomes for low, middle and high income earners were 59.0 percent, 23.5 percent and 17.5 percent respectively.

Household respondents were classified by residential class in accordance with the classification by the KEEA Municipal Assembly. These were the first or high class, second or middle class and third or low class areas of residence. The high class area comprised mostly high profile houses with decent sanitation facilities, including toilets, sewage system and concrete drains. The second class residential area was made up of mostly middle level housing units, most of which had sanitation facilities such as household toilet while the low class areas were the indigenous settlements with mostly traditional houses most of which were compound houses with no or poor sanitation facilities such as household toilet. Invariably the high, middle and low class residential areas were also known as high, middle and low income residential areas respectively.

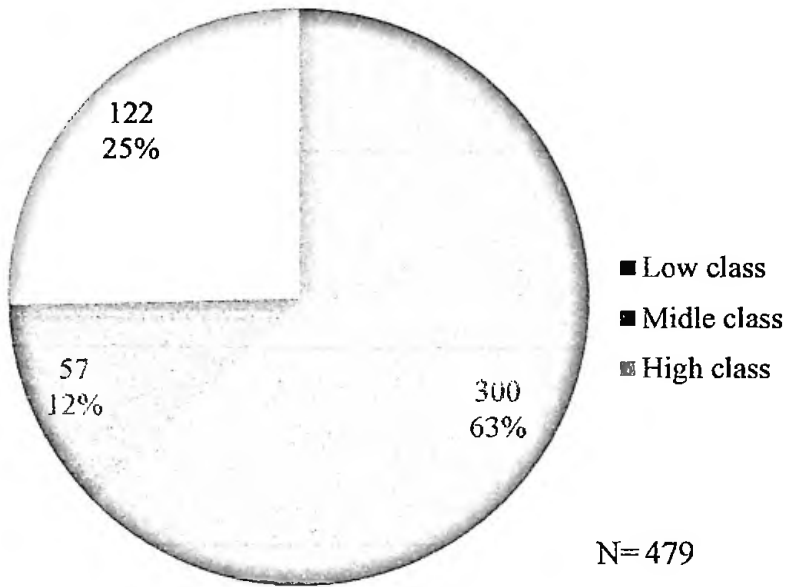
Income and residential class cross-tabulation of the household respondents showed that most of the respondents in the first class residential area were in the high income category while the reverse was the case for the respondents in low class residential areas. From Table 5, about 65 per cent of people in the high income bracket lived in the first class residential area while about five per cent of those in the low income bracket lived in high class residential area.

*Table 5: Income and Residential Class Cross-Tabulation*

	Residential class							
	Low/Third		Middle/Second		High/First		Total	
<u>Income</u>	Freq	%	Freq	%	Freq	%	Freq	%
Low	212	91.8	8	3.5	11	4.7	231	100
Middle	30	38.5	16	20.5	32	41.0	78	100
High	15	20.2	11	14.9	48	64.9	74	100
<b>Total</b>	<b>257</b>	<b>67.1</b>	<b>35</b>	<b>9.1</b>	<b>91</b>	<b>23.8</b>	<b>383</b>	<b>100</b>

Source: Field data, Mensah (2015)

The distribution of the household respondents by residential class showed that the majority (63%) of them were from the third or low class residential areas, while the lowest proportion (12%) were from the second or middle class residential area category (Figure 6). Classification by residential types was necessary to allow for comparison of sanitation practices among people living in different residential areas (Mahama, 2013; Praisetyoputra & Irianti, 2013). In the thesis, residential class is used to analyse issues of availability of household toilet, awareness about sanitation as well as waste management practices.



*Figure 6:* Distribution of respondents by residential class

Source: Field data, Mensah (2015)

Documentary review of KEEA Municipal Assembly’s Sanitation Action Plan 2010-2015 revealed that the Assembly recognised that the development potential of the area was in tourism, fishing and salt industries around which most other economic activities revolved. The document, therefore, saw the need to maximise the benefits associated with their related livelihood activities. However, as revealed by Dorkenoo (2013), improper ESM could pose threats to the maximization of benefits associated with these economic activities. Against this context, the study investigated issues related to the effect of ESM practices on tourism, salt and fishing industries as the main livelihood activities in the study area. In the next three sections, the results of the study with respect to the implications of ESM practices for these socio-economic activities are discussed.

The principal issues under consideration relate to the implications of ESM for natural, human, financial, and physical capital through the implications for health, productivity, employment income and the physical environment. It starts with the relationship between sanitation and fishing-related livelihoods.

### **Environmental Sanitation and Fishing-Associated Livelihoods**

The conceptual framework links ESM to livelihood, and one of the key livelihood activities that the objective one of this thesis stresses is fishing. Goal 14 of the SDGs relates to sustainable use of the oceans, seas and marine resources. According to Spalding (2016), this goal recognises that over three billion people depend on coastal biodiversity for their livelihoods and the oceans serve as the world's largest source of protein, with more than 3 billion people depending on them as their primary source of protein. The fisheries sector provides livelihood empowerment to over 2.4 million Ghanaians in the fishing enterprise including processing and other ancillary businesses such as boat building and input trade (Kwadjosse, 2009).

Questions on the effects of ESM on livelihoods were posed to people who eke out existence directly from fishing related activities such as fishermen, fish processors, fishmongers/traders as well as canoe and boat builders using indepth interview guide and focus group discussion guide. Similar questions on same issues were posed to an expert, that is, a professor of fisheries and aquatic science to allow for juxtaposition of views and perspectives about the relationship between ESM and livelihoods. In a focus group discussion with fish processors,

varied views emerged about the relationship between ESM and livelihoods. A fish smoker had this to say:

*This is where we have been processing our fish. This is where our grandmothers smoked their fish. Although the environment is unclean, we always smoke and sell our fish without any complaints from any quarters. It does not affect our sales. Since the world was created, filth has found its way into the lagoon and the sea as a result of floods and human activities, including ESM practices but the sea and the lagoon still exist because they are resilient. Filth can affect our health but not our job as fish processors. What actually pose threats to the fishing industry and for that matter our livelihoods are the issues of operations of foreign trawlers and pre-mix fuel but not sanitation.. (Fish smoker, Mbofra Akyinim, 2015).*

It is learnt from this quote that, the fish processor does not see the relationship between environmental sanitation and sustainability of the fishing industry and, therefore, does not associate the sustainability of fishing-associated livelihood with the sustainability of the lagoon and the sea as natural capital or resources. This contrasts with Carney's (1998) view about livelihoods. According to Carney, a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural capital base. It should be noted that, by making the point that the lagoon and the sea are resilient, the fish

processor suggests that the sustainability of sea and lagoon cannot be affected by poor ESM practices because the sea and the lagoon have the capacity to contain the waste.

However, the fisheries expert interviewed debunked the argument that these water bodies have unlimited capacities to contain all manner of pollutants forever. The expert's argument reinforces the sustainable livelihoods theory's warning about visiting shocks and stress on livelihood capital or assets such as the natural capital – in this instance, the sea and the lagoon – in a manner that would render the resources or assets and their related livelihoods vulnerable. Implied from the expert's submission is that, putting stress on the natural capital – the sea and the lagoon – through improper ESM practices, has the tendency to render fishing associated livelihoods vulnerable and unsustainable.

. It is also clear from the quote above that although the fish processor linked sanitation to human health, she did not extend the linkage to human capital in terms of productivity; financial capital in terms of income; natural capital in terms of fish stock as well as other implications of sanitation for livelihoods. However, in an FGD with canoe/boat builders the discussants alluded to such connections in their submissions, one of which is quoted for an illustrative purpose as follows:

*I went to the hospital the other time when I was feeling feverish.*

*The doctor said I had malaria. I was down for five days without coming to work. During this period, I did not only lose working time, which was money, but also my daughter had to stay away*



*from school to take care of me apart from the money I spent on treatment. I am sure if we keep this environment tidy and clean, we will save ourselves from diseases that will affect our work, income and wellbeing (Canoe/boat builder, Elmina, 2015).*

It can be gleaned from the two preceding quotations above that, while the fish processor saw no association between sanitation and livelihood, the canoe builder did. An interview with the fisheries expert on same issue reinforced the argument by the canoe builder. In the interview, the expert indicated that the relationship between ESM and fishing-associated livelihoods should not be restricted to only the implications for demand for, or sale of fish but also the health, productivity, income and wellbeing, as well as the sustainability of the habitat for the fish. The expert opined that, environmental pollution could damage the fragile ecology of the coral reef. Additionally, the expert noted that, poor sanitary environment could affect the health, productivity and income of the fish-related workers and the fishing community. This is in line with Ahmed's (2003) conclusion that the impact of improved sanitation on livelihoods include reduction in diseases, savings from buying medicine and visiting doctors, increase in labour hours due to reduction in sickness and increase in income

The canoe builder and the expert's perspectives were consistent with the observation by George (2008) regarding the role that unsafe sanitation plays in diseases, livelihoods and the poverty cycle. George observed that poor sanitation leads to sicknesses, which in turn, lead to low productivity and consequently, to poverty. Additionally, George noted that when poor people fall ill, they lose

income and may lose their jobs, while other family members have to spend scarce resources on treatments and may have to stop working or attending school to care for the sick relatives. Furthermore, valuable time, energy and resources are absorbed in household-level care, which would otherwise be put to productive use. It is also consistent with the DFID sustainable livelihood theory's and the conceptual framework's linkage between ESM and human capital through health implications of sanitation as well as the financial capital through the income and productivity implications of sanitation.

A focus group discussion with fishermen revealed interesting perspectives about the relationship between ESM and livelihood. A question on whether waste disposal and defecation practices in the area had any effect on fishing-related livelihoods yielded varied responses. One fisherman said that sanitation highly affected the fishing industry because the faeces and refuse dumped or washed into the lagoon and the sea affected the habitat of the fish and could kill some of the fishes, apart from making fish unhygienic for human consumption.

The fisherman said that he caught fish from the Benya Lagoon some time ago and when the fish was being processed in the house, it was noticed that there was fresh faeces in its mouth. According to the fisherman, he was not bothered because it was nothing strange to him as a resident fisherman but there was a visitor who saw it, expressed shock and swore never to eat fish from the lagoon again. Another fisherman in the discussion group with a contrasting view put it this way:

*Egya Kojo has spoken well but the fact that there was faeces in the mouth of the fish confirms that faeces is a delicacy for fish. Some species of fish live on it. So for me, although I agree that indiscriminate dumping of faecal matter into the lagoon and the sea is unacceptable, I do not think it should be stopped entirely. It should be controlled for the benefit of, at least, some of the species of fish (Fisherman, Bantuma, 2015)*

Juxtaposing the two submissions, it can be argued that, while the first fisherman portrayed an express link between sanitation and livelihood, the second did not. That is, while they both converged in thought that sanitation was important, they diverged in opinion regarding the implications of sanitation for the sustainability of fish stock and for that matter livelihoods. In fact, the first fisherman even alluded to the implication of sanitation for human dignity and demand for fish by indicating that the visitor swore not to eat fish from the lagoon again after the shocking revelation. While the evidence makes the fisheries expert's earlier admonition more relevant, the reference to dignity supports the observation that sanitation also has implications for human dignity and welfare as stressed by Fried (2010) and WHO/UNICEF (2010).

In a related development, a fisherman from Mbofra Akyinim indicated that one of the problems of fishing in the area that needed a very urgent attention was the siltation of the Benya Lagoon, which was associated with improper ESM, with particular reference to waste disposal and defecation practices. The fisherman's observation corroborated evidence from documentary review, Elmina

2002-2015 Strategy, which maintained that silt had accumulated to an approximate depth of three metres in the lagoon and was, therefore, impeding the free movement of fishing vessels (See plate 1)



*Plate 1:* Filth accumulated in the Benya Lagoon at Elmina

Photo Credit: Mensah (2015)

The strength of the fishing industry to contribute to sustainable livelihood in the area, in another fisherman's statement, lies not only in demand for fish and fish products but also the health of the sea and the Benya Lagoon, which is associated with ESM practices. One can argue from this evidence that ESM could affect the sale of fish and for that matter the financial capital, while the health of the sea and the lagoon relates to the sustainability of the natural capital, all of which affect livelihood as asserted by the sustainable livelihood theory. This is what the 62-year old fisherman from Mbofra Akyinim actually said to illustrate his point regarding how the ESM practices in the area were affecting his livelihood.

*Some forty years ago, one could just stand at the edge of this lagoon, cast the net and catch plenty of fish. This is not the case these days. Last Thursday, I cast my net into the lagoon hoping to have a good catch so I could sell some and take the rest home for domestic consumption. When I was pulling the net, I realised that it was quite heavy so I cherished the hope that it was a bumper catch. When the net was completely out the lagoon, I noticed to my chagrin that, the garbage content of the net was more than the much-expected fish. Thus, my commercial motive for undertaking that fishing expedition became dashed, and as if that was not enough, the fish I had for domestic consumption lasted for just a meal for a family of nine. When I narrated my disappointing story to my colleagues in a conversation, they had worse experiences on the same topic to share with me. Honestly, the rate at which poor ESM practices are causing the garbage to take over the lagoon and the sea from the fish, for which these water bodies are supposed to serve as natural habitat, is not only unimaginable but also unthinkable. If these were the people's personal properties, would they pollute them like this? The government should do something about it because our livelihoods are at stake.*

It is deduced from the above quote that the fisherman's experience illustrates a relationship between sanitation and fishing as a livelihood activity. However, the last statement which urges the government to work to improve

sanitation in the community, though not out of place, presupposes that the responsibility for ensuring proper environmental standards, rests solely with the government. While it can be said that the fisherman was right by insisting that the government should intervene to stop the practice of indiscriminate defecation and dumping of waste in the lagoon, the Common Pool Resource Theory (Li,1996) systems theory (Miller, 1978) and participation theory (Skelcher, 1993) emphasise that ESM is a shared responsibility between governmental and private stakeholders. The Common Pool Resource theory further suggests that, since individuals mostly do not care about things that are not their private property, it is incumbent upon the government to play more active role in ensuring that the unacceptable use of common resources is stopped.

Two assemblymen shared their views in separate interviews with them, that the fishing industry in the area had the potential to create forward and backward linkages, which could also create more employment for the people. However, they acknowledged that, poor ESM practices could whittle away these opportunities and reduce the chances for improved livelihoods. This admission about the possibility of ESM practices reducing fishing-related employment opportunities implies that, these livelihoods are vulnerable to poor ESM practices, and this is consistent with Latterman and Hoepner's (2008) conclusion that overburdening the coastal resources such as the sea and lagoon could compromise the sustainability of these resources and affect their associated livelihoods.

Relatedly, the fisheries expert revealed that poor ESM practices ranked high among the factors that posed threats to the fishing industry in Ghana as a whole and the study area in particular. The expert maintained that poor ESM practices had been identified as one of the principal contributors to water pollution, which negatively affected the health of aquatic resources including fish. Specifically the expert opined that;

*A healthy ecological habitat is important for fish production because dirty water is inimical to the growth of fish. Water quality is of great essence to fish production and so if the water bodies such as the lagoon and sea get polluted, the health of fish is compromised and their growth is impaired. This can lead to a reduction in the quality and quantity of fish produced. Pollution of the Benya Lagoon and the sea through indiscriminate waste disposal and defecation practices leads to poor water quality, increase in coliforms and damage to, or loss of aquatic life*

*(An Expert in Fisheries and Aquatic Sciences, Cape Coast, 2015)*

The expert further observed that pollutants of water that contain oxygen-depleting organic and inorganic materials affect the health of aquatic animals, including fish and their associated livelihood activities. This observation reinforces a similar one by Kyangwa and Odongkara (2005) from their study on sanitation practices among fishing communities in Lake Victoria area that, unknown to some of the residents, their waste disposal and defecation practices had fish quality implications as seepage from these sources could contaminate the

aquatic environment with fish spoilage bacteria. The expert proffered the suggestion that the general public should be educated on the concept of bacteria, which could affect the health and growth of fish and subsequently affect food and job security and for that matter, sustainable livelihoods.

Furthermore, the chief fisherman of the study area confirmed that ESM practices had effects on fishing activities in the area as it polluted the habitat of fish and depleted the fish stock. The chief fisherman indicated that indiscriminate dumping of waste that contains harmful chemicals were inimical to the growth of fish and had dire consequences for the those whose livelihoods depend mainly on fishing. According to the chief fisherman, “the catchment area of Benya Lagoon has an enormous potential to contribute more to fish production in Ghana if the right measures, including sound ESM practices are maintained”. It is gathered from this submission that, poor ESM practices expose the fishing industry to ecological and resource vulnerability, which translate into vulnerability of livelihoods as the sustainable livelihood theory (Ellis, 2000) shows.

Other varied individual and group perspectives about the relationship between ESM practices and fishing as a livelihood activity were expressed. While some of these views supported those of the fisheries expert and chief fisherman, others were at variance with them. One corroborating view from canoe and boat builders in a focus group discussion in Elmina lends credence to this assertion.

*I am canoe and fishing boat builder and my wife is a fish processor. I take a serious view of the alarming rate at which the*



*lagoon is getting choked with various forms of pollutant as a result of unacceptable waste disposal and defecation practices in this area. My fear is that, if the trend is not curtailed, it will get to a point that movement of fishing vessels on the lagoon will be seriously obstructed or literally impossible. In such circumstances, the fishing business will decline drastically and will affect our job and incomes. It is from these petty economic activities that some of us eke out existence so I am appealing to the powers that be through you (referring to the researcher) to check the spate of wanton pollution of the lagoon through unacceptable sanitation behaviour and practices in all the communities around the Benya Lagoon. (Boat builder, Elmina, 2015)*

While the canoe and boat builder's opinion supported the views of the fisheries expert and the chief fisherman, some views from the fish processors at Bantuma and Elmina were at variance with them. Contrary to the canoe and boat builder's submission, which supports the conceptual framework that, sanitation affects financial capital through its effect on employment and income, a fish processor expressed her views about the relationship between ESM and the fishing industry in a focus group discussion as follows;

*We have been involved in this fish processing business for many years. The fishing vessels always land on the lagoon unimpeded and no one has ever complained about our fish not being hygienic or unwholesome as a result of poor sanitary conditions so I do not*

*see how sanitation directly affects the fishing business. It only makes the place smell bad but scent has nothing to do with the fish in the sea or lagoon. (Fish processor, Bantuma, 2015)*

Although views and experiences shared by the informants about the effects of ESM practices on fishing as a livelihood activity were varied, it cannot be gainsaid that directly or indirectly, ESM sanitation affects the fishing industry in the study area. The effects border on the health and growth of fish, making fish unhygienic and unwholesome for consumption as well as dwindling fish stock. Writing on poor sanitation and its consequences, Sessey (2007) concluded that the effects of poor ESM include reduced fish production and revenue from fisheries. Others are effect on food security, health, income and productivity of those who depend directly on fishing related activities for livelihood as well as sustainability of the ecological habitat of fish, all of which are linked to sustainable livelihood and development.

### **Environmental Sanitation and Salt Production-Associated Livelihoods**

The principle of sustainability as well as the sustainable livelihood theory (Carney, 1998) requires that resources are used and/or maintained in a manner that will be beneficial to human now and in the future. In line with the principle and theory, the conceptual framework recognises the relationship between ESM and livelihood by linking sanitation to livelihood assets and outcomes. The local people in the study area use the water resources not only for fishing activities but also salt production, which is in line with Ellis' (2000) admonition on

diversification as a positive strategy for decreasing vulnerability and poverty, while maintaining local natural capital sustainably.

As alluded to in the background to the thesis, the catchment area of Benya Lagoon is one of the few locations in Ghana where salt is produced on commercial quantities and since this economic activity provides food, jobs and economic security to many people in the area, it is important to protect it for the future generation. This, according to Simson (1993), Thomas (2004), Bevan (2006), Redclift (2005) as well as the sustainable livelihood theory (Arce, 2003; Carney, 1998; 2002), constitutes the essence and epitome of sustainable development.

In a focus group discussion with salt producers, the discussants were asked about the implications of ESM practices for their livelihoods. Virtually every discussant talked about sanitation's effect on their health without linking it to productivity, income and employment. This implied that these salt producers had not really thought about the implications of sanitation for these aspects of livelihoods. Contrastingly, Navarro (1994) observed that, "it is when the people understand the implications and consequences of the unsanitary conditions for their livelihoods that they will be willing to change their poor ESM habits". The evidence also contrasts the implications of sanitation for livelihoods of the salt producers as outlined by the salt expert, which include effect on job security, health, savings from buying medicine, visiting the doctor, time for work and for that matter income. Thus, by referring to the effect of sanitation on health, productivity, income, employment and the sustainability of the lagoon, the salt

expert implied the effect of sanitation on livelihood assets such as human, financial and natural capital.

In an interview with a key informant from the Salt Producers Association, the interviewee indicated that sanitation could affect productivity and income through ill-health. This is consistent with the literature on enhancing livelihoods through environmental sanitation by Sudgen (2007), which refers to similar implications of sanitation for livelihoods. The informant, however, added that chemically, salt was strong enough to withstand contamination but admitted that, it was unhygienic to find human excreta at the very place where the commodity was produced. This was what the respondent actually said:

*Personally, I abhor the faeces and dirty environmental conditions under which salt is produced here, although I am convinced that the chemical composition of salt makes it resistant to all manner of bacterial infections. Some of our customers have been complaining bitterly about this unhygienic environment yet they buy the salt. As far as I can recall since my sixteen years of being in this business, there has been only two cases where the complainants about the unhygienic environment here did not come back to purchase the salt. However, it was unclear if their failure or refusal to come back was attributable to the filth, especially the faeces that they complained about. (An Executive Member of the Salt Producers Association, Dwira Ayinim, 2015).*

This statement was made in reaction to the indiscriminate manner in which people had defecated near the salt ponds, while refuse had been dumped in the lagoon from which water was used as raw material for salt production. The informant opined that, the sight of filth in and around the salt ponds could have psychological effect on some customers, which could discourage them from buying salt produced in such an environment. According to the informant, this could decrease demand for salt produced in the area, leading to a contraction effect on salt production, culminating in not only loss of income but employment as well. This supports the observation by Navarro (1994) that the economy and livelihoods of most coastal communities hinge greatly on water-based activities, including fishing and salt production. It also proves the linkage or relationship between sanitation and salt production associated livelihood as implied by the conceptual framework and the sustainable livelihoods theory.

Another salt producer revealed that when it rained, the refuse and human excreta were washed into some of the salt ponds in spite of the walls that had been built around the ponds as embankment as captured in Plate 2. This, according to the producer, is a threat to the quality and patronage of the salt produced in the area. The evidence supports Navarro's (1994) finding about the quality implications ESM for coastal water-based livelihood assets and outcomes. The producer-informant added that, she would not be surprised if one day the Ghana Standards Board declared salt produced in the area as unwholesome for consumption due to the insanitary conditions in the vicinity, although this was contrary to her wish. The informant prayed this would never happen because if it

ever did, a lot of people would lose their jobs and livelihoods

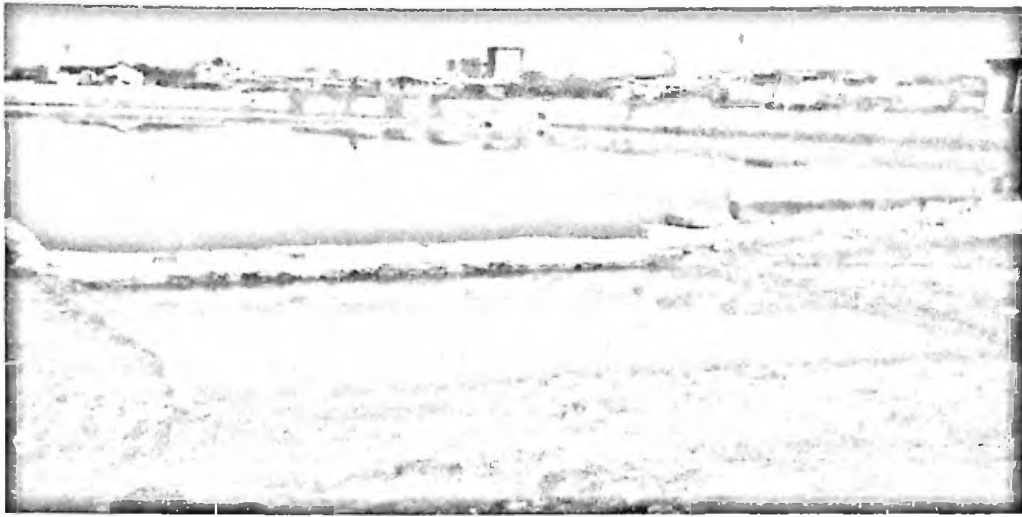


Plate 2: A salt pond at Bantuma

Photo credit: Mensah, (2015)

. The producer-informant's submission can be interpreted as an expression of linkage between ESM and livelihood, which is consistent with the message that the conceptual framework seeks to convey. The framework connotes the idea, and conveys a corresponding message that, ESM affects the physical capital; that is, ESM practices make the physical environment repulsive, which is linked to the unwholesomeness of edible commodities as expressed by the informant.

A quotation from another salt producer during an FGD, would put into perspective how poor ESM in the area was affecting salt production, which he claimed was his main source of livelihood. According to the salt producer:

*I have been engaged in the salt extraction business for over twenty years. It is from this business that my family and other dependents of mine eke out existence and, therefore, I am particularly*

*concerned about the protection, development and sustainability of the salt industry. Water from the lagoon is the single most important raw material for the production of salt and, therefore, anything that does not augur well for the lagoon is a threat not only to the lagoon, but also to my livelihood. That is why I am unhappy with those who have been defecating in the lagoon area. Aside the threat to the sustainability of the lagoon and its associated livelihoods for the future generation, the stench that one has to endure is unbearable and poses a threat to human health (Salt Producer, Dwira Akyinim, 2015).*

The salt producer's concern for sustainability of the Benya Lagoon as a livelihood resource is consistent with the definition of livelihood as given by Chambers and Conway (1992) and captured in the conceptual framework based on the sustainable livelihood model. According to Chambers and Conway, a livelihood refers to people's means of living, including food, income and other assets. They add that, a livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which it depends, and has net beneficial effects on other livelihoods, while it is socially sustainable when it can cope with and recover from stress and shocks, and provide for future generations. It is also in line with the conceptual framework's depiction of vulnerability of livelihood resources as touted by the sustainable livelihoods theory while at the same time connoting a connection between sanitation and livelihood assets such as human, physical, natural and financial capital.

Through an interview with a salt production expert, it became evident that poor sanitation could have implications for salt production. According to the expert, "salt is

produced through evaporation and crystallisation and so once the crystals are formed, the salt is pure. However, the expert added that “although the process of producing salt purifies the substance, in the process of collecting and storing it, it could be mixed with impure substances or contaminants”. This implies that insanitary conditions, which breed the contaminants should be avoided to ensure total safety of consumers. Besides, filling the lagoon with filth through improper ESM practices threatens the sustainability of the lagoon and the survival of people who depend on salt production for their livelihoods. This finding is consistent with the argument concerning the vulnerability of livelihood assets or resources as proffered by the sustainable livelihood theory (Murray, 2001) and accentuated by the conceptual framework for this study.

A female salt producer observed during a focus group discussion at Dwira Akyinim that, faecal pollution was one of the most serious challenges confronting salt producers in the catchment of the Benya Lagoon, adding that while some people defecated straight into the lagoon, others dumped faeces into the drains and gutters, which were eventually washed into the lagoon and salt ponds. Additionally, observations revealed that, in communities such as Mbofra Akyinim, Pershie, Bronyibema, Dwira Akyinim and Bantuma, refuse dumps and public toilet facilities were located near the sea or the lagoon. This had resulted in waste materials being washed into these water bodies during heavy rains, thereby polluting them. Similar findings were arrived at by Navarro (1994) and Kyangwa and Odongkara (2005) when they observed through their respective ESM-related studies in communities in Palawan Province, Philippines and Lake Victoria area, Uganda that, the residents dumped domestic waste and faeces in or near the lake, lagoon or sea to be diluted in the water or washed away by the tidal inundations.



Again, through observation it became evident that some residents reared pigs near the Benya Lagoon. The pigs, fed on garbage and also defecated in and near the lagoon (Plate 3), leading to a flow of waste from the pigsties into the lagoon, thereby further polluting the lagoon, which is a livelihood resource.



*Plate 3: Pigs feeding on filth in the Benya Lagoon at Elmina*

Photo credit: Mensah (2015)

The sanitation practices as reported by the salt producer and confirmed through observation were found to be at variance with best practices (McConille, 2010) and also undermined the sustainable use of natural capital or resource (the Benya Lagoon and the sea) for the salt producers and fishermen and, therefore, rendered the livelihoods of these residents vulnerable. This supports the connection between ESM and natural capital or asset, and the effect of this connection on livelihood as stressed in the sustainable livelihood theory and the conceptual framework. Additionally, the effect of these ESM practices on human health was a threat to human capital since it had the tendency to reduce

productivity and demand which would translate into loss of income or financial capital, leading to increase in poverty.

From the foregoing, it is deduced that the evidence about the effect of sanitation on salt production is mixed but the implications for sustainable livelihood are clear. Though salt is said to be chemically composed to withstand bacterial infection and contamination, producing salt under poor sanitary environment renders the commodity unhygienic to consumers and unattractive to customers. This has the tendency to reduce the demand for salt produced in such unhygienic environments, which in turn, will lead to low output, less employment of labour, low incomes, unsustainable livelihoods and low standard of living. The unclean environment also poses health hazards and productivity threats to the producers while the pollutants render the main resource for salt production – the lagoon – not only unhygienic but also unsustainable, thereby rendering its associated livelihoods vulnerable.

### **Environmental Sanitation and Tourism-Associated Livelihoods**

As already mentioned, the theoretical and conceptual frameworks relate ESM to livelihood outcomes, stressing that absence of proper sanitation could render livelihoods unsustainable, affect incomes and economic activities through reduction in productivity. Tourism, like fishing and salt production, is an important economic activity which is a source of employment and income, and for that matter livelihood, for a lot of people in the study area (Dorkenoo, 2013).

Documentary analysis of Elmina Strategy 2002-2015 revealed that tourism was an important economic activity in the study area due to the presence

of a wide range of tourists attractions, prominent among which was the St George Castle and Fort Jago, which had been designated as world heritage sites. According to a key informant at the Ghana Museums and Monuments Board at Elmina, the Castle, for instance, attracted over 100,000 visitors annually, of whom 50,000 were foreigners. The informant emphasised that, although tourism was already contributing to the local economy, further development of tourism was important in order to entice tourists to stay longer and spend more money locally so that the local people could benefit more from their heritage assets through more jobs and increased income for enhanced livelihood.

The Medium Term Development Plan of Ghana (2010 – 2013) prepared by the NDPC (2010) highlights the importance of tourism for sustainable development, especially in the coastal areas, and emphasises the role of ESM in promoting tourism. However, this study revealed a general lack of awareness of the benefits of tourism and how the communities could exploit tourism for enhanced livelihood. A quote from an interview with an expert in tourism at the Museums and Monuments Board attests to this assertion and explains the people's attitude to ESM. According to the expert;

*As far as many of the communities and residents in Elmina and its immediate environs are concerned, tourism is an activity for the government, tourists and other people, not them. Elmina is attractive to tourists due to its history and the presence of the world-class monuments such as the castle and fort but residents are largely unconcerned about the actual and potential benefits of*

*tourism, including employment, income and recreation. This is evident in their ESM practices, especially with respect to indiscriminate defecation and waste disposal practices. They neither see nor care about the essence of providing the sanitary and environmental attractiveness that is needed for tourism to flourish (An expert in tourism, Elmina Castle, 2015).*

The expert's evidence suggests that, although Elmina is attractive to tourists, the insanitary conditions could reduce the benefits that can be derived from tourism. This is consistent with Tizser's (2010) observation that, no matter how attractive a tourist site may be, insanitary conditions have the potential to reduce the number and/or frequency of visits or visitors to the tourist centre. Aboagye, Frimpong and Eshun (2013) also made similar observation about the relationship between sanitation and tourism promotion.

A visit by the Principal Investigator to one of the hot spots of tourism attractions in the study area - the area between the castle and the sea - confirmed the general low level of awareness about the importance of tourism in the area as the tourism expert had hinted. Through observation, it became evident that, this area had been converted to a place of convenience by some residents and itinerant population. Open defecation was practised at this place with careless abandon. An informal conversation with some of the people who were spotted defecating around the castle yielded interesting responses about open defecation in the study communities. One of such typical responses is quoted here to illustrate this point.

*I do not have a toilet facility in my house, and unlike the public toilet, which emits foul odour and is almost always unclean, the air here at the beach is fresh and so I feel more comfortable defecating at the beach than using the public toilet (A 45-year old male open defecator- Elmina, 2015).*

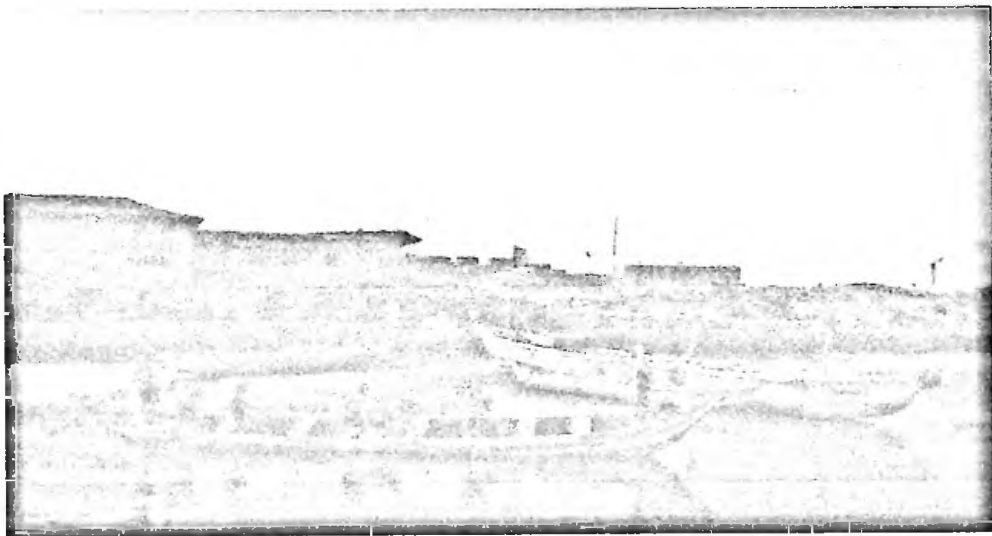
While the reference to lack of access to toilet facility in the house is consistent with the observation by WHO (2010) and UNICEF (2010) as the main reason for open defecation, the unacceptability of the practice, especially in tourist attraction sites, supports Sessey's (2007) conclusion that the cost of environmental damage due to sanitation includes discouragement of the tourist trade. Asked about the health and tourism implications of open defecation, the 45-year open defecator had this to say;

*The faeces here will soon be washed away by the tidal waves of the sea so the health implication is out. Concerning the effect on tourism, I know the tourists have designated routes that they use to visit the places of interest, which normally exclude where the open defecation takes place and so I do not think it affects tourism.*

The respondent's perception about the effect of his defecation practice on tourism is inconsistent with the theoretical perspective of the relationship between ESM practices and tourism development and for that matter tourism associated activities/livelihoods. Contrary to respondent's view that the indiscriminate defecation practices do not affect tourism, it has been argued that poor ESM

practices are inimical to tourism promotion and its associated livelihoods (Latterman & Hopner, 2008; Aboagye, Frimpong & Eshun, 2013).

A key informant at the Museums and Monuments Department at the Elmina Castle and another at the Coconut Grove Hotel, Elmina, revealed in separate interviews that, tourists had been seeing and expressing disgust about open defecation and indiscriminate dumping of waste within certain portions of the study communities, especially around the castle and the Benya Lagoon. According to the informants, some of the tourist had been taking pictures (See Plate 4) of the nasty scenes in the area. It can be argued from this evidence that the practice was an affront to the dignity of the people in the area and bad for tourism promotion for improved livelihood and sustainable development.



*Plate 4: Tourists cruising on the Benya Lagoon at Elmina*

Picture credit: Mensah (2015)

An expert in tourism and hospitality industry had this to say about the relationship between environmental sanitation and tourism.

*Environmental sanitation has a great deal of relevance for tourism and hospitality industry. Health is every tourist's prime concern and so any suspicion of an outbreak of disease such as cholera, typhoid or malaria at a given tourist site will negatively affect the number of tourists visiting the place. Elmina's poor sanitary environment, exhibited by its poor drainage network and choked gutters, improper disposal of waste and the common practice of defecating at the beaches and in the lagoon, create an aesthetic discomfort and embarrassment to tourists. This reduces patronage of the tourists sites here and reduces employment of the factors of production, including labour. It could lead to a shrinking of both the local and national economies and for that matter increase in poverty. Apart from that, when any of the staff suffers from any sanitation-related disease and is unable to report for duty or work well, productivity and income could reduce.*

The expert's observation is consistent with Dorkernoo's (2013) as well as Aboagye, Frempong and Eshun's (2013) conclusion that sanitation has implications for productivity and patronage of tourists sites, which also affect income and employment. In addition, it emerged from documentary review, Elmina Strategy 2015, that, on their usual short route between the Castle/Fort and areas around the Benya Lagoon, which was of so much interest to most tourists, the tourists are

often distraught by the unpleasant surroundings (See Plate 5) and express disgust about it.



*Plate 5: Unhygienic sanitary scene near the Benya Lagoon  
between Elmina Castle and Bantuma  
Picture Credit: Mensah (2015)*

This implies that the poor sanitary environment in Elmina and its surrounding communities is a threat to tourism promotion and for that matter tourism associated livelihoods. The finding corroborates the observation by Lange and Jiddawi. (2009) that improper sanitation practices in Zanzibar threatens the water quality and ecosystem integrity, thereby impacting negatively on the fisheries, tourism and their related livelihoods.

A key informant, who was an administrator at the Coconut Grove Hotel added another dimension to the implications of environmental sanitation in the area for tourism and hospitality related activities as livelihood opportunities. The informant disclosed in an interview that, the poor sanitation practices in the



catchment area of the Benya Lagoon had both direct and indirect impacts on the operation and sustainability of the hospitality industry, including the Coconut Grove Hotel.

According to the Coconut Grove Hotels informant, “the tourism and hospitality industry is an image business so what people see and hear about it form(s) part of their impressions and judgement about the place. Several factors, including the physical environment, make the visitors decide to stay and inform other people to choose the hotel for several purposes”. The informant hinted, however, that sanitation within the catchment area of the Benya Lagoon detracted substantially from the credit they got from their customers and even reduced patronage of the hotel but he could not give statistics on the issue. The evidence supports Gandip’s (2013) finding that, garbage in the physical environment a bane of tourism and hospitality industry promotion in the Annapurna Region of Nepal. Quoting what the Coconut Grove Hotel Administrator opined is of evidential essence:

*The pockets of shanty squatters (See Plate 6) around the Benya Lagoon, the drying of stinking fish with its associated foul scent as well as the faeces and garbage around the place pollute the air. In the afternoons visitors/guests complain a lot about the foul scent around, which often has a nauseating effect on them. While some guests of ours have complained verbally, others have resorted to written comments about the insanitary environment and the associated unpleasant smell. The insanitary conditions have the*

*potential to drive customers away which could lead to reduction in employment of labour and loss of incomes to a number of people whose livelihoods depend on this industry in the area.*



*Plate 6: Shanty squatters near the Benya Lagoon between Elmina Castle and Coconut Grove Hotel*  
Credit: Mensah (2015)

As implied by the Coconut Groove Hotel Administrator, the unpleasant smell, health hazards and the aesthetic repulsion associated with these shanty spots resulting from poor ESM practices, have the potential to affect negatively the productivity and sustainability of the hospitality industry. This evidence supports the finding by Saei (2012) that unsightly sanitary environment poses aesthetic discomfort to tourists/visitors. The evidence about repugnant smell and repulsive aesthetic effect from improper sanitation practices also supports the sustainable livelihood theory's assertion and the conceptual framework's depiction that sanitation affects the physical capital or the physical environment.

It can be argued that apart from the productivity and dignity implications, when the demand for the services of the hotels falls as a result of the poor physical capital caused by poor environmental sanitation, total revenue will also fall and so employment of labour may be affected. Once employment and income are affected, livelihoods also get affected. This is the implicit import of the main tenets of the sustainable livelihood theory and its implications for the relationship between ESM and sustainable development as modeled in the conceptual framework.

### **Summary of chapter**

The chapter has examined the relationship between ESM and livelihood from the perspectives of experts, key informants and residents, especially those whose livelihoods depend mostly on fishing, salt production and tourism and their associated activities. The main finding is that, ESM has implications for health, income, employment, productivity and ecological sustainability through sanitation's implications for livelihood assets, namely financial, natural, physical and human capital.

However, while experts in all the three livelihood activities agreed that ESM had implications for the growth and development of fishing, salt production and tourism firms and their associated livelihoods, there were other residents and beneficiaries from these livelihood activities who did not really see the effects of ESM on the activities and their related livelihoods. With the conclusion based on the results of this chapter that sanitation has relevance for livelihoods in the study area, it cannot be gainsaid that there is the need to map up and apply strategies to

ensure environmental justice through proper ESM for sustainable livelihood and development. However, the question is what strategies are available for managing the sanitation and how are these being applied to ensure effective management for sustainable development. The next chapter, therefore, takes a look at the application of ESM strategies for improving environmental sanitation for improved livelihood and sustainable development.

## **CHAPTER SIX**

### **APPLICATION OF STRATEGIES FOR MANAGING ENVIRONMENTAL SANITATION**

#### **Introduction**

This chapter presents analyses of issues in relation to the second objective of the thesis. In line with this objective, three main broad issues are analysed, namely sanitation infrastructure management, education management and regulation management as strategies for improving environmental sanitation. Other related issues addressed in the chapter are prioritising sanitation management strategies, willingness to contribute to improving sanitation and suggestion for improving environmental sanitation management.

The chapter starts with the analysis of management of sanitation infrastructure followed by education and regulation management. It continues with willingness to contribute to improving sanitation, prioritising sanitation management strategies and ends with analysis of suggestions for improving environmental sanitation. The units of analysis for this chapter as dictated by the objective are individuals, households and institutions and supported with documentary analysis. In line with the mixed method approach, analyses are done both quantitatively and qualitatively combining aspects of both concurrent triangulation and nested approaches.

Analytical tools that are employed throughout this chapter include descriptive statistics such as frequencies, percentages, cross tabulations as well as textual analyses. However, where relevant, the Pearson's chi square tests are used to

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Analytical tools that are employed throughout this chapter include descriptive statistics such as frequencies, percentages, cross tabulations as well as textual analyses. However, where relevant, the Pearson's chi square tests are used to

determine significance of association or relationship between demographic variable such as education, income, residential class or sex and sanitation practices indicators such as access to household toilet as well as sanitation attitude or behaviour such as willingness to contribute to improving sanitation.

### **Environmental Sanitation Infrastructure as a Sanitation Management Tool**

The systems theory alludes to sanitation hardware as an important aspect of sanitation management (Jumper 2012; Kaminsky, 2013). This, from the theoretical literature review, borders on the provision, maintenance and use of sanitation infrastructure/facilities such as toilet facilities, refuse dump site, drains or the drainage system, vehicles for transporting waste or refuse to the dump site, dust bins and other containers for collection of refuse as well as other tools, equipment, and logistics for sanitation management.

Under this sub-section key issues that are addressed include provision of access to key sanitation facilities, solid waste disposal and liquid waste management practices. The first issue addressed under application and management of sanitation infrastructure is provision of access to key sanitation facilities

#### **Provision of Access to Sanitation Infrastructure**

One key piece of physical infrastructure that is needed to maintain acceptable sanitation practices in the house and community is a defecation facility (McConvile, 2010; WHO, 2010). In order to ensure proper ESM practices in Ghana, the ESP of Ghana outlines a wide range of ESM programmes and services but puts special emphasis on some aspects on the basis of their

importance and potential impact on public health and livelihood (Acheampong 2010; Addo, 2010). Key among these basic services include domestic waste collection and disposal, promotion of household toilets, provision of public toilets in heavily used areas such as markets and lorry stations, cleansing of streets, beaches and markets (MLGRD, 2010).

One aspect of sanitation management, which is often stressed at the international, national and local levels, is access to home defecation facility, that is, toilet in the house. Theoretical literature (Mosler, 2012), reinforced by empirical literature (Spencer, 2012), singles out availability and use of toilet facility in the house as one of the best ways of checking the unacceptable practice of open defecation. The conceptual framework also emphasises access to sanitation infrastructure as essential in ESM.

Based on literature and the conceptual framework, the study engaged extensively with the issue of defecation practices in the study area. As shown in Table 6, which also disaggregates the data by residential class, out of 479 households, 53.7 percent had access to toilet in the house while 46.3 percent did not. It must be stressed, however, that within residential class 100 percent, 82 percent and 29.1 percent of respondents in the high, middle and low classes respectively reported having toilet facilities in the house.

Considered in terms of unavailability of household toilet, Table 5 shows that while no household in the high class residential area was without a toilet facility, 17.5 per cent and 71 per cent of the households in the middle and low classes respectively did not have access to home defecation facility.



Table 6: *Availability of Toilet in the House by Residential Class*

Residential Class		Availability		
		Yes	No	Total
Low class	Frequency	88	212	300
	%	29.1	70.9	100
Middle class	Frequency	47	10	57
	%	82.5	17.5	100
High class	Frequency	122	0	122
	%	100.0	0.0	100
Total	Frequency	257	222	479
	%	53.7	46.3	100

$\chi^2=195.76$      $df= 2$      $p\text{-value.} = 0.00$      $\alpha\text{ level}= 0.05$

Source: Field data, Mensah (2015)

Additionally, the Pearson's chi square analysis returned a p-value of 0.00, which is less than the alpha level of 0.05, meaning there is a significant relationship. It implies that the higher the status of the residential class, the higher the likelihood of availability of defecation facility in the house. This supports the finding by Mahama (2013) in a study on determinants of factors influencing household access to improved water and sanitation facilities in selected low-income urban areas of Accra that the significant factors that influence household access to toilet facilities include the location or residential class of the house.

It must be emphasised, however, that the residential class with 100 per cent availability of toilet in the house in this study was a settlement where the houses were built by the Social Security and National Insurance Trust (SSNIT)

and so each flat was provided with a toilet facility in conformity with the building regulations of the Town and Country Planning. Additionally, the percentage of households in the second class residential area with toilet was high because it was an extension of the old settlement where most of the new buildings that were springing up had toilet facilities.

At Elmina, it was reported by two opinion leaders in separate interviews that most of the big houses in the tenement area close to the Benya lagoon did not have toilet facilities in the house and so a lot of the residents resorted to open defecation in the lagoon and the beach. The two key informants at the chief's palace revealed that the colonial buildings there were constructed with the bucket or pan latrine facility but that type of toilet had been banned and the town planning was such that it was difficult for those houses to have place (space) for the construction of modern toilet (water closet). The argument about improper town planning constraining sanitation management is consistent with the findings by Saei (2012) and Tukahirwa (2011) on a similar issue.

A key informant from the Zoomlion company also indicated in an interview that historically, the people in the catchment area of the Benya Lagoon particularly, Elmina, Bantuma, Bronyibema, Mbofra Akyinim, and Pershie were used to open defecation, especially in the lagoon and/or the sea, and were finding it difficult to adapt to any improved system of disposing of their human excreta. Unfortunately for them too, governments over the years had not taken it as a priority to provide adequate approved toilet facilities for the poor communities, while most of the residents were unable to construct household toilet due to

poverty and/or lack of space. It is discernable from the Zoomlion Officer and the opinion leaders' report that the problem of open defecation in the area was due mainly to income poverty and lack of space for household toilet.

Reacting to the opinion leaders and Zoomlion officer's report on the ban and lack of space for household toilet, an Environmental Health Officer (EHO) of the Municipality indicated in an interview that, before the ban, landlords and landladies were given the option to replace the pan latrines with other approved alternatives. That is, there was a project to convert the pan latrines to available alternatives but most of the landlords refused to take advantage of this offer. In this connection the EHO noted that the Urban III project afforded them the opportunity for alternative toilet facilities which were very economical with space because the design was such that the superstructure could be built on the septic tank even in the building.

. The EHO indicated that landlords and landladies who were ready were supported but most of them declined. The informant therefore attributed the problem to poor attitude of the residents, that is, resistance to change, adding that even right behind the Municipal Assembly Office Complex, open defecation was a common feature. The informant hinted that;

*Now the emphasis is on Community-Led Total Sanitation (CLTS) because as a lower middle income country, the subsidy for the construction of toilet is being discouraged in Ghana. When the people are made aware of the indignity and shame associated with unacceptable defecation practices such as open defecation, the*

*excuse of no money and no space will all disappear. How much does it cost to build a toilet such that a house with about ten rooms will not have a toilet? Meanwhile, the landlords and their tenants have television sets, refrigerators or even cars. The amount of money some of them spend on funerals, weddings and other social functions in a year can build a toilet in the house. It is a matter of attitude, mentality and priority. (Environmental Health Officer, KEEA Municipal Assembly, 2015)*

The EHO as well as the Community Water and Sanitation (CWS) Officer hinted that sanitation marketing, which focuses on household as consumers through a user-centred approach to designing affordable latrine options had been introduced. With this, support was being provided for local businesses to provide and sell the affordable household latrine, using the 4Ps of marketing – product, price, place and promotion. Schemes such as village savings and loans associations as well as micro credits were available for households who could afford, while grants to the poorest households identified through the Livelihood Empowerment Against Poverty (LEAP) was also being instituted to help people have access to toilet in the house.

The observation about poor attitude and sanitation not being given a priority attention as captured in the quote from the EHO accords with Olajide's (2014) conclusion from the study on household sanitation practices in Katsina Metropolis, Nigeria. Olajide concluded that poor sanitation in the metropolis was due to poor attitude and sanitation not being considered as priority by residents. It is also consistent with Kirunda's (2009) finding that poor sanitation in Kiwa Town Council in Uganda was due to lack of commitment on the part of local authority who did not give the issue a

priority attention. The EHOs submission about CLTS and Sanitation Marketing was also in line with best practices in attempts to stop open defecation (UN, 2013; USAID, 2013; Water-Aid, 2013) for sustainable development.

In line with empirical evidence that not all people who have access to toilet in the house use them (Spencer, 2012), household respondents who had access to toilet in the house were asked if they used them. This revealed that, although they all used them, sometimes some (i.e. 54 out of 212) of those in low class residential areas, especially those in the compound houses where one toilet facility served many people, were forced to use defecation options other than the one in the house, including public toilet and open defecation.

The factors that occasioned the multiple defecation situations, according to the household respondents, included queuing or having to wait for one's turn as well as some users not keeping the toilet clean. This evidence supports the finding about multiple defecation practices as reported by Adubofour, Obiri-Danso and Quansah (2013) in their sanitation survey of two slum Muslim communities in the Kumasi metropolis. It will also be recalled from the theoretical literature (WHO/UNICEF, 2010: 2014) that shared toilet facilities are not regarded as improved defecation options and so their use undermines best practices in ESM.

Baabereyir (2009) and Spencer (2012) observed that ESM behaviour and practices of the average Ghanaian can largely be attributed to the low literacy rate or education of the population. In order to establish a relationship between education and ESM practice, particularly with regard to defecation practices, the educational levels of respondents were analysed against availability of household

toilet. The finding supported a relationship between educational level and access to household toilet as the Pearson's chi square test showed a significant relationship between the two variables. The test yielded a chi square value of 168.7 with a p-value level of 0.00 which is lower than the alpha value of 0.05, thus supporting its significance.

In terms of percentages, the household data analysis revealed that, while 10.7 per cent of household respondents with no formal education had access to toilet in their houses, 35 per cent, 74 per cent and 94 per cent of household respondents with basic, secondary and tertiary education respectively had access to household defecation facility (Table 7). This shows that level of education is associated with access to home toilet and thus corroborates Abdu, Adewara and Oloni's (2013) as well as Spencer's (2012) findings that availability of household toilet is associated with educational level.

In Spencer's (2012) study, it became evident that respondents who had completed basic education were more than 2.5 times as likely to live in houses with latrine, increasing to seven times as likely for senior secondary school graduates and 25 times as likely for residents who completed post-secondary education. As Spencer (2012) argued, people with high educational attainment may have higher incomes because they have better or more opportunities for better jobs and so may be more able or better disposed to provide and maintain household toilet/latrine or rent houses that have toilet facilities than their counterparts with lower levels of education.

Table 7: *Access to Toilet in the House by Level of Education*

Access	Level of education									
	None		Basic		Secondary		Tertiary		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Yes	8	10.6	64	35.2	87	73.7	98	94.2	257	53.7
No	67	89.4	118	64.8	31	26.3	6	5.8	222	46.3
Total	75	100	182	100	118	100	104	100	479	100

$\chi^2=168.4$      $df=3$      $p\text{-value} = 0.00$      $\alpha\text{ level}= 0.05$

Source: Field data, Mensah (2015)

The finding is also consistent with Sharma and Roma’s (2012) observation that higher education could contribute to a better appreciation of importance of sanitation issues, which may motivate a person to see home defecation option as a priority. Additionally, Sharma and Roma (2012) maintain that residents with higher educational level may appreciate the nobility and prestige associated with access to household toilet, because it is expected of someone of their rank in society, unlike residents with low level of education who may see nothing wrong with non-household defecation options such as public toilet and open defecation

It costs money to construct a toilet facility and so houses with proper toilet facilities normally attract higher rent. In any case, whether as landlord or tenant, extra cost has to be incurred to occupy a house with toilet facility. However, in order to put a stop to the practice of open defecation, the World Health Organisation (WHO, 2013) has insisted on house latrine. The rationale behind this insistence is that, once a latrine becomes available in every house and this is complemented by the provision of latrines at public places for the transitory population to use, there will be no or little incentive for indiscriminate defecation

in any community, especially in regard to open defecation. Against the backdrop that occupying a house with faecal disposal facility entails extra cost to either the landlord or the tenant, respondents' access to household toilet was cross-tabulated against their disposable income levels and chi square analysis carried out.

The results of the analysis showed that progressively higher percentages ( i.e, 27%, 85% and 93%) of the respondents in the low, middle and high income brackets had access to household/house toilet respectively (Table 8). This suggests that, the higher the level of disposable income, the higher the likelihood of owning a house latrine or living in a house with this sanitation facility. The resultant chi square analysis returned a p-value of 0.00, which is less than the alpha value of 0.5 implying that it was significant.

While studies by Abdu, Adewara and Oloni did not establish a significant relationship between income and access to house toilet, the evidence from studies by Sabra (2009), Mahama (2013) as well as Li, Gao and Chen, 2014 did, and therefore the evidence from` this study corroborates the three latter studies. This finding could be explained by the fact that a higher level of income makes one more economically empowered to put up a house with toilet facility or rent one of such houses. As explained earlier, this is so because constructing a house with toilet facility is more expensive than building a similar one without such a facility for either owner occupancy or rental purposes, and for rental purposes, a house with a toilet facility is more likely to attract a higher rent than a similar one without such a facility.



Table 8: *Availability of Toilet in the House by Income Level*

Income level		Availability		
		Yes	No	Total
Low income	Frequency	62	169	231
	%	26.8	73.2	100
Middle income	Frequency	66	12.0	78
	%	84.6	15.4	100
High income	Frequency	69	5.0	74
	%	93.2	6.8	100
Total	Frequency	197	186	383
	%	51.7	48.3	100.0
$\chi^2 = 142.10$		df = 2	p-value = 0.00	alpha level = 0.05

Source: Field data, Mensah (2015)

On the other hand, it could be the case that, as Appiah-Boamah (2010) found, as disposable incomes increase, people tend to care more about their living standards, including their environmental sanitation conditions. Concerning sex and access to household toilet, the Pearson’s chi square test returned a statistic of 3.42 and a p-value of 0.07 which is higher than the alpha level of 0.05 implying non-significance of relationship

It is learnt from the theoretical literature review that, while sanitation facilities such as water closet and ventilated improved pit are considered as improved and acceptable, others such as open defecation and the use of bucket or pan are regarded as unimproved (WHO, 2012). In consonance with the literature, household respondents who indicated that they had access to toilet

facility in their homes were asked to indicate the type of toilet facilities available to them for use.

It is observed from Table 9 that, 61 per cent of the households with home defecation facility had access to water closet (WC). The percentage is high because all the first/high class residential households and over 90 per cent of the second/middle class residential households had access to water closet. It will be recalled that the first class residential area was a modern residential area constructed by SSNIT and so all building regulations, including provision of toilet in the house or flats were respected.

In line with the conceptual framework's, reference to preference for sanitation option under infrastructure management, household respondents were asked to indicate their preference for sanitation options and the result of this showed that the majority (92%) of them cited water closet as their preferred option. This corroborates the finding by Spencer (2012) in a study on sanitation practices and preference in peri-urban Accra, where he reported that 90 per cent of the household respondents who did not have access to home defecation facility indicated that they preferred water closet.

While reasons cited for opting for WC were mostly (92%) associated with the hygienic and odourless nature of this facility, the other eight per cent cited unreliable water supply for flushing toilet and increase in water bills as reasons for not preferring the WC. This implies that water closet type of toilet is valued for its hygienic nature but cost of constructing and maintaining it prevents many people from having such facilities.

Table 9: *Types of Toilet Facility Available in the Houses*

Type of toilet facility	Frequency	Percentage
Water Closet	157	61.1
Pit latrine	2	0.8
KVIP/VIP	97	37.7
Bucket/pan	1	0.4
Total	257	100.0

Source: Field data, Mensah (2015)

Notwithstanding the relatively high proportion of the household toilet facilities being water closet, it also emerged that the use of pan or bucket toilet still existed in the study area. No matter how insignificant (0.4%) this finding is, it is worth reporting as it was contrary to expectation because apart from being banned in Ghana, documentary analysis of the KEEA MESSAP/DESSAP 2010-2015 produced by Municipal Planning Co-ordination Unit (MPCU) in February 2010 had revealed that the use of bucket toilet had been completely eradicated in the study area. Additionally, the use of bucket or pan latrine is inconsistent with global best practices as pointed out in the theoretical literature (WHO, 2010: UNICEF, 2010).

It emerged that 56 per cent of the household toilet facilities were shared facilities while the remaining 44 per cent were private. This is somehow close to Mazeau's (2013) finding from his doctoral study relating to the implementation, availability and usage of shared toilet in Ghana. Mazeau found that about 70 per

cent of urban dwellers did not have private sanitation facilities in their houses and so relied on an informal network of shared toilets. However, it is worth pointing out again that, the high percentage of house toilet facilities in the study area was influenced by the first class residential area whose flats were all built with provision made for private toilet facilities in line with Town and Country Planning regulations for construction of houses of residence.

Out of the 222 household respondents who did not have access to toilet in the house, 57 per cent used the public toilet compared to 22 per cent found by Acheampong (2010) in a similar study in Kumasi. It also emerged that 18 per cent of 479 household respondents resorted to open defecation mainly in the bush, lagoon or at the sea shore. This is very close to the percentage (18.4%) of Ghanaians reported to be defecating in the open (GSS 2012/13)

Informal conversations with some people who had just finished defecating in the bush, lagoon (See Plate 7), open refuse dump and the beach revealed interesting reasons behind open defecation in the study area. While all open defecators at Sanka cited lack of public toilet in the community as the reason for doing so, those at Bantuma, Pershie, Dwira Akyinim, Essaman, Elmina and Bronyibema cited reasons such as no alternative, long distance to public toilet, unhygienic condition in the public toilet environment as well as the comfort associated with defecation at the beach and lagoon side as compared to the use of public toilet. Similarly, Mazaeu (2013) found that open defecation was opted for for its affordability and the relative absence of smell as compared to public toilet.



*Plate 7: Open defecation on a canoe at Teterkessim in Elmina*  
Photo credit: Mensah (2015)

Household respondents who reported using public toilet were asked if they paid for the use of the facility. About 99 per cent of them indicated that they did while about one per cent said they did not. Those who did not pay were found to be relatives of the attendants or caretakers of the public toilet. Meanwhile, payment for use of these facilities was important for the maintenance of the facilities and payment of the caretakers' remuneration. Two Environmental Health Officers of KEEAMA complained in separate interviews about corruption and mismanagement by some political party functionaries with regard to funds and cleaning of the public toilet facilities. Saei (2012) arrived at similar findings about politics and corruption in the management of sanitation in Delhi and Manila metropolises especially in regard to award of contracts for building sanitation facilities.

The conceptual framework recognises affordability of sanitation services as an important issue in ESM. In consonance with this, affordability of public sanitation facility fees was the next issue of engagement. Regarding how much respondents paid for each visit to the public toilet, it was reported that the fees varied from 15 pesewas (71%) to twenty pesewas (29%) depending on the community. As a follow-up, respondents were asked about the affordability of the fees to them.

The majority (75.5%) of the respondents indicated that the fees were affordable and reasonable because the attendants must be paid for their services from the proceeds, while part of the proceeds would be used for procuring logistics for cleaning the facilities. However, the minority (24.5%) who said the fees were not affordable gave reasons such as low levels of household income as well as the toilet facilities being government properties so they must be free of charge. The quote below amplifies an opinion leader's voice on the matter of affordability of public toilet fees.

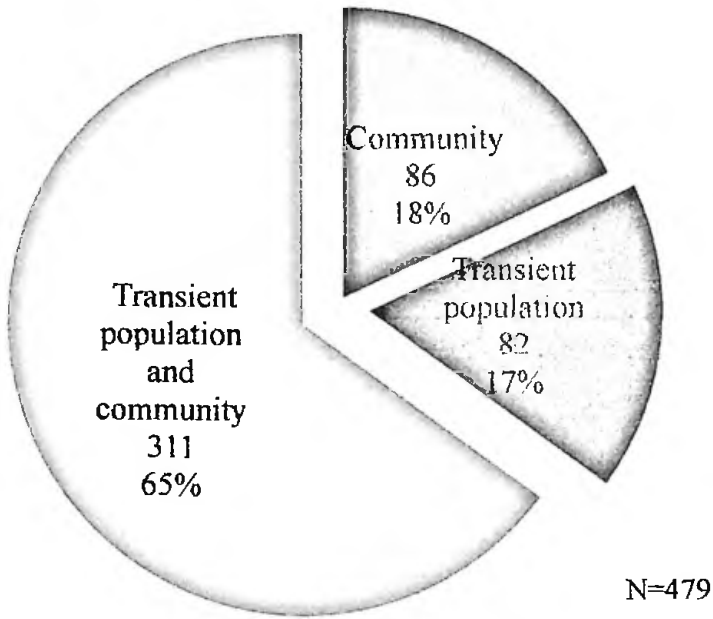
*Get ready with your pen and paper to do the calculation for me and draw your own conclusion on the issue of affordability of public toilet fees. We are eight in the family. Assume for simplicity sake that, each of us visits the toilet once a day. Multiply the number of visits per day for one month by the number of family members and the fee for a visit. If we spend this amount, which I consider as colossal in relation to my pocket on toilet alone, how much of my meagre income will be left for payment of school fees,*

*utility bills, meals, clothes and social functions such as funerals and weddings as well as faith-based obligations such as church offertory. The government must build more public toilet facilities and make it free or subsidise it to make it more affordable to us (Opinion leader, Essaman, 2015)*

The quote suggests that Ellis's (2000) view with respect to poverty and people's mentality about state property are important in sanitation infrastructure management. Ellis claims that sanitation affect livelihoods and that solving sanitation related problems, particularly in the low income communalities should be considered in the context of income and mental poverty.

The import of the quote in question also brings to question whether the rationale for public toilet (MLGRD, 2009: Sheikh, 2008) is understood by the generality of the people and so this issue.t this question was asked during the household interviews and data on this is the next subject of analysis. Specifically, the household respondents were asked to indicate who, in their respective opinions, were the public toilet facilities primarily or basically meant to serve.

Sixty-five per cent of 479 the respondents indicated that those facilities were provided for the general population, that is, residents and visitors alike, while 18 per cent said the rationale was primarily to serve the residents of the community (Figure 7). This implies that 83 per cent of 479 households were not aware that public toilets were basically meant for the transitory population. However, literature search did not reveal any previous finding on this issue to serve as a benchmark for comparison.



*Figure 7: Respondents' views on the rationale for building public toilet*

Source: Field data, Mensah (2015)

It is discerned from the responses that most of the household respondents did not know that public toilets were constructed primarily to serve the transitory or transient population. Community perspective on the same issue corroborated the household view. It became clear that most people, including some opinion leaders such as queen-mothers, chiefs, and their elders had misconceptions about the main rationale for constructing a public toilet in the community as exemplified by the quotes below from a queen-mother in one of the study communities.

*Open defecation is a common practice in this community because the government has not constructed a public toilet for the residents. I don't know whether this village is not part of Ghana*



*but if it is not, why do we pay tax to the government of Ghana. Once we fulfil our tax obligations, we expect corresponding privileges such as the provision of water, electricity and toilet. It is a philanthropist, Dr Paa Kwesi Ndoum who has offered to construct a communal toilet for the community and has started the project but it is yet to be completed. Though we have water and electricity now, the government is not responding to our demand for a public toilet to make the residents comfortable as far as defecation is concerned. We appeal to the government to construct a public toilet for this community. It is its responsibility to do so for the residents here. If the government fails to discharge this obligation, we will not only stop paying taxes but also stop voting to elect Assemblymen, Members of Parliament and even President.*

Another opinion leader from Pershie expressed his view on the rationale for provision of public toilet as follows;

*I think the main reason for providing public toilet facilities in this community is to make residents who do not have toilet in their houses have access to a more decent defecation option than the open defecation, which is very common here. That is a brilliant idea because it is the government's responsibility to construct a public toilet facility in every community that does not have one so*

*the residents in particular, and visitors as well, can access the facility (Opinion leader, Pershie, 2015).*

The majority view on the rationale for the provision of public toilet was not consistent with the Environmental Sanitation Policy of Ghana (MLGRD, 1999:2010), which insists on a toilet in every house and encourages the construction of public toilet primarily for the population in transit and not the residents. According to a key informant at the Environmental Protection Agency (EPA) at Cape Coast, the misconception about the rationale for public toilet, apart from encouraging landlords to bother not about making provision for toilet in their houses, could also explain why some residents put pressure on the government to provide certain facilities such as public toilets. An opinion leader indicated that due to the presence of a public toilet, some estate developers in the communities, including himself did not consider the provision of household toilet as a priority. The opinion leader had this confession to make;

*I am a landlord. My house is close to the public toilet so I did not bother to make provision for toilet facility in the house because I felt I could use the public one. All the occupants in the house, including the tenants are using the public toilet facility; thanks to the Municipal Authority and for that matter the Government of Ghana. I think the government should construct more public toilets in this and other communities so that those who cannot afford the cost of providing private toilet can use the public one because times are really hard (Opinion leader, Bronyibema, 2015).*

The import of the above evidence supports Mazaeu's (2013) finding that, provision of household toilet by landlords is not given priority not only because of the cost involved in its construction but also due to the availability of public toilet in some communities. In regard to the use of public toilet, it became evident through FGDs with market women that some people did not use the facility because they considered it unsafe for their health as the following quote from a market woman at Elmina suggests.

*I used to use the public toilet at the market here but I started contracting vernal disease – what the doctor described as candidiasis – due to the excessive heat that emanated from the toilet. Since I could not sacrifice my health in this regard, I stopped using the public toilet and resorted to defecating at the beach because that is the only alternative to the public toilet available to me at the market here.*

This quote suggests that some of the residents were compelled by circumstances beyond their control to resort to open defecation. However, there were others who indicated that they had used the public toilet facility for over thirty years and liked everything about the facility except the unpleasant odour, in cases where the facilities were not the water closet type. This implies that providing water closet as public toilet could solve the double-edged problem of unpleasant odour and the excessive heat, which people, especially women normally complain about regarding public places of convenience, which is

consistent with Ramaraja's (2013) observation in a study on impact of total sanitation campaign on rural households in Andhra Pradesh, India.

### **Solid Waste Disposal Practices**

In line with the conceptual framework, which highlights attitude, behaviour and practices based on the behavioural theory (Bandura, 1977), this section discusses solid waste disposal practices in the study communities. Issues involved are waste disposal methods, facilities available and used for waste disposal, affordability and accessibility of the facilities and people's satisfaction with the services available.

According to the conceptual framework, policy is one of the processes by which effective ESM can be ensured. A review of the ESP of Ghana revealed that one of the basic sanitation services that the MMDAs in Ghana are to ensure its provision is domestic waste collection and disposal facilities and services. In this connection, the policy emphasises house-to-house collection and provides that in communities where house-to-house collection of waste is not appropriate or possible, the Assembly should designate communal storage sites where solid waste can be discharged into a fixed or moveable container. The policy's insistence on the above was found to be consistent with global best practices in ESM, which frown on the dump-the-refuse-anywhere attitude, behaviour and practice (WHO/UNICEF, 2014).

It emerged, as depicted in Figure 8 that, 64 per cent of households used the communal containers, followed by disposal at the open dumpsite (21%). Contrastingly, Fei-Baffoe, Nyankson and Gorkeh-Miah (2014) found in their

study of municipal solid waste management in Sekondi-Takoradi Metropolis, Ghana that 49.3 per cent of households used the communal container system.

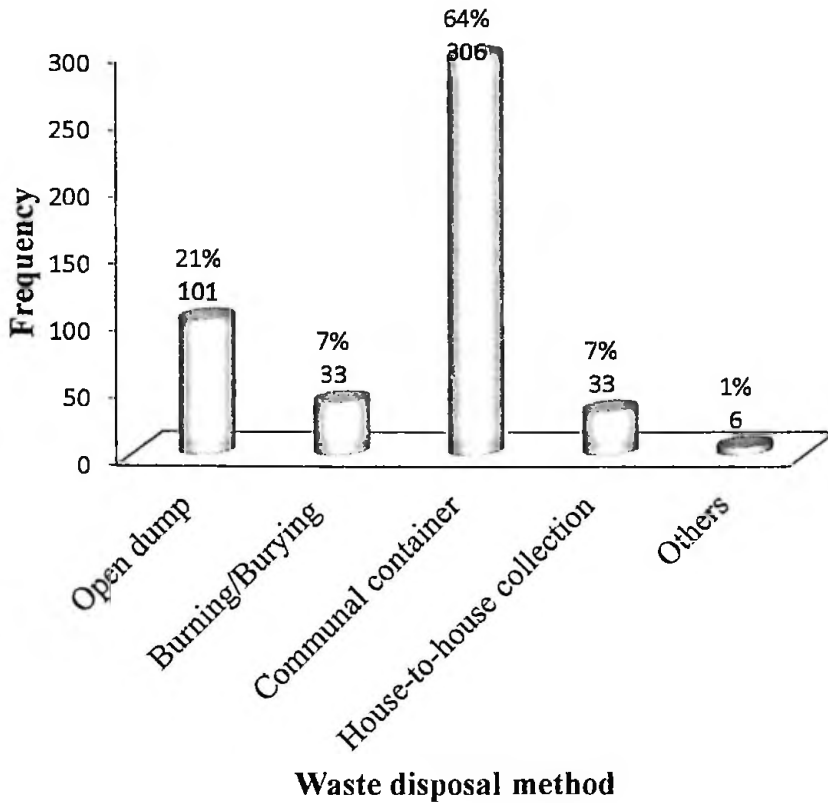


Figure 8: Solid waste disposal methods

Source: Field data, Mensah (2015)

The Ghana Living Standard Survey (GLSS) by GSS (2010) reported that 10.7 per cent, 14.4 per cent, 37 per cent and 23.5 per cent of Ghanaians practised open dump, house-to-house, burning and the communal containers methods of waste disposal in Ghana respectively. Thus, the evidence shows that, while the percentage of people using the communal container system in the study area was higher than the national average, those using the house-to-house system in the study area was lower than the national average.

As mentioned earlier, literature review (Puopiel 2010) showed that the best solid waste disposal practices are house-to-house collection and the communal waste disposal system where waste is discharged into containers provided for such purposes at properly sited locations. This issue was engaged at the household level and analysed by the type of residential areas. The essence was to find out which methods of waste disposal were popular in the various residential areas. It became evident that for all the households in the first class residential area, the communal skip container system was the mode of waste disposal while for those in the second class residential area 31 out of 57 patronised the door-to-door services by a private service provider, the Zoomlion Company. None of the respondents in the second class residential area reported using the communal container because no such container had been provided in that residential area. The other residents who could not afford the house-to-house waste collection resorted to burying or burning their refuse in their backyard.

All the households in the high class residential area used the communal skip container because the residents claimed they did not have space for household dustbins in their flats. In the low class residential areas, the communal container method and the crude refuse open dumping in the bush, lagoon, gutters and by the roadside were the commonest modes of solid waste disposal (See Plate 8). This corroborates the finding by Puopiel (2010) that in Tamale, most residents in the low class residential areas, resorted to dumping of waste at open dump sites, by the roadside, in the gutter or backyard.



*Plate 8: Refuse dump near the public toilet and the Benya Lagoon at Dwira Akyinim*

Photo credit: Mensah (2015)

At Sanka, it became evident through observation and was confirmed by an opinion leader that, the community had no access to house-to-house services nor communal container system so the whole community engaged in crude open-dump system of waste disposal. At Pershie, Essaman and Mbofra Akyinim, refuse had been dumped by the roadside and at Elmina, Bronyibema, Bantuma, Pershie and Mbofra Akyinim some residents dumped refuse into the lagoon, close to the lagoon or into waste streams. Furthermore, observations revealed that there were a number of waste streams filled with garbage in most of the study communities. Although this was a common phenomenon in all the study communities, it was more so in the low class residential areas such as Nyanta and Teterkesim in Elmina (Plate 9) and area between Elmina Castle and Coconut Grove Hotel which were the hotspots for tourism, fishing and salt production activities.



*Plate 9: Waste stream choked with garbage and serving as a feeding ground for pigs and vultures at Teterkessim in Elmina*

Photo Credit: Mensah (2015)

In all, about 70 per cent of households who used the communal container system indicated that the containers were located within a reasonable distance, while the rest reported that the containers were too far from their houses. Literature indicates that communal waste containers should be readily accessible to those who dump wastes, at most 200 metres away from their house (Owusu-Sekyere, Bogah & Quansh 2015; Oteng-Ababio, 2010). It will be recalled from literature review (Ali, 2010; Oteng-Ababio, 2010; Wilson, 2007) that, beyond the 200-metre threshold, households are deterred from using the facility and rather tend to look for alternative dumping sites, which in most cases, are not the approved options. It is worth noting that accessibility in terms of distance to sanitation facility is one of the main determinants of people's willingness and motivation to use the facility (Dugah, 2013). Besides, the conceptual framework captures accessibility in this sense as one of the important factors that influence effective ESM practices.



Additionally, the conceptual framework highlights affordability as one of the factors influencing the management of sanitation infrastructure. Of the 448 out of 479 households that were not accessing the door-to-door services, 44 per cent indicated their preparedness to pay for such services if the fees would be made affordable and the service providers would collect the bins regularly. This reinforces the affordability and quality of service arguments by the MLGRD (2010) and corroborates the finding by Abudulai (2011) in a similar study on the causes and effects of indiscriminate waste management in Tema metropolis. The rest of the respondents indicated that, they were okay with the communal collection system or would rather prefer the communal system to the house-to-house model if this could be extended to them by locating the communal skips closer to them mainly because it was free of charge. This justifies the conceptual framework's and the theoretical literature's emphasis on availability and accessibility of, as well as preference for sanitation options as important.

By the method of observation, it was found that waste spillage from the old, rusty, torn and uncovered waste trucks while in transit made previously cleaned communities dirty. The finding reinforces a similar one by Fei-Baffoe, Nyankson and Gorkeh-Miah (2014) that massive patronage of the communal container system by residents, coupled with erratic schedules of waste collection by the waste collection companies has put pressure on the limited number of skips available for waste disposal, thereby resulting in spillages and mushrooming of illegal dumpsites.

It became evident that, none of the 479 households sorted or segregated their solid waste because they did not see the need to do so, considered it time wasting, or simply had not thought of doing so. This evidence is contrary to, and undermines global best practices in ESM, which stress a move-away from the conventional practice of collection-haulage-dumping to more modern systems of waste management that integrates waste sorting, reduction, recovery, recycling and reuse (Hutton, 2012). According to Hutton, such practices and systems are considered economically prudent, environmentally friendly and more sustainable. However, an EHO of KEEA indicated that sorting of waste had started at the KEEA Municipal Assembly on pilot basis and would soon be introduced in the communities after public education on its importance.

It was established through observation that, apart from Sanka and Bronyibema Extension or Estate, there were designated communal storage sites where solid waste was discharged into moveable containers in all the study communities in line with policy ESP (MLGRD, 2010) prescription. Although a key informant from the Zoomlion Company disclosed that, Zoomlion hauled the skip containers to the final dumping site, which was a landfill site located at Essaman once or twice a week, the frequency of haulage of the skips as reported by the key informant was not wholly confirmed by the respondents in the various study communities.

A visit by the Principal Investigator to the landfill site at Essaman revealed that it was an unengineered one and there were lots of scavengers including vultures as well as waste pickers, including school children who went

round the site to pick some waste materials for re-use as captured in Plate 10. This was found to be inconsistent with modern best practices in sanitation management (Konrandsen, 2010; Kaminsky, 2013) which required the use of engineered landfill sites.



*Plate 10:* School children picking waste materials from an unengineered landfill site at Essaman  
Picture credit: Mensah (2015)

As regards satisfaction with Zoomlion service delivery by the households, about 63 per cent of 448 household respondents were dissatisfied with the frequency of the company's collection and removal of dust bins and containers for final disposal, adding that the containers/dustbins often overflowed, forcing waste depositors to dump the excess waste around the bins/containers (Plate11). The evidence supports the findings of several other studies (Abdul-Barik, 2012; Adu-Buahun, 2012; Spencer, 2012) that public and private waste bins are not often emptied as regularly as expected, thus creating repulsive physical environmental

scenes and detracting from advantages that proper physical capital brings such as good health and tourism promotion in the study area as envisaged by the conceptual framework.



*Plate 11: An overflown communal waste container near the Benya Lagoon at Bronyibema*

Photo credit: Mensah (2015)

Four opinion leaders, one each from SSNIT Flats, Elmina, Dwira Akyinim and Bronyibema reported in separate interviews that in some cases the Zoomlion or the Municipal Assembly had to be called several times before they came over to evacuate the refuse. This supports the evidence by Acheampong (2010) and Pupiel (2010) in their respective similar studies in Kumasi and Tamale. Other key informants simply reported that, the containers were evacuated when they were full but failed to report on how promptly this was done. Having thus examined the solid waste disposal practices, the next issue for examination is the liquid waste management practices.

## **Liquid Waste Management Practices**

This section examines the liquid waste management practice in the study area. Oldfield (2006) as well as Scheinberg and Mol (2010) has maintained that, liquid waste, if not properly managed, could pose sanitation challenges and constrain sustainable socio-economic development efforts. As established in the literature (Tsai, 2007; Kaminsky, 2013), drainage is a critical factor in ensuring proper ESM in every community. In Tsai's view, this is so because apart from clogged drains making the environment unsightly, they also contribute to flooding and breeding of mosquitoes, which cause malaria.

Based on the above setting, the study sought to find out how the drainage system was being taken care of in the study area. Issues that were engaged were disposal practices, existence, adequacy and quality of drains, responsibility for construction and maintenance of drainage system as well as monitoring, accountability and institutional matters relating to liquid waste management.

An interview with the Municipal Engineer at the KEEA Municipal Assembly revealed that, the Municipal Assembly, with the financial support of the Royal Netherlands Embassy, had constructed some drains in Elmina. According to this informant, with assistance from the World Bank under the Urban II and III Rehabilitation Development Projects, the Government of Ghana tackled some of the drainage problems in Elmina. However, through observation it was found that most of the drains did not support easy flow of waste water into the lagoon and so most of them were choked with garbage. The key informant

confirmed the engineering defects and attributed it to weak monitoring of infrastructural projects on the part of the assembly and other external monitors.

It emerged that, while all high class households disposed of their liquid waste through the sink and water closet system, the commonest liquid waste disposal practice, including disposal of urine and faeces of children in the low class residential area was by throwing it on the compound, or into the gutter or bush. The evidence supports that of Olajide (2014) in a study on sanitation practices in Katsina Metropolis in Nigeria. An assemblyman attributed the practice to mental poverty as well as weak monitoring, adding that even some adults urinated in the open while some defecated in the gutters or drains in the night.

It was revealed, through observation and separate interviews with the assemblymen and key informants from the KEEA Assembly that, apart from SSNIT Flats all the other communities in the study area had drainage challenges. Communities that were identified through, observation and separate interviews with two key informants from the KEEAMA as having serious drainage problems were Teterkessim and Nyanta in Elmina, Bronyibema Old Town and Estate, Essaman, Pershie , Bantuma, Mbofra Akyinim, Dwira Akyinim and Sanka. It was observed that most places in all the communities had earth drains, which needed to be changed to concrete-lined drainage channels. In places where there were a few concrete drains, most of them were uncovered and filled

with filth, thereby creating unsightly physical environment (See Plate 12).



*Plate 12: An uncovered drain filled with filth at Nyanta in Elmina*

Picture credit: Mensah (2015)

A key informant at the KEEAMA indicated in an interview that, one main challenge with drainage construction was cost recovery. According to the informant, the assembly charged no fees for the use of drains and a lot more of the sanitation services were for free due to poverty and political reasons. That is, while most of the people were too poor to pay for most services, ruling political parties also declined to approve payment for such services for fear of losing votes in elections. Furthermore, an assemblyman reported that the quality of the drainage infrastructure provided by the government in the very few locations of the study area was sub-standard and, therefore, reduced the reasonability of charging for their use and the likelihood of the people accepting to pay. This evidence does not only justify the conceptual framework's emphasis on quality of sanitation infrastructure and services but also undermines it.

It was reported by opinion leaders at Elmina, Pershie, Bronyibema, Essaman and Dwira Akyinim that on 6<sup>th</sup> June 2014, several places in their respective communities got flooded as a result of heavy downpour of rain. The opinion leader attributed this situation, which resulted in displacement of people, loss of property, livelihoods and lives, to the poor drainage system and construction of structures in water ways and other unapproved locations.

With regard to institutional framework, the Planning Officer of KEEA Assembly admitted that, although the legal framework for drainage management was generally well-defined, the degree of enforcement and implementation was weak. He further observed that more decentralization was required, but while administrative decentralization was somehow on-going, fiscal decentralisation and accountability needed a further boost. Challenges associated with decentralisation such as these, had already been established (Kumi-Kyereme, Yankson & Thomi, 2006) and were said to be hampering development efforts in the MMDAs, especially in sanitation infrastructure management.

It also emerged from an interview with a key staff of Zoomlion that the business climate for drainage construction and cleaning in the study area was not helping much as the odds did not favour private interests because contractual payments to contractors by the government for works done, were not effected regularly. This finding defeats the essence of public-private-partnership in sanitation management as stressed by Bird and Avoka (2007). Bird and Avoka have maintained that, the public sector might not be able to cope with the



sanitation challenges in a given country and therefore partnership with the private sector should be given a serious consideration.

### **Education as an Environmental Sanitation Management Strategy**

Theoretical literature (Mynt & Aye, 1988), acknowledges that improving sanitation is not only about fixing sanitation infrastructure but also managing the sanitation behaviour of the people through education and regulation. While the behavioural change theory emphasises the role of education and sensitisation in sanitation behaviour change communication, the systems theory and the conceptual framework are clear about the complementary roles that sanitation education can play to support infrastructural and regulatory management as strategies for improving ESM.

The important issues for effective sanitation education as distilled from literature (Nhamo & Inyang, 2011), which are addressed in this section, include the sources/channels/media and targets of education, the messaging and the language through which the education is done. Another issue that is addressed is the awareness, observance and relevance of the environmental sanitation day, which the government of Ghana has instituted to sensitise and mobilise the people for sanitation improvement in Ghana, including the study area.

An investigation into channels through which household respondents normally received education or information on sanitation was carried out. An analysis of the multiple responses from the household respondents on this issue revealed that, the most cited source of information was the radio (20.6%), followed by community opinion leaders (chiefs, queenmothers, assembly

members youth group leaders) (14.7%) [Table 10]. The least popular sources were the newspapers (2.6), NGOs (1.1%), internet (0.9%) and books (0.7), thus betraying households' high level of low compliance with modern information and communication technology for sanitation management as well poor reading habits. The high patronage of radio services could be attributed to the proliferation of local information centres in almost every community in Ghana, which affords even those who do not own personal radio sets the opportunity to receive information through this channel, medium or source.

Table 10: *Household Respondents' Sources of Information on Sanitation*

Source	Frequency	Percentage
Radio/Local information Centres	425	20.6
Traditional and community leaders	304	14.7
Television	275	13.3
Health institutions	271	13.2
Private sanitation companies	269	13.1
Municipal assembly	198	9.6
Educational institutions	150	7.3
Faith-based organisations	58	2.9
Newspapers	55	2.6
NGOs	23	1.1
Internet	18	0.9
Books	15	0.7
Total	2,061	100.0

Source: Field data, Mensah (2015)

Note: The total is more than the sample of 479 due to multiple responses

It became evident that most of the public education or sensitisation sessions were neither well designed nor regular programmes, although they were delivered in the local languages. For example, while two religious leaders from Essaman and Dwira Akyinim admitted in separate interviews that talks about sanitation in the churches were irregular and scanty, a chief's elder at Pershie acknowledged that the traditional authorities were mostly just announcing dates and times for communal cleaning exercises but not undertaking any well designed sanitation education. They added that this practice had been going on since time immemorial because their forefathers, the current crop of leaders and the ordinary residents were aware that sanitation was important for their health.

In the case of the NGOs, it was only at Bronyibema Old Town and Sanka that an assemblyman and a queen-mother reported in separate interviews that some NGOs provided some education on the need to stop open defecation. The Community Health Assistants from the Municipal Health Centre at Elmina were reported, through FGD with market women to be holding routine health education for pregnant and nursing mothers, and as part of this education, they talked about sanitation as a health-related issue

A market woman reported that since the target group for this education was nursing mothers and pregnant women, the education benefited only a limited section of the community unlike the radio and television education, which is for the consumption of the general public. This undermines the emphasis that the theoretical literature (Water AID, 2008) as well as the conceptual framework

places on the concept of targeting of all relevant stakeholders for sanitation education.

While two EHOs from the KEEAMA claimed in separate interviews with them, to be going round all the communities to provide sanitation education on regular basis, this claim was not confirmed by the households and opinion leaders who saw sanitation law enforcement in the area as weak. The opinion leaders at Sanka, Essaman, Bantuma, Gwira Akyinim and Pershie reported that for over ten years the Municipal Assembly had not embarked on any form of organised public education on sanitation in the communities except the adhoc or emergency ones when Ebola and Cholera broke out in 2014. This is contrary to best practices in sanitation management (Kaminsky & Javernick-Will, 2015; McConville, 2006: WHO, 2010), which call for the mounting of regular education on sanitation issues, especially in developing countries where sanitation has been found to be seriously militating against efforts at development.

It will be recalled from the review of the behavioural change theory that in their knowledge-attitude-behaviour change model, Matthews and Riley (1995) stated that an increase in sanitation knowledge through sanitation education could lead to attitudinal change and subsequently influence behaviour. The conceptual framework also acknowledges the influence of sanitation knowledge in this respect and recognises messaging as an important factor in achieving effective sanitation education results.

All 479 household respondents indicated that the relevance of environmental sanitation was embedded in its importance for human health and

37 per cent added that sanitation was important for human dignity. All respondents also said that most sanitation education they had benefited from centred mainly on health implications of sanitation. Additionally, it was gleaned from all the FGDs that, all the scanty sanitation education by EHOs, NGOs and many others they had benefited from, centred principally on the health implications of sanitation. The concentration on health implications of sanitation as found in this study supports the claim (Curtis, Danquah, & Aunger, 2009; Marshall & Kaminsky, 2016) that one potential reason for failed efforts in sanitation management may be a misalignment between the motivations of local stakeholders and development professionals. .

It is also argued from the foregoing that, although health is an important reason worth emphasising in sanitation education, concentrating on only health implication of sanitation for sanitation education underestimates the use of other benefits of sanitation for possible effective sanitation behaviour change communication messaging. The literature (Mosler, 2012; Murphy & Roe, 2004), supported by the sustainable livelihood and behavioural change theories as well as the conceptual framework, abound in several other benefits of sanitation, including productivity, income, sustainability of tourism and water-based economic activities, which can be capitalised on for possible effective sanitation behaviour change communication messaging.

The government of Ghana launched the National Sanitation Day (NSD) in 2014 by way of sensitising the public and eliciting their support for proper sanitation management for sustainable development (Suna, 2015). According to

Suna, starting from the day of launch, the first Saturday of every month was declared as a national sanitation day whereby all Ghanaians would be expected to participate in community and neighbourhood clean-up exercise as part of measures to rid the communities, and for that matter the country, of filth.

The government's expectation for the institution of the day, which was in line with the behavioural theory (Sutton 2005), was that it would influence the sanitation management attitude, behaviour and practices of residents in Ghana, including those in the study area. However, for the NSD to make the expected impact, two issues that are of paramount importance according to Suna (2015), are stakeholders' awareness of the day and observance of it. The conceptual framework of this thesis identifies awareness as one of the elements that need to be ensured in sanitation education to produce the expected results. Concerning awareness about declaration of the first Saturday of every month as the ESD, 68.3 per cent of the household respondents indicated that they were aware whereas 31.7 per cent indicated they were not.

Data disaggregation by residential class showed that the higher class residents were more aware about the environmental sanitation day as 54 per cent, 88 per cent and 93 per cent of the respondents from the low, middle and high class residential areas respectively, indicated that they were aware (Table 11).

The chi square test corroborated the finding that higher class residents were more aware about the environmental sanitation day. The test returned a chi square value of 72.03 and a significance value or p-value of 0.00, which is lower than the 0.05 alpha level implying that it is significant. This could be

attributed to the fact that more educated people lived in the middle and high class residential areas, and cared more about sanitation or were more economically empowered to have more access to radio, television and newspapers through which publicity on the national sanitation day was mostly carried out.

Table 11: *Awareness of Environmental Sanitation Day*  
by Residential Class.

Residential class		Awareness		
		Yes	No	Total
Low	Frequency	160	135	295
	%	54.2	45.8	100
Middle	Frequency	50	7	57
	%	87.8	12.2	100
High	Frequency	114	8.	122
	%	93.4	6.6	100
Total	Frequency	323	150.0	473
	%	68.3	31.7	100
$\chi^2=72.03$		df=2	p-value.= 0.00	alpha level = 0.05

Source: Field data, Mensah (2015)

However, the high level of awareness of the day did not necessarily translate into participation in activities that marked the day as at the day of data collection, only nine per cent of the household respondents confirmed ever participating in the day since it was launched in 2014. Household data disaggregation by educational level showed that highly educated people were more aware about the institution of the NSD than their counterparts in the lower level education categories (Table 12)

Table 12: *Awareness of Environmental Sanitation Day by Educational Level*

Educational level		Awareness		
		Yes	No	Total
None	Frequency	24	49	73
	%	32.9	67.1	100
Basic	Frequency	94	84	178
	%	52.8	47.2	100
Secondary	Frequency	102	16	118
	%	86.4	13.6	100
Tertiary	Frequency	103	1	104
	%	99.1	0.9	100
Total	Frequency	323	150	473
	%	68.3	31.7	100

$\chi^2= 125.33$      $df=3$      $p\text{-value.}= 0.00$      $\alpha$  level= $0.05$

Source: Field data, Mensah (2015)

It is observed from Table 11 that, the percentages of respondents who were aware about the NSD were 33 per cent, 53 per cent, 86 per cent and 99 per cent respectively for none, basic, secondary and tertiary levels respectively. The Pearson's chi square analysis showed a p-value of 0.00, which is less than 0.05 alpha level implying that it is significant.

An opinion leader at Pershie saw the National Sanitation Day as synonymous with communal labour and wondered if the rationale was to replace the age-old communal labour system with the day. The opinion leader also saw the publicity of the day as low. The following quote amplifies the voice of the opinion leader on the environmental sanitation day.



*So far, this community has not participated actively in the national environmental sanitation day because we were engaging in communal labour before that day was introduced or instituted. Apart from that, the publicity of the day has been low or inadequate so many people do not know much about it. So far publicity has been carried out principally through radio and television. Other avenues for publicising the day such as the chiefs and opinion leaders, religious organisations, youth groups and other community-based organisations have been ignored, or at best, underutilised. Besides, the day is observed on regional basis so the people think that it is a regional affair. Even at the regional level, active participation has so far been limited to the regional capitals. The observance of the day needs further decentralisation to engender grassroots participation (Opinion leader at Pershie).*

This quote supports the anecdotal evidence about inadequate publicity of the National Sanitation Day (NSD). Additionally, other opinion leaders reported that the day had been so politicised that some people even wore political party T-shirts during the clean-up exercises that were organised during the day. An opinion leader at Essaman expressed misgivings about the sustainability of the day. According to the informant, the National Sanitation Day was seen as a modernised version of the communal labour which used to be championed by the traditional leaders who were non-partisan but rather unifiers. The opinion leader observed, on the contrary, that the NSD was being spearheaded by people

perceived as politicians, using the day to score political marks. Saei (2012) observed and warned about the negative effects of politics on sanitation management in New Delhi and Manila Metropolises, India.

Although anecdotal evidence pointed to varying degrees of the relevance and observance of the NSD, empirical evidence on same was hard to come by. Approximately 88 per cent of the household respondents including some of those who had earlier indicated that they were not aware of environmental sanitation day described the institution of day as relevant. It is deducible from the foregoing analysis that, although awareness about the day was quite high and perception about its relevance was also high, participation in its observance had been low due to low publicity of the day, politics, misconception about the day leading to people mistaking it for a regional exercise or the usual communal labour.

### **Regulation as an Environmental Sanitation Management Strategy**

In this section, the application of regulatory mechanisms for managing environmental sanitation is subjected to examination. The principle of complementarity under the systems theory endorses the use of complementary activities in sanitation management and identifies regulation as one of the relevant activities in this respect (Ackoff, 1981). Additionally, the conceptual framework recognises that the processes of regulation in ESM include policies, laws and institutions.

Though sanitation laws exist in Ghana (MLGRD 1999:2010), in practice those for whom the laws were made may not even be aware of the laws' existence let alone what they – the laws - entail (Atuahene, 2010). Thus, the first entry point for

the laws to work in practice is for the people to be aware of the laws. In partial fulfillment of the requirements for the second objective of the study, and also in consonance with the conceptual framework, the study found out about awareness of the laws governing ESM in the study communities.

When the 479 household respondents were asked to indicate whether they were aware of the existence of laws governing ESM and practices, all of them responded in the affirmative. However, majority (94.7%) of them confessed that they were not conversant with the contents or most provisions of the laws. As many as 86 percent were not aware that for those living close to the streets, the distance from the middle of the street to their house fell within their jurisdiction and so they were responsible for keeping it tidy. This corroborates a finding in a similar study in Effiduasi, Kumase by Adubofour, Obiri-Danso and Quansah (2013), which revealed that although the Assembly had bye-laws that regulated sanitation management, the households were not aware of the laws.

It can be argued that the majority of the respondents not being aware of the sanitation laws, suggests that sanitation regulation management in the area was not really being complemented with education on the laws. This negates the principle of complementarity as espoused by the systems theory (von Bertalanffy, 1968), which is also implicit in the conceptual framework. It also brings into question the assertion by the Environmental Health Officers (EHOs) of KEEAMA that they (EHOs) had been embarking on regular house-to-house public sanitation education.

A crosscheck with an EHO of the KEEA Assembly revealed that the education on sanitation by the EHOs did not talk about sanitation laws but rather the

importance of sanitation and hygiene for health. However, evidence from the Netherlands Embassy in Ghana report (2015) indicates that sanitation adoption is not motivated by messages about health benefits alone. The implication is that the content and scope of sanitation education needed to be broadened to include what the by-laws entailed as well as other benefits of proper sanitation such as productivity, dignity, income and environmental sustainability. It is argued that this is the essence of the principle of complementarity between sanitation education and regulation as the conceptual framework and the systems theory (Bowler, 1981; von Bertalanffy, 1968) would want one to appreciate in ESM endeavours.

The theoretical literature cautions that, knowledge and awareness of sanitation laws, important though they are, may not be enough as they alone cannot guarantee enforcement and compliance with the laws by the people (Ekane 2013: Yardley, 2010). Ekane, therefore, advises that conscious efforts should be made to enforce them as the next step after making the people aware of the laws. In this study, an assessment of people's views on enforcement of and compliance with sanitation laws was done at both household and community levels. It will be recalled that enforcement and compliance are highlighted under regulation management in the conceptual framework.

While about 50 per cent of the household respondents described the degree of enforcement as low, 42 per cent rated it as average. Reasons for rating it as low included irregular visits of personnel from the municipal assembly for premises inspection as well as people engaging in indiscriminate defecation and disposal of waste without being sanctioned by the assembly. This observation reinforces the assertion by Mingle (2013) that, the nation's inability to maintain

proper environmental sanitation standards stems from disregard for sanitation laws by the population and inertia on the part of the regulatory authorities to apply the necessary sanctions for breach of the laws. Commenting on the role of the Municipal Assembly in enforcing the laws, an opinion leader observed that;

*The Assembly is more interested in collecting taxes than enforcing the sanitation laws. The Assembly is aware that some people defecate where they are not supposed to, while others litter indiscriminately and dump garbage into the lagoon, gutters and by the roadside but look on instead of dealing with the offenders in accordance with the assembly's own by-laws. Law enforcement is the bane of environmental sanitation not only in this community but the whole of Ghana (Opinion leader, Mbofra Akyinim, 2015).*

A traditional chief of one of the study communities revealed that Environmental Sanitation Officers (EHOs) at the Municipal Assembly had not been visiting the communities regularly to carry out their duties. Occasionally, they visited a few houses hurriedly for premises inspection. Sometimes they summoned some offenders to the Municipal Assembly but the offender refused to honour the summons and nothing happened to them. The quote below amplifies the chief's voice on this issue.

*I suspect that some of the sanitary inspectors take bribes from the offenders and the case dies a natural death. Until we revisit the pre-independence and early post-independence era of sanitary inspectors popularly known as "Tankas" to assist with enforcement of sanitation laws at the household and community levels, I am afraid very little results*

*if any at all, can be achieved as far as improving environmental sanitation is concerned. It is high time we stopped the rhetoric and plunged into action by strictly enforcing the sanitation laws (A traditional chief, 2015).*

The allegation about bribery is tantamount to corruption, which as already pointed out, has been found by other researchers, including (Saei, 2102 ) as the bane of ESM. However, an EHO at the KEEA Municipal Assembly claimed that, the sanitation officers had been carrying out premises inspections in all the areas under their jurisdiction, including the study area. What were preventing the laws from being successfully enforced, according to the EHO, were nepotism, politics and corruption on the part of prominent and influential people who were supposed to be agents of positive change by helping to enforce the law.

At the MMDA level, according to a key informant from the Environmental Sanitation Division of the MLGRD, “people’s affiliations with those at the helm of affairs make enforcement difficult. When people fall foul of the sanitation law and are brought up for prosecution, people in higher authority step in to stop the prosecution. This does not only discourage the EHOs from doing their work but also weakens their power to do so.” These findings were similar to Atuahene’s (2010) observation that the challenge of sanitation law enforcement as pointed out by District Environmental Health Officers (DEHOs) in Ghana was political interference. Atuahene found that there was an instance where a District Chief Executive ordered the refund of fines to the offenders and also through the influence of the DCE, sanitation offenders were discharged by the court and so due to this, the public often show disrespect to DEHOs

A key informant from the MLGRD opined that the courts that should prosecute sanitation law breakers were already overwhelmed with/by non-sanitation cases. The Environmental Sanitation Division of (MLGRD) had advocated for a day in every week to be devoted for trial of sanitation cases by the district courts but the court were saddled with too many cases to give the needed attention to sanitation cases. It had also been advocated by the Division that sanitation courts be set up in all the ten regions of Ghana but this had not yielded the desired results as most regions had not done this.

With reference to behavioural theory, Armitage, Connerjzen and Madden (1986) have advocated the application of rewards and punishment to exact compliance with sanitation laws. They maintain that rewards encourage compliance with sanitation laws, while sanctions discourage non-compliance with same. Ensuring compliance with sanitation regulation, therefore, calls for a mechanism to encourage compliance and discourage non-compliance.

In keeping with the conceptual framework and empirical literature (Abdulai, 2011; Spencer, 2012) regarding sanctions as a tool for regulation of sanitation behaviour, household respondents were asked about their opinion on three main forms of sanctions that may be applied to sanitation offenders namely, community service, fine and imprisonment. The result showed that, while (32.3%) of them were in favour of community service, (62.4%) were in favour of a fine. This finding contrasts with Spencer's (2012), which indicated that, 20.5 per cent of the household respondents suggested community service as a sanction for sanitation offence. While respondents who were in favour of a fine generally

maintained that a spot fine would discourage unacceptable sanitation practices and also accumulate funds for community development, others in favour of community service submitted that, making offenders do community service as punishment would not only be effective but would also make the community benefit from such services. In Spencer's (2012) study, similar reasons were given to justify the sanctions for sanitation offences.

Other views regarding sanctions for sanitation offence were expressed through interviews with key informants. An opinion leader at Bronyibema opined that exacting compliance with sanitation laws should not be looked at only from the punitive perspective but also from the motivational point of view. The opinion leader suggested that, awards should be instituted for maintenance of high sanitation standards to motivate people to comply with acceptable sanitation standards. This is in consonance with the behaviour change theory (Sutton 2007), which posits that, much as unacceptable behaviours need to be discouraged through punishment, commendable behaviours need to be recognised through a number of ways including awards. It can also be argued that rewards complementing punishment reinforces the argument of the systems theory (Akoff, 2010) that, the components of a system need to work harmoniously for a holistic functioning of the system.

In relation to reward as strategy for regulating people's sanitation behaviour and practices, an assemblyman indicated in an interview that the cleanest household could be awarded at the community level, the cleanest community could be awarded at the district or municipal level, the cleanest



district/municipality could be awarded at the regional level and the cleanest region awarded at the national level. The assemblyman was of the view that, this would make the government monitor, the regions, the regions monitor the districts and/or municipalities, the districts and/or municipalities monitor the communities and the communities monitor the households for the maintenance of proper sanitation standards at all levels. The relevance of effective monitoring in sanitation management has been stressed by Carrard, Pedi, Willetts and Powell (2009) and is also recognised by the conceptual framework as an important factor in regulating sanitation behaviour.

### **Willingness to Contribute to Improving Sanitation**

This section is devoted to examining household respondents' willingness to contribute to improving ESM in their localities. The issues for analyses are willingness to report sanitation law breakers, make financial contribution towards ESM, participate in communal labour, participate in sanitation route march for advocacy as well as be a member of sanitation committee or task force. Tools of analysis employed here include percentages, cross-tabulation and chi square test.

Sanitation is described as a public good (McConville, 2008) whose effects are not discriminatory and so everyone is expected to contribute towards ESM. Kirunda (2009) made the point that, the willingness of the people to contribute their quota towards improving ESM is essential for the crusade against environmental injustice. The participation and systems theories assert that, participatory approaches are essential in making a system wholly functional (Annepu & Themedis, 2013). However, making the ESM system work depends

on a number of factors, key among which is the willingness of the stakeholders to contribute to the ESM system or enterprise (Alderwish & Dottridge, 2013). In the conceptual framework, willingness to contribute to ESM is implicit, implied or embedded in the concept of participation.

The 479 households were asked if they were willing to contribute to ESM in their communities in one way or the other and all of them indicated they were. This evidence supports Kirundi's (2009) finding on prospects and challenges in ESM in Kira Town Council in Uganda, which established that all the respondents found it prudent to contribute to ESM in various forms with particular emphasis on waste management. However, it is inconsistent with the finding by Finn (2007) in a similar study in Kratove, Macedonia, which found that only 41 per cent of households were willing to contribute to ESM programmes.

One important way of contributing to the success of ESM is by reporting sanitation law breakers for the necessary action to be taken against the offenders. Although the behavioural theory (Bandura, 1977), supported by the conceptual framework, suggests that sanitation law breakers should be punished to serve as a deterrent, the offender must be caught and sent to the appropriate authority before the punishment can be administered or meted out to them. Common knowledge has it that, all countries around the globe expect the public to assist the law enforcement agents to deal with the offenders by reporting the offenders to the appropriate authorities. However, the effectiveness of this expectation from the public depends on the public's willingness to co-operate in this direction.

An investigation about 479 household respondents' willingness to report sanitation offenders revealed that 80.2 per cent were prepared to do that, while 17.3 per cent were not. Willingness of household respondents to report sanitation offenders was cross-tabulated with residential class to analyse the relationship between the two variables. While 77.7 per cent of the respondents in the low class residential areas and 84.2 per cent in the middle class residential area were willing to report sanitation offenders, 84.4 per cent were willing to do so in the high class residential area (Table 13). The Pearson's chi square test produced a chi square statistic of 8.26 and a p-value of 0.08 which is higher than the alpha level of 0.05, showing that there is no relationship between people's residential class or status and willingness to report sanitation offenders.

Table 13: *Willingness to Report Sanitation Offenders by Residential Class*

Residential class		Willingness			Total
		Yes	No	Undecided	
Low	Freq	233	55	12	300
	%	77.7	18.3	4.0	100
Middle	Freq	48	9	0	57
	%	84.2	15.8	0	100
High	Freq	103	19	0	122
	%	84.4	15.6	0	100
Total	Freq	384	83	12	479
	%	80.0	17.0	3.0	100
$\chi^2=8.26$	df=4	p-value.= 0.08		alpha level= 0.05	

Source: Field data, Mensah (2015)

Willingness to report sanitation offenders was further analysed by educational level of respondents. This revealed that, the majority of respondents in each of the categories were willing to report sanitation offenders. From Table 14, it is clear that, 74.7 per cent, 78.0 per cent, 80.5 per cent and 87.5 per cent of respondents with no formal, primary, secondary and tertiary levels of education respectively, expressed willingness to report sanitation offenders. It implies that, highly educated people were more willing to report offenders than those whose educational levels were lower. The chi square test returned a p-value of 0.03, which is less than alpha level of 0.05 showing that there is no between education level and willingness to report sanitation law breakers.

Table 14: *Willingness to Report Offenders by Educational Level*

Educational level		Willingness			Total
		Yes	No	Undecided	
None	Freq	56	14	5	75
	%	74.7	18.7.0	6.6	100
Basic	Freq	142	35	5	182
	%	78.0	19.4	6.6	100
Secondary	Freq	95	21	2	118
	%	80.5	17.8	1.7	100
Tertiary	Freq	91	13	0	104
	%	87.5	12.5	0.0	100
Total	Freq	384	83	12	479
	%	80.0	17.0	3.0	100

$\chi^2=13.64$  df= 6 p-value = 0.03 alpha level= 0.05

Source: Field data, Mensah ( 2015)

Par

deshi, Shirke and Jagtap (2008) as well as Puopiel (2010) have maintained that the role of women in ESM is crucial given the cultural expectation of women in sanitation management. Based on this observation, the willingness of both sexes to contribute to ESM was delved into by finding out their preparedness to involve themselves in the crusade for improving sanitation by reporting sanitation offenders.

The results of a cross-tabulation of women's willingness to report sanitation offenders and that of men showed a marginal percentage difference, that is, 79.6 per cent for males respondents and 80.8 per cent for females. The Pearson's chi square test returned a chi square value of 1.21 and a p-value of 0.54 showing that it is not significant. Contrastingly, the results of a similar study by Pardeshi, Shirke and Jagtap (2008), found that women's willingness to participate and actually participating in total sanitation campaigns (TSCs) played a significant role in ensuring open defecation-free communities in Yavatmal District of Maharashtra, India.

It is deduced from the foregoing analyses that whether by educational level, residential class or sex, the verbal expression of willingness to report sanitation law breakers was high indicating preparedness of respondents to cooperate with law enforcement agencies to apply the sanitation laws. However, when asked whether any of the household respondents had ever reported anyone for any sanitation offence such as littering the street or defecating at unapproved places, none of the respondents answered in the affirmative implying that their verbal expressions were not backed by action.

However, the finding is close to that of Finn (2007) on households' willingness to contribute to improving sanitation in Kratovie in Macedonia, which established that 26 per cent of the households were prepared to contribute to improving sanitation through awareness creation campaign. Other studies (Dogah, 2013; Massie & Webster, 2013) have also found that community sensitisation campaigns play a key role in improving environmental sanitation. As Ahmed (2003) has shown, trends in sanitation management, especially in rural and peri-urban settlements point to effectiveness of community-led sanitation improvement systems

Table 15: *Forms of Contribution Respondents are willing to Make to Improve Sanitation in the Community*

Form of contribution	Willingness			Total %
	Yes %	No %	Undecided %	
Contribute financially for sanitation improvement	71.2	18.0	10.8	100
Sensitise neighbours and others on sanitation issues	39.3	18.3	32.4	100
Participate in communal labour for sanitation improvement	98.3	1.7	0	100
Be a member of a committee to plan and do sanitation work	69.3	9.1	21.6	100
Be a member of a task force to enforce sanitation laws	52.4	11.3	36.3	100
Participate in route march for sanitation improvement	39.2	21.8	39.0	100

Source: Field data, Mensah (2015)

N=479

Although as many as 71 per cent of households were prepared to make financial contributions towards improvement of sanitation in their communities, about 66 per cent of these added the conditional clause “if the money would be used for the intended purposes.” This suggests suspicion of corruption in the management of sanitation even at the community level, thus supporting the observation by Saei (2012) in this connection. The main reason cited by the respondents who did not subscribe to the idea of contributing financially towards ESM bordered on mistrust for and loss of confidence in some community leaders who had not proved to be trustworthy in terms of accountability and transparency. Others cited poverty and tax payment fatigue as the reasons for their unwillingness to contribute financially towards sanitation management.

With the exception of participation in route march and sensitisation of neighbours, more than half (50%) of the household respondents were willing to participate in the rest of the activities to improve sanitation in their communities. Thus, the evidence supports the conclusion by Kirunda (2009) that the future of sanitation management in a community is bright only if all or at least most of the people are willing to contribute and their willingness is purposively and tactfully tapped. However, having explored and analysed the three main sanitation management strategies and established their relevance and applicability for proper environmental sanitation management the next issue is prioritisation of strategies for effective sanitation management in situations where prioritisation becomes necessary. The next section takes a look at this issue.

## **Prioritising Environmental Sanitation Management Strategies**

This section discusses prioritising environmental sanitation management strategies. The main issue here relates to which sanitation management activity or strategy should be accorded the most attention in the effort or attempt to improve sanitation for sustainable development. According to Kumar, Kar and Jain (2011), for any initiative to achieve its goals, it must have a set of strategies for implementation and clear priorities in place for the achievement of the desired objectives and goals. In the view of these authors, having the strategies aligned with the priorities creates a defined path to reaching the goal of the initiative. In addition, setting priorities also helps to avoid becoming overwhelmed where there are multiple goals to be reached through adoption of multiple strategies (World Bank, 2015).

The main sanitation management strategies, according to the conceptual framework and supported by the systems (Checkland, 1981) and behavioural (Townsend & Angel, 2011) theories are sanitation education, infrastructure and regulation. Townsend and Angel posit that planning, implementing, monitoring and evaluating sanitation improvement programmes entail cost but the resources to undertake these activities are limited. For this reason, there is often the need to prioritize as part of strategic sanitation management. However, the question remains 'which of the three main sanitation management activities or strategies – infrastructure education and regulation - should be given a priority in order to record or register maximum environmental sanitation improvement effect or impact.'



By asking household respondents to rank the strategies based on their individual perceptions of the sanitation challenges prevailing in their communities, this study found out which of the strategies should be given priority in the sanitation management efforts. As can be observed from Table 16, infrastructure was ranked first by 56 per cent, second by 34 per cent and third by 11 per cent of the respondents.

Since infrastructure had the highest percentage of first ranking, it implies that most respondents saw it as the strategy that should be given the highest priority. This is consistent with Oti's (2012) views and definition of basic sanitation, which put emphasis on sanitation infrastructure, especially defecation facilities that are hygienic and safe. It also reinforces the conclusion by Godfrey and Gonzales (2010) that the key strategy for addressing environmental challenges, including sanitation should be technological, paying special attention to physical design and construction of infrastructure.

Sanitation education was ranked first by about 37 per cent, second by 50 per cent and third by 13 per cent of the household respondents. Receiving the second highest ranking among the strategies suggests that in the respondents' view in general, sanitation education should be considered after infrastructure as a ESM strategy. This, however, is at variance with the observation by Kirunda (2009) that public sensitisation or education on sanitation should be prioritised ahead of sanitation infrastructure.

In relation to the position of regulation in the order of priority strategies, it was ranked first by eight per cent, second by 16 per cent and third by 76 per

cent of the household respondents. This suggests that regulation should be considered third after infrastructure and education, which is inconsistent with the several advocates (Luthi & Parkinson, 2011; Movik & Mehta, 2010, Pesson, 2010) of emphasis on law enforcement as the solution to unacceptable sanitation practices, particularly in developing countries. The main argument by the respondents for ranking infrastructure first was that, many people indulge in unacceptable sanitation practices because they do not have better options with regard to sanitation facilities

Table 16: *Ranking of Sanitation Management Strategies in Order of Priority*

<u>Ranking</u>	<u>Strategies</u>					
	Infrastructure		Education		Regulation	
	Freq	%	Freq	%	Freq	%
First	265	56.0	174	36.3	38	8.0
Second	159	33.5	238	49.7	74	15.6
Third	50	10.5	62	13.0	362	76.4
Undecided	5	1.0	5	1.0	5	1.0
Total	479	100	479	100	479	100

Source: Field data, Mensah (2015)

Most respondents (191 out of 265 respondents) argued that if the proper infrastructure, including toilet, dustbins or waste containers, drains, dump sites and other logistics were not put in place first, education and regulation would not work because the people would be compelled to use the unapproved alternatives. On the other hand, a little over half (91 out of 174) of the respondents who advocated education as the first in the order of priority, held the view that, if the people were properly and adequately educated or sensitised they

would see the importance of environmental sanitation and so would strive to put the infrastructure in place. They further argued that, if the sanitation messages went down well with the people, they would appreciate the need to engage in proper ESM practices and once they were maintaining acceptable behaviour and practices, regulation through law enforcement would be least necessary. The import of this argument reinforces the argument and rationale for the Community-Led Total Sanitation (CLTS) approach for stopping open defecation as proffered in contemporary (WHO/UNICEF, 2014; World Bank, 2011) sanitation literature, particularly for rural and semi-urban areas

Half of the household respondents (19 out of 38) who were of the view that regulation should be the first option to consider, contended that some people defecated close to the public toilet and others littered with careless abandon even when public litter bins were close by. They, therefore, held the view that provision of sanitation infrastructure and/or even education, was/were not the solution to the sanitation problems but rather people must be compelled to comply with ESM best practice through law enforcement. The observation about indiscriminate littering goes to support a statement attributed to former President Mahama, Ghana in the July 13, 2015 edition of the Daily Graphic newspaper, indicating that people litter the streets, drains and seashore indiscriminately without thinking about the implications for health and livelihoods but rather with the negative perception of making the work of the garbage collectors difficult.

Although in terms of majority view, the household respondents' rankings placed infrastructure, education and regulation in this order of priority attention

for managing environmental sanitation, Oti (2012) has advised that in prioritising sanitation management strategies, local conditions and needs should to be taken into account. In doing so, the prevailing local conditions have to be interpreted in light of what the people actually need.

It can be argued from the analysis that, the fact that some of the respondents placed infrastructure, education or regulation first, second, or third as the case may be, demonstrates that deciding on which should be given priority is neither linear nor simplistic. Oti's admonition is, therefore, noteworthy in this regard since a one-size-fits-all strategy may not be helpful.

However, in the interviews with the key informants (CWS Officer, EHOs, Assemblymen and other Community Opinion Leaders), the general view was that all three (infrastructure, education and regulation) were important but prioritization could be residential area specific. For example in the low/third class residential area, although all the three need to be stressed because level of education of the residents is generally low, the availability of infrastructure/facilities are low and awareness about the laws is also low, the biggest challenge is availability of infrastructure/facilities such as household or toilet. In the second class residential areas the scenarios could be described as average for all three but education could lead to people making the efforts to put the facilities in place and also obeying the laws. With regard to the high class residential areas, it was noted that availability of the infrastructure is generally high, most residents are educated to appreciable levels and are appreciably aware the of importance of ESM and so are expected to comply with proper ESM

standards, therefore, those who do not voluntarily comply should be made to comply through strict enforcement. It is deducible from this that, while all the three strategies are important in all the residential areas, infrastructure management, education and law enforcement could be prioritized in the third/low, second/middle and first/high class residential areas respectively.

After the investigations in relation to the topic concerning application of the three management strategies to address the second objective of the study, suggestions on the issue from all the categories of respondents were elicited. The suggestions have been analysed in the next sub-section to conclude this chapter.

### **Suggestions for Improving Environmental Sanitation**

The essence of studying ESM is to identify factors that affect it in order to maximise the benefits associated with the good practices and minimise the effect of the unhelpful ones (Konradsen, 2010) and this requires that the perspectives of stakeholders are considered. Following this dictate, suggestions for improving environmental sanitation for sustainable development were elicited from the perspectives of all categories of respondents, namely households, key informants and groups. Although an avalanche of suggestions were proffered in this direction, they all gravitated towards four main issues namely, infrastructure, education, regulation and institutional development. However, under each of these broad areas, specific areas were emphasised, which are highlighted in the analyses using percentages and text.

Suggestions on infrastructure management saw prominence being given to drainage, solid waste disposal and defecation facilities. With regard to drainage,

the suggestion by an assemblyman and a queenmother in separate interviews was that constructing concrete drains to replace the earth drains in the unserved communities such as Bronyibema, Essaman, Pershie and Terterkessin in Elmina would improve effective discharge of storm water and end the perennial flooding and water logging, which would improve sanitation. They also suggested that the few existing drains and gutters should be covered to prevent them from being filled with solid waste such as plastic products, broken bottles, wood and faeces wrapped in polythene bags. The suggestion was similar to one made by Olajide (2014) in a study on household environmental sanitation practices in Katsina Metropolis, in Nigeria.

Furthermore, it was suggested by 47 per cent of the 479 household respondents that, provision of adequate waste disposal facilities such as dust bins for house-to-house collection and communal containers at vantage points in the communities would help to improve environmental cleanliness. This suggestion is in line with the Environmental Sanitation Policy of Ghana (MLGRD, 2010), which provides that, in communities where house-to-house collection of waste is not possible or appropriate, the Assembly should designate communal storage sites, where solid waste can be discharged into a fixed or moveable container. Besides, the issue of adequacy of sanitation facilities being stressed here by the respondents is consistent with the conceptual framework, under the concept of infrastructure management.

Another suggestion concerning infrastructure management, which, in the view of majority (84%) of the households could make an impact on the sanitation

situation is the provision of toilet facility either in every house or adequate improved communal toilet facilities, which those who cannot afford the private ones as well as the transient population can access. However, about 64 per cent of the household respondents who identified with this suggestion were expecting the government to intervene by building more public toilets or providing subsidy for the construction of household toilets.

The finding captured in the last sentence of the preceding paragraph undermines the modern trends in sanitation management - the CLTS approach - as observed by (Gonzalez, 2013). In his doctoral thesis on 'pathways to sustainability in CLTS', Gonzalez (2013) observed that participatory facilitation methods enable communities to analyse their sanitation conditions and the risks of open defecation, which trigger a desire in the community to take their own action to become open-defecation free. Additionally, the idea of constructing more public toilet to serve residents does not only expose the ignorance of the respondents regarding the rationale for public toilet but also implies overburdening the central government, because basically, public toilets are meant for the transitory population (MLGRD, 2010).

Public education was another broad strategy that was suggested for improving ESM. While 95 per cent of households and almost every key informant suggested that attitudinal change and the health implications of sanitation should be highlighted in public sanitation education, only the experts for the tourism, fishing and salt production as well as the key informant from EPA mentioned that

implications of sanitation for productivity, income and sustainability of livelihood resources were worth highlighting in sanitation education.

It is discerned from the preceding paragraph that, the majority of the households and other respondents were aware or concerned about only the health implications of sanitation which is contrary to the tenets of the sustainable livelihood theory, which outlines a host of benefits of sanitation, including productivity, income and sustainability of ecological resources. Again, although the massive suggestion concerning attitudinal change corroborated other studies (Abdulai, 2011; Achiro, 2012) and reinforced the view that the problem of sanitation in the area was attitudinal, the little emphasis on implication for livelihood undermines the tenets of the sustainable livelihood theory as put forward by Carney (1998), the DFID (1999) and accentuated by other theorists, including Bebbington (1999) and Ellis (2004).

Concerning regulation, a community chief opined that the bane of improving sanitation in the area was weak law enforcement and, therefore, the law should be strictly enforced without fear or favour. All the assemblymen added their voice to the need to enforce the laws. The literature is replete with similar suggestions about law enforcement as a solution to sanitation problems in Ghana (Appiah-Boamah, 2011; Adubofour, 2010; Puopiel, 2010; Atuahene, 2010) and outside Ghana (MacConville, 2010; Kaminsky, 2013; Kirunda, 2009).

Other suggestions by the EHOs were directed at institutional challenges in ESM. In this respect, the suggestions were that, the Municipal Assembly should strengthen the capacity of the sanitation staff, equip and motivate them to work



harder, while the government should demonstrate more commitment to sanitation management by providing the needed funds and logistics to support ESM programmes. These suggestions were similar to the ones by Acheampong (2010) and Kirunda, (2009) based on their respective similar studies in Kumasi in Ghana and Kiriwa in Uganda.

It was also suggested by the opinion leaders in virtually all the study communities that the Municipal Assembly should strengthen partnership with other sanitation stakeholders such as the NGOs, traditional leaders, youth, churches/mosques and Zoomlion to deliver sanitation services. These were in line with Saei's (2012) recommendations based on his findings from a study on the application of private-public partnership in sustainable ESM in Delhi and Manila Metropolises in India.

### **Summary of Chapter**

The chapter examined the application of sanitation management strategies for improving ESM for sustainable development. It is clear from the analysis that sanitation infrastructure such as waste containers; drainage system and defecation facilities are not only inadequate but are also poorly managed. Households and individuals do not give sanitation management a priority attention. There is significant relationship between (i) residential class (ii) income level (iii) educational level and access to home defecation facility. Sanitation education is not only inadequate in terms of frequency of delivery but is also limited in terms of messaging. People have misconceptions about sanitation issues such as the rationale for public toilet and the institution of the National Sanitation Day, while

ignorance about sanitation laws is high, not in terms of awareness about existence of the laws but in terms of what the laws entail and imply.

Additionally, the analyses point to weak application of the law with respect to enforcement. It is clear that, while the laws are not strictly enforced leading to people flouting them with careless abandon, the limited enforcement that is carried out, is done only from the punitive perspective without complementing it with the motivational aspect, thereby negating the principle of complementarity as touted by the systems theory. Furthermore, Sanitation behaviour change communication is inadequate and also limited as it focuses on the health implications of environmental sanitation, which border on human capital with little or no attention being given to other implications of sanitation for other livelihood assets such as financial, natural and physical capitals. All these support the evidence that there is limited and ineffective application of sanitation education, regulation and infrastructure management as complementary strategies or tools for improving sanitation for sustainable development. However, it is established from the analysis that prioritising these management strategies by way of addressing the environmental sanitation challenges, is neither simplistic nor linear but depends on the prevailing circumstances.

Although a wide range of suggestions for improving sanitation were made by the respondents, they all bordered on improving sanitation infrastructure, education and regulation management. In all these, the respondents acknowledged the role of stakeholders and urged that they should be more actively involved in the ESM efforts for meaningful outcomes. It can be argued that, the suggestion

concerning the involvement of key stakeholders in sanitation management in the area is an implicit acknowledgement of the relevance of the role of stakeholders in the crusade for proper ESM practices for sustainable livelihood and development.

The foregoing supports the systems and participation theories' implied acknowledgement that, meaningful change can occur only if those who affect and/or are affected by the change contribute to effecting it by participating in the change management process (Ackoff, 1981; Lazlo, 1995). This brings into focus the role of stakeholders in the environmental sanitation management enterprise and justifies the devotion of the next chapter to examining this issue based on evidence gathered in that regard.

**CHAPTER SEVEN**  
**ROLE OF STAKEHOLDERS IN ENVIRONMENTAL SANITATION**  
**MANAGEMENT**

Introduction

This chapter presents the results of the study in respect of its third specific objective, which relates to identification of key stakeholders in the study area and examination of their respective roles in the ESM enterprise. The main issues for examination are the roles of the various stakeholders with respect to regulation, education and infrastructure management, their capacities in terms of strengths and weaknesses, their opportunities and threats as well as their interactions, and the implications of these for ESM and sustainable development.

The conceptual framework, as well as the theoretical and empirical literature shows that, basically, two broad structures namely, the government and the private sector exist for ESM. However, theoretical literature (Mosler, 2012) admits that, further categorisation of the structure is permissible depending on the rationale for the analysis one intends to do. For the purpose of analysis in the whole of this chapter, the stakeholder structures are broadly categorised into three namely, government, as represented by the ministries, departments and agencies (MDAs); private sector as represented by private sanitation companies and NGOs; and the community-based organisations (CBOs) as represented by traditional authorities, youth groups and faith-based organisations. The issues pertaining to these categories of stakeholders are analysed qualitatively throughout the chapter using the content and thematic approach. The presentation

is done in the textual, prose or narrative mode and supported with photographs and direct quotations of illustrative essence and relevance. The presentation starts with government as a stakeholder in ESM, followed by private sector, CBOs and ends with interactions among stakeholders for effective sanitation management.

### **Government as a Stakeholder in Environmental Sanitation Management**

A review of the Environmental Sanitation Policy of Ghana (2010) revealed that the overall sanitation manager in Ghana and for that matter the study area, was the central government supported by a number of governmental agencies, with the Ministry of Local Government and Rural Development (MLGRD) as the lead ministry in this respect. A key informant at the Environmental Health Division of the MLGRD, Accra, revealed in an interview that, the government of Ghana had provided the policy guidelines for ESM through MLGRD acting in consultation with other relevant agencies, including particularly, the Metropolitan, Municipal and District Assemblies (MMDAs). In their review of sanitation and hygiene management in Tanzania, Thomas, Holbro & Young (2013), reported of similar roles being played by parallel institutions in Tanzania regarding ESM.

According to the key informant from the Environmental Health and Sanitation Directorate of the MLGRD, the overarching policy framework for ESM was provided by the National Environmental Sanitation Policy (NESP) of 1999, which was revised in 2010. The broad issues presented in the NESP had been translated into a National Environmental Sanitation Strategy and Action Plan (NESSAP) and a Strategic Environmental Sanitation Investment Plan (SESIP).

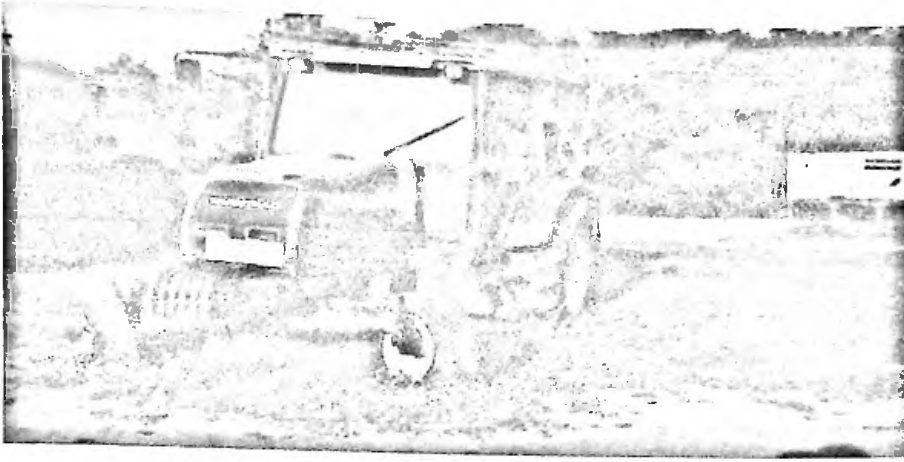
The EHO indicated that, the KEEA Municipal Assembly had developed by-laws and a District Water and Sanitation Action Plan dubbed vision 2040 for the Municipality. A review of the documents revealed elaborate plans, activities and regulations, including assignment of responsibilities, and in some cases timelines and budgetary allocations for the activities outlined to improve ESM. In terms of responsibilities, an EHO indicated that, in line with the duties as prescribed in the documents, the EHOs checked the medical wellbeing on food vendors and monitored the cleansing and disinfection of thoroughfares, markets and other public spaces. The EHOs collaborated with the School Health Education Programme (SHEP) co-ordinators to assess the hygiene situation in schools. They also carried out premises inspection and educated individuals on sanitation practices as well as enforced the sanitation laws. Through documentary review it was discovered that these roles were also consistent with the roles assigned to EHOs in the NESSAP of Ghana.

A Planning Officer at the KEEA Municipal Assembly revealed that the assembly's ability to improve sanitation depended on material and human resources to carry out the various sanitation tasks. Documentary review of the NESSAP indicated that, in recognition of the role of capacity development in sanitation management, the Strategic Framework for the Development of Capacity for Environmental Health and Management (SFDCEHM) in Ghana was developed in 2008 to guide capacity building in environmental sanitation management within the local government system. In line with this framework,

the capacity building arrangements of the KEEA Municipal Assembly (KEEAMA) were investigated.

It was revealed by an EHO that, the KEEAMA had since 2010, been participating in quarterly workshops and in-service training provided by the MLGRD on sanitation and apart from this, the assembly had plans to organise sanitation workshops on its own but was financially constrained to do so. The revelation about the financial difficulty as a constraint to executing sanitation plans corroborated Spencer's (2012) observation that funding was a major problem for most local governments' ESM endeavours in Ghana.

Concerning capacity in terms of logistics/equipment for sanitation management, a key informant at the KEEAMA reported that the Assembly had one motor bike, 30 communal containers, one skip loader, three skip containers, three arm rock trucks and two waste trucks. It also had one compaction truck, a cesspool emptier and a tractor. The weakness, however, was that, apart from being inadequate as reported by the informant, most of the pieces of equipment were either in bad shape or were no longer functioning (See Plate 13). Through observation, this evidence became substantiated, that some of these obsolete and or broken down pieces of equipment had been parked in front of the Municipal Assembly Hall Complex. This evidence is in conformity with Fei-Baffoe, Nyankson and Gorkeh-Miah's (2014) conclusion that inadequate and obsolete sanitation equipment prevented the municipal assemblies from effectively managing sanitation in the communities under them.



*Plate 13:* A broken down tractor parked at the KEEAMA Office  
Picture credit: Mensah (2015)

As regards capacity in terms of human resource, an EHO at the KEEA Assembly disclosed in an interview that, the Municipal Assembly had 16 environmental health staff, two building inspectors, one engineer, four quantity surveyors and three draughtsmen, which was described by the informant as not bad in terms of adequacy. The major challenge here, according to the informant, related to logistics to work with, staff effectiveness and efficiency in relation to technical competence as well as corruption and political interferences. While the finding about logistical constraints corroborated the finding by Acheampong (2010), the finding regarding corruption and political interference corroborated Saei (2012) on a similar issue in his study on the application of public-private partnership in sustainable sanitation management in New Delhi and Manila Metropolises.

Sanitation education is important in keeping stakeholders updated on current trends and practices in ESM (Mansuri & Rao, 2013). In an interview with an EHO at the KEEAMA on how the Assembly was promoting sanitation



through education, the officer indicated that, this was being done through house-to-house education but the EHOs were faced with a number of challenges in this regard. The following is what the EHO said concerning sanitation education in the study area.

*The EHOs go round to provide sanitation education to the residents in all the communities in the Municipality through one-on-one conversation in order to ensure proper maintenance of sanitation standards. What make our work difficult, however, are unavailability of education materials, lack of means of transport and computers to keep records of our activities and data for planning. Additionally, although we have received some training in our areas of operation, we are yet get exposed to the larger media campaign to complement our door-to-door education. We need sponsorship to enable us educate the public on the local FM or radio stations and information centres because we do not have money to do that.*

The above quotation from the Environmental Health Officer accords with the assertion by Adubofour (2010), Acheampong (2010) and Pupiel (2012) regarding logistical and funding challenges that bedevil ESM in Ghana. It also supports the finding by Adubofour (2010) that the sanitation departments of the municipal assemblies lack planning data.

As the conceptual framework depicts and supported by literature (Nhamo & Inyang, 2011; Tukahirwa, 2011), sanitation management is not complete

without regulation of people's behaviour, principally through law enforcement. Through documentary review it was gathered that, as far back as 1892, the Towns Ordinance was introduced as a legislative framework for promotion of environmental sanitation in Ghanaian communities (MLGRD, 1999). This Ordinance introduced the position of Inspector of Nuisances, which was defined to include the post of Sanitary Inspectors. Further to this, the Expanded Sanitary Inspections, Compliance Management and Enforcement (ESICOME) programme was initiated in 1999 to revisit the previously effective colonial and post-independence sanitary inspection and enforcement of bye-laws.

An EHO revealed that, in line with the national legislative framework for the promotion of sanitation in communities, the KEEAMA had enacted by-laws to help address the sanitation issues. A review of the by-laws revealed that they addressed issues relating to control of solid and liquid waste, indiscriminate littering and defecation, ban on pan or bucket latrines, as well as building laws that conform to the town and country planning regulations. An investigation into application of the laws revealed that, the laws existed largely on paper since there was very limited enforcement of the laws as reported by key informants, including community leaders and Zoomlion officers.

Documentary review, supported by an EHO's report, revealed that in line with the Ghana Building Code (1988), which was governed by the National Building Regulations L1 1630 (1996), the existing municipal regulations on building enjoined landlords to make provision for proper sanitation infrastructure in the building plan, especially toilet facility as a prerequisite for obtaining

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building permits. In this connection, the building inspector must make sure that the building plan has a toilet facility before the Assembly approves it.

. The procedures as enumerated by the EHO were found to be consistent with theoretical literature (Oteng-Ababio 2012). The challenge, according to the officer-informant was that, some actors within the approval chain often failed to do their part or the right thing. The officer in question attributed this to various reasons but pinpointed politics, nepotism, corruption, negligence and technical incompetence as the main ones, an evidence which corroborated findings by Puopiel (2012) and Saei (2012) on a similar issue.

It was revealed by a key informant at the Assembly that, there were building inspectors who went round to enforce the building regulation in the municipality. However, the informant reported that the professional and technical capacities of most of these officers were weak. Besides, the building inspectors were reported by an assemblyman and a queen-mother to be prone to corruption as they easily yielded to bribe offers by estate or land developers who flouted the building regulations and wanted to avoid going to court to face the consequences of their actions. The assemblyman, for instance, reported that:

*The building inspectors seldom come round to do their work. Once in a blue moon, they come over to just threaten land developers by inscribing “stop work” on uncompleted buildings and other structures but in spite of these inscriptions, the construction works go on steadily because the developers bribe the building inspectors. Other people continue to put up buildings and other*

*structures where they are not supposed to, as well as houses without toilet facilities because they have fraudulently secured building permit from the appropriate office or officer through bribery.*

The assemblyman pointed to several houses and structures such as shops and market stalls built in waterways and other unapproved places to substantiate the claims. He indicated that, when some of those structures started, the building inspector came around and invited the developers to their office, ostensibly to take action against them, but a few days after the visit, the structures were completed. When the assemblymen asked the owners of the structures what happened when they were invited to the building inspector's office, they confessed that the building inspector took money from them and gave them verbal approval - not written or documented permit - to continue. This finding supports the evidence by Dogah (2013) that, layouts in most communities in Ghana are poor because offenders often go unpunished. The practice also undermines effective law enforcement as envisaged by the conceptual framework.

Another major challenge of ESM that became evident at both the national and local levels was sustainable financing. A key informant at the MLGRD, Accra noted that, although Ghana was a signatory to the Thekwini Declaration, which enjoined the government to commit 0.5 per cent of its GDP to sanitation services, the government's commitment over the years had hovered around 0.1 per cent. This evidence corroborated the finding by Baabereyir (2009) about the low commitment of government to ESM in Ghana.

While a Planning Officer at the KEEA Assembly indicated in an interview that the MLGRD was supposed to facilitate the mobilisation of funds for ESM, a Municipal Engineer intimated that even though the Strategic Environmental Sanitation Investment Plan outlined user fees to be collected, in the KEEA Municipality, no user fees were charged for the use of drains, communal waste containers and final disposal sites. Both respondents cited political, administrative and poverty reasons for this. As regards sources of funding for ESM activities, the Planning Officer had this to say;

*The main source of funding of the Municipal Assembly for most major activities, including ESM, is the District Assembly Common Fund (DACF), which is not only inadequate but also irregular. The Common Fund Administrator in Accra virtually decides what the money should be used for because before it comes, part of it has been deducted by the Administrator for the payment of certain things without the knowledge of the Municipal Assembly. A case in point is when the costs of the vehicle for the Municipal Chief Executive and motor bicycles for the Assemblymen and women were deducted from the fund, leaving very little for developmental projects, including sanitation-related ones.*

Additionally, the planning officer opined that, the provision of several free sanitation services coupled with inadequate revenue from the District Assembly Common Fund (DACF) and other internally generated funds made the assembly unable to finance sanitation projects relating to infrastructure, education and

regulation. This corroborates the observation by Mwangi and Aggrey (2014), that the local taxation system in developing countries is inadequately developed to yield adequate funds for public works, including sanitation services. Anomanyo (2004) attributed this to the low capacity of municipal governments for cost recovery and their heavy reliance on state subsidies for projects, including ESM activities. On the same issue, Atuahene (2010) also maintained that the free or low fees usually charged for waste collection and insufficient funds from central and municipal budgets cannot finance adequate levels of sanitation services.

From the foregoing, it can be argued that the strengths of the government as represented by the MLGRD and EPA at the national level, and the KEEAMA at the local level, lie in the development and enactment of sanitation policies, laws and by-laws on sanitation. The weaknesses include inadequate funds, weak law enforcement and monitoring systems. However, the government, through its relevant agencies such as MRGLD, EPA and KEEA, have the opportunity to ensure compliance with acceptable ESM practices through law enforcement, education and infrastructure management. The threats are negative attitudes of the public to sanitation due mainly to mental poverty as well as corruption and political leanings.

### **Private Sector as a Stakeholder in Environmental Sanitation Management**

The conceptual framework endorses the complementary role that the private sector plays to that of the government agencies in ESM. However, the participation by the private sector in providing utility services including water and sanitation services remains debatable (Saner, Yiu & Khusainova, 2014). While

the public sector is perceived as slow and inefficient in extending utility services to the public, the private sector is perceived as efficient and quick but too exploitative due to its profit motive (Duit, Eckerberg & Ebberson, 2010). Whether the debate is necessary or not, what matters most is the role that both the public and the private sectors can play in the effective ESM for sustainable development.

It will be recalled that, by the classification of stakeholders adopted for this study, private sector stakeholders in sanitation management include the private sanitation companies and non-governmental organisation (NGOs). The only private sanitation company that was identified as being actively involved in ESM in the study area at the time of data collection was the Zoomlion Company. According to a key Zoomlion local officer, “the company’s ESM duty is to clean the streets, gutters and other public places, offer communal or house-to-house waste collection services to the public and offer public education on sanitation.”

Concerning solid waste disposal management, the Zoomlion Officer noted that, the company had distributed dustbins and communal containers for household and communal waste collection. He added that these were inadequate because, due to negligence on the part of government officials in charge of ESM, the number of communal containers actually needed by the communities were not mentioned to be added to the contract given to Zoomlion for management of waste. As a result of this anomaly, Zoomlion had been doing its best with the limited number of waste containers available. The finding about inadequate household and communal waste bins corroborates Thomas, Hoolbro and Young’s



(2013) observation in their review of sanitation and hygiene in Tanzania and also justifies the conceptual framework's insistence on adequacy of sanitation infrastructure as an important factor in sanitation management.

Although the Zoomlion officer claimed that, about 90 per cent of waste generated in the municipality was professionally taken care of by the company, this assertion was challenged by the opinion leaders. Much as the opinion leaders generally commended Zoomlion for their efforts at improving sanitation in the study area, they held the view that there was plenty of room for improvement in the company's efforts, especially with regard to provision of waste bins and prompt evacuation of waste for final disposal.

Meanwhile, the Zoomlion officer attributed the poor attitude of the people, which made the company's work difficult to weak law enforcement as well as mental and income poverty. What the Officer actually said in this connection is of illustrative essence and is quoted below.

*Apart from the fact that the laws are not being strictly enforced, the educational and income levels of the people are too low to support proper ESM. When the levels of education and economic conditions of the people are improved, the people will be more likely to change their poor EMS attitude, behaviour and practices because they will understand and appreciate sanitation issues better and be more empowered to afford sanitation facilities and services. It must be acknowledged that, it is not easy to change the sanitation attitude, behaviour and practice of the poor and*

*uneducated or semi-educated. Law enforcement is key in ESM but it needs to be complemented by mental and economic empowerment of the people because appreciation of sanitation issues and affordability of sanitation facilities and services are equally important.*

It can be argued that, this finding corroborates the result of the household respondents' view on a similar issue in chapter five of this thesis, where households in the high income and tertiary education brackets were found to be associated with better sanitation management practices with respect to defecation options than their counterparts in the lower income brackets. Additionally, Sbrana (2009), Abdu, Adewara and Oloni's (2013), .Praisetyoputra and Irianti (2013), Mahama (2013) as well as Li, Gao, Miao and Chen (2014) arrived at similar conclusions about the relationship between sanitation practices and income as well as educational level in their similar studies in Yemen, rural Nigeria, Indonesia, Accra and rural China respectively.

With respect to Zoomlion Company's role in public education on ESM, the key informant indicated that, their staff had been sensitising the public on the importance of sanitation, especially the health implications of sanitation but admitted that more education was necessary since the people's attitude to sanitation was very bad. He indicated that instead of providing money for sanitation infrastructure and education, the municipal assembly would always say there is no money. This is what the Zoomlion Officer said about the assembly's unhelpful behaviour in this connection:

*. The Government or Assembly would always say there is no money, to the extent that sometimes it causes undue delay in the payment of the Zoomlion staff. We pay the staff from the contract sum negotiated with the government, which is paid more or less through the Assembly. It must be confessed that, this is a great source of worry to the company because it affects the motivation and morale to work. It is also the responsibility of the Assembly, and not Zoomlion, to provide logistics for communal cleaning, especially during Environmental Sanitation Day activities but the Assembly does not have adequate logistics for such purposes and when the Zoomlion Company helps, the Company loses its tools and equipment through their carelessness and/or lack of knowledge of the use of some of the tools. The Company is even contemplating to stop helping in this direction. I hope you will crosscheck from the Assembly in order to ascertain the veracity of what I am telling you*

The above assertion by the Zoomlion Officer connotes ineffective and unsustainable collaboration between the company and the Assembly as stakeholders or partners in ESM. This reinforces the argument by Ashby (1986), that, the one-way information flow in which the recipient has a passive role results in contractually minimal participation of stakeholders in service or resources provision. Additionally, Arnstein's (1969) ladder of participation also describes such relationships or interactions as being at the level of informing, consultation or placation, which are all characterised by varying degrees of

tokenism rather than meaningful collaboration and partnership for meaningful outputs and outcomes.

The Assembly, through a Planning Officer, explained that it was not its intention to cripple Zoomlion or thwart the Company's efforts by not providing the much-needed financial and logistical support for sanitation management. According to the informant, the assembly normally met such demands and obligations from the District Assembly Common Fund (DACF), which was not only inadequate but also not released timely.

The Planning Officer further explained that, in most cases the Assembly received only between thirty and forty per cent of the common fund. Besides, the Common Fund Administrator sometimes dictated what the money should be used for, ignoring the fact that the assembly had its own budget and plans and for that matter priorities. Sometimes, before the money came, certain deductions had been made for items provided by the government, such as vehicle for the Chief Executive and motorbikes for assemblymen, which was wrong because it was the government's responsibility to bear such costs. When asked why the assembly did not complain about the frustrations, the informant said the assembly did so through the National Association of Local Authorities of Ghana (NALAG) but the complaints did not yield any meaningful results for political reasons. In the words of the key informant;

*NAGLAG is more or less an appendage of the government and so everything of theirs is beclouded by political sycophancy and, therefore, they only pretend to be barking but are unable to bite.*

*Politics is the bane of development in Ghana. It has permeated almost all facets of the socio-economic milieu of the country, including even the observance of Environmental Sanitation Day, and in most cases, it is doing more harm than good*

Furthermore, the Zoomlion Officer hinted that the town planning of the communities in the low class residential areas was not suitable for ESM, especially with regard to where to place communal containers for users and collection of refuse containers by Zoomlion Company. According to the officer, there was no proper layout so most places were not accessible by road to allow for driving of trucks to locate a container there let alone collect the garbage when the container was full. This evidence supports the conclusion by Dogah's (2013) that, the poor layout of most communities in Ghana posed difficulty in the appropriate siting of communal containers, and that a substantial amount of crude waste disposal practices was due to lack of access to and wrong siting of communal or public collection/storage containers.

. A sanitary labourer of the Zoomlion Company pointed out her frustration and disappointment as a staff of the Company as follows;

*While some people dump faeces wrapped in polythene bags directly into the lagoon or places where it could be easily washed into the lagoon, thereby threatening the sustainability of the lagoon and its ecosystem, others deposit such unsightly parcels in the gutters or dust bins that have been put at vantage points to collect rubbish. Sometimes when we are cleaning the choked drains or emptying the*

*rubbish containers, faeces wrapped in polythene bags explode and splash onto our faces and dresses/uniforms. Meanwhile, the field staff are not given soap for washing our hands and dresses, let alone risk or inconvenience allowance. This is in bad taste for people who have offered to work to improve sanitation in this area. As if these are not enough, about 80 per cent of the general public do not respect the us (sanitary staff). I find the public attitude towards sanitation and sanitation workers very disgusting and disappointing.*

This evidence supports the assertion that the public has poor attitude towards ESM in Ghana (Acheampong, 2010; Addo, 2010; Agyepong, 2011). The Zoomlion sanitary worker further hinted that they were not getting much assistance or support from the religious organisation, NGOs, and the media. According to the Zoomlion sanitary worker;

*The local media have not been highlighting ESM issues as expected. The Ahomka radio station at Elmina once interviewed some of our staff on the sanitation situation in the community but that was not enough. There is the need for regular public education on ESM at all the information centres in the communities in this area. The information centres in these communities tend to give priority to the sale of traditional medicine and funeral announcements. Other matters of socio-economic importance such as ESM receive very little attention, probably due to lack of sponsorship.*

The import of this quote supports the observation by Chudger (2010) as well as Kumar, Kar and Jain (2011), that sustainable improvement in sanitation is achieved when sanitation is given a priority. The sanitary worker further indicated that, as a complementary measure, the sanitation bye laws should be explained to the people as part of sanitation education. It should not be assumed that the people are aware of the bye laws. According to the sanitary worker, "the major challenge faced by the company is the negative attitude of the public who indulge in indiscriminate disposal of waste in the study area." The evidence supports the conclusion by Yoda, Chirawurah and Adongo, (2014) that indiscriminate disposal of waste, which is a common practice in developing countries poses a major challenge to ESM in such countries.

In accordance with Ahmed's (2003) observation that NGOs have been playing significant role in ESM in Bangladesh and India as well as many other developing countries, the role of NGOs in the ESM in the study area was investigated. According to an EHO of the KEEA Municipality, there was a Netherlands based NGO known as SVN, which was collaborating with the Community Water and Sanitation Department of the Municipal Assembly to provide sanitation education on the dangers of indiscriminate defecation and waste disposal in the study area, particularly Elmina. The NGO had also provided financial and technical support for the design of the Water and Sanitation Action Plan for KEEA known as Vision 2040. Robinson (2008) reported of a similar role being played by NGOs in Timor about community education and awareness-raising in order to induce positive sanitation behaviour change.

At the paramount chief's palace in Elmina, it was reported by an elder of the chief that, the Netherlands government, through Gouda-Elmina Partnership programme, had provided vehicles for ESM in KEEA, particularly Elmina, which the opinion leader confirmed that they were very useful (See Plate 14). This evidence supports the assertion by Cairncross (2003) that the provision of technical and financial assistance by NOGs is crucial in ESM. The weakness here, according to a key informant at the KEEAMA was that, money or funds for the purchase of fuel to run the vehicles was a problem because the Assembly would always complain about unavailability of money. This finding supports Fei-Baffoe, Nyankson and Gorkeh-Miah's (2014) conclusion that the difficulty on the part of the municipal authorities and the waste collection companies in securing adequate funds to purchase fuel and other logistics is a major constraint to sanitation management in Ghana.



*Plate 14: A Vehicle donated by Gouda (A Netherlands NGO) for sanitation management in the KEEA Municipality*

Photo credit: Mensah (2015)



At Sanka, a joint European Commission (EC)/United Nations Fund for Population Activities (UNFPA)/Government of Ghana (GoG) Project was reported to be helping with ESM in the community. According to an opinion leader in the community, although the project was basically about adult reproductive health, the NGO was occasionally liaising with the youth and traditional authorities for clean-up exercises in the community. Additionally, as part of their sexual reproductive health education dubbed “Time with Grandma” to the youth in the community, the project talked about sanitation as well. This is similar to the observation by Carrard, Pedi, Powell (2009) on the role of NGOs in community education and awareness-raising as part of sanitation behaviour change programmes in Vietnam.

At Bronyibema an NGO, called “Hope for the Future Generation” was reported by the opinion leaders to be helping to provide a communal toilet facility for the residents in the community who lived in the part of the community where they had to cross the Accra–Takoradi highway to access such facilities. These were residents who lived very close to the Benya Lagoon and so a number of them resorted to open defecation in or near the lagoon where salt ponds had been created for the production of edible salt. This NGO was reported by an assemblyman to have met with the traditional authorities to educate them on the need to put a stop to open defecation but attendance by the community members was poor. The evidence reinforced the assertion by Carrard, Pedi, Powell (2009) that, the provision of technical assistance, sanitation infrastructure and education by NGO helped to increase sanitation inclusion of the poor.

Although no significant NGO activity in ESM was reported in the other six out of ten study communities, the main strength of NGOs as gleaned from the foregoing is that, they had the expertise, logistics and funds for innovative ESM. The weakness was that, the NGOs covered limited communities. In terms of opportunities, the NGOs had the potential to undertake research to pilot and nurture more innovative and locally adapted technologies and engage in policy dialogue and advocacy. They also had the opportunity to foster more collaboration with the other stakeholders and what posed a threat to their activities was the attitude of the general public. In general, the presence and contributions of NGOs to the ESM endeavours in the study area were found to be limited in terms of coverage of communities. This was dissimilar to the finding by Robinson (2008) that demonstrated remarkable contributions of NGOs in rural sanitation in Timor, which was contrary to the limited role played by NGOs in ESM as found in this study.

However, the observations about opportunities available to the NGOs as established in this study, reinforce those by Carrard, Pedi, Willetts and Powell (2009) on opportunities to maximise benefits of NGO engagement in the sanitation sector. In the study by Carrard et al., it became evident that, NGOs played a substantial role in sanitation services delivery by piloting and demonstrating innovative sanitation technologies in Timor and Vietnam.

## **Community-based Organisations as Stakeholders in Environmental Sanitation Management**

The community-based organisations (CBOS) that were identified to be involved in ESM in the study area included faith-based organisations (FBOs), youth groups and traditional authorities. All nine faith-based leaders who were interviewed confessed that although their religious organisations occasionally talked about sanitation, they did not translate the preaching into action by doing enough in the communities to help improve sanitation. At Bronyibema, however, the leader of the Moslem community indicated that occasionally they donated logistics to the youth groups for communal labour but admitted that the members needed to do more as far as community sanitation was concerned since sanitation and health were bed fellows.

The opinion leaders in all the study communities confirmed that FBOs were not doing much to help improve sanitation. At Elmina, it was learnt from an opinion leader (an assemblyman) that the only time the FBOs became a little active in ESM was when the Ebola disease broke out in 2014. That was when the municipal assembly collaborated with some of the churches to mount public education on the disease in some of the churches and as part of such programmes, sanitation was talked about. It is argued that, this undermines the claim by Bandy and Crouch (2008) that FBOs can act as important partners to other stakeholders in addressing the gaps in executing development projects, including the provision of sanitation services. According to Bandy and Crouch, some donors were

beginning to recognise FBOs , especially the churches, and so were stepping up their ESM engagements with FBOs, viewing them as partners in development.

It was reported by the opinion leaders in all the communities that, there was very little collaboration between the religious organisations and other stakeholders to undertake either clean up or sensitisation campaigns in the communities. Six out of nine religious leaders confessed that their churches had never undertaken any sanitation-related activity in their communities; that is, whether in relation to public education, provision of infrastructure or law enforcement in their respective communities. This contrasts with Carter and Rwamwanja's (2006) conclusion from their experience with Tearfund Partners in Burkina Faso, Madagascar and the Democratic Republic of Congo that, local churches have a great potential to facilitate innovative community-led endeavours and can be useful partners to local government and NGOs in sanitation management.

While six out of nine religious leaders admitted that a more active involvement of the faith-based organisations was needed to improve ESM in the communities, two out of nine claimed their church members were already taking part in communal labour for sanitation improvement, implying that the churches were doing their part although it was not enough. However, further investigation revealed that this was something the church members were doing as residents of the communities but not as church-initiated sanitation activities. The implication is that the FBOs were doing very little as far as sanitation management in the study area was concerned. This evidence is inconsistent with Webster's (2007)

conclusion that the crucial role of churches and other FBOs has been recognised in other development sectors because they demonstrate a close integration in their communities at the grassroots level.

The next CBO whose role in ESM was investigated was the traditional authorities. Kendie and Guri (2004) found that in some communities in Ghana, traditional authorities wielded such a great influence that the implementation of almost every community development project that failed to recognise the presence, authority and role of these leaders stood a high risk of failing. It emerged from interviews with chiefs, queen-mothers and other opinion leaders of the various study communities that the traditional authorities participated in ESM by mobilising the residents for communal labour during which the residents cleaned the communities. Actual activities undertaken during such times included cleaning public places of convenience such as public toilet, refuse dumps as well as drains and gutters. In a response to a question on what the traditional authorities were doing to improve environmental sanitation in the community, the queen-mother of one of the study communities reported as follows:

*Every first Tuesday in every month, we undertake communal labour in this community. All the public places of convenience are cleaned thoroughly. Choked gutters are desilted and drains are cleaned. We do this because we know that dirty environment does not only attract diseases but is also an affront to the image and dignity of this community.*

It was reported by the opinion leaders at Elmina that the chief of Elmina, organised a clean-up exercise on the occasion of his 52<sup>nd</sup> birthday in 2014 to support the national sanitation day. The exercise received massive support from the youth, traditional leaders, workers of Zoomlion, staff of the police service and the municipal assembly. It can be argued from the support that the chief's initiative received from the people that a lot could be achieved in improving sanitation for community development if the government strengthened its partnership with the traditional authorities in this regard.

However, with respect to sanitation education, traditional authorities were reported to be involved on a very limited scale and adhoc basis. According to an opinion leader at Mbofra Akyinim, "when there is an outbreak of sanitation associated disease such as Cholera, the chief and his elders cause gong-gong to be beaten and an announcement to be made at the local information centre. However as soon as the problem is solved the education or sensitisation stops completely." Concerning law enforcement, the traditional authorities' involvement was found to be limited as a chief and a queen-mother reported in separate interviews that they were involved in the very minor sanitation offences such as sanctioning people for not attending communal labour. This corroborates the MLGRD's (1999) assertion that traditional authorities are often the arbiter in minor environmental sanitation offences or nuisances.

Concerning youth groups, it became evident that, with exception of Bronyibema and Elmina, where there were organised youth groups that took

active part in sanitation management, the rest did not have such organised groups. It was reported by an elder of the Paramount Chief of the Edina Traditional Area that the youth leader had been mobilising the youth for communal cleaning exercises which were usually organised on monthly basis but the frequency could be changed if there was an emergency situation that called for a general clean-up exercise in the community. At Bronyibema, a volunteer in the community had mobilised the youth in the community to form a Sanitation Youth Club known as the "Friends of the Environment". The motto of the club was "cleanliness is health". Led by their leader, the club members had been cleaning the community. They sensitised people on sanitation through route marches (Plate 15), and educating people on sanitation at FM stations.



*Plate 15: A Youth Club at Bronyibema on a sanitation sensitisation route march*  
Photo Credit: Mensah (2015)

However, the leader (patron) of the club reported that the public attitude towards the club was disappointing and discouraging as they called members of the club names such as “Tankass” - that is, town council sanitary workers - and so some of the members had resigned. The patron of the club reported that the Municipal Chief Executive of the KEEA tasked the leaders of the club to spearhead the formation of similar clubs in the other communities in the area and promised to assist them financially for that purpose but did not fulfil the promise. The Member of Parliament for the KEEA consistency also promised to assist the youth club but did not do so. This is what the patron of the club said about the clubs experience with unfulfilled promises and how they were affecting the club’s ESM efforts and plans.

*So far we have received only promises but people who promise us do not honour their promises. We want to embark on more sanitation education at FM stations but we do not get the sponsorship. It is only Asafo FM that has been helping us by reducing the amount we need to pay to enable us broadcast sanitation messages to people on their FM.. Meanwhile, members of the club are children who cannot pay dues because they are not working. The KEEA Assembly has asked us to register as an NGO but we do not have money for the registration (Youth Club Leader Bronyibema, 2015).*

It can be argued that, the promises by the Municipal Chief Executive and Member of Parliament demonstrate at least, a verbal commitment to motivate the



youth for improvement in sanitation. This is consistent with Kirunda's (2009) conclusion that the future of sanitation management in the Town Council would be bright only if the potential of the people to participate was purposively tapped. However, the failure to fulfil the promise was found to be a source of disappointment to the sanitation youth club as reported by the youth club leader. Besides the leader reported that the attitude of the community members to the club members was unhelpful since some people called the member names, which was very discouraging to the members.

Interviews with the youth leaders revealed that, the strength of the few youth groups as sanitation promotion agents in the study area lay in their being zealous to work, especially in the area of sensitisation and communal labour. The weaknesses, however, were that they lacked funds, logistics and sponsorship. They had the opportunity to strengthen collaboration with other stakeholders such as NGOs, Zoomlion and the traditional authority to prosecute their sanitation agenda. Their main threat was the uncooperative and lukewarm attitude of the public.

### **Interactions among Stakeholders for Improving Environmental Sanitation**

Fruitful interactions among stakeholders are important for the success of endeavours that require participation by different actors (Arnstein, 1969). ESM is one of such multi-stakeholder ventures. The participation theory (Arnstein, 1969) talks about seven rungs of participation, which Ashby (1986), Biggs (1989) and Rowe and Frewer (2000) have modified and condensed into five modes depending on the kind and level of interactions that characterise the participation

process. These are informative, contractual, consultative, collaborative and collegial modes as explained in the theoretical literature review.

. In line with the definition of stakeholder structures adopted for this study as captured in the introduction to this chapter, three categories of stakeholders, namely government, as represented by the ministries, department and agencies, private sector as represented by sanitation companies and NGOs and the community-based organisations/institutions as represented by traditional authorities, youth groups, faith-based organisations and households are used. However, the role of households as stakeholders in ESM, has been extensively dealt with in chapter five and so it is not repeated in this chapter.

. It was learnt from two key informants - a youth leader and a traditional chief - through separate interviews, that government as represented by MLGRD, EPA and KEEA Municipal Assembly did not engage with the CBOs on constant basis to discuss sanitation issues. According to the opinion leaders, the Municipal Assembly's engagements with the CBOs were on adhoc basis and occurred mostly in emergency cases. While the youth leader said he had never heard of EPA, the traditional leader indicated he had, but had not come into contact with any EPA staff before. A key informant at the EPA office in Cape Coast confirmed that although EPA had offices in all the regional capitals and some districts in Ghana, they did not have one in the KEEA Municipality. This did not allow for constant engagement and information flow on environmental issues between the EPA and the Municipal Assembly, let alone the CBOs.

Even among the government agencies, that is, MLGRD, EPA and KEEA Municipal Assembly themselves, it was discerned from separate interviews with the key informants from these outfits that, the interactions among them were often the top-down flow. The KEEAMA, for instance, reported through the Planning Officer, Municipal Engineer and the and an EHO of having to succumb to the whims and caprices of the ruling government through the sector ministry. This finding contrasts the evidence from documentary review that, the District Environmental Sanitation Action Plans of the MMDAs were developed with the input from the local assemblies. In the Ashby (1986), Biggs (1989) and Rowe and Fewer (2000) levels of stakeholder participation or interaction, this top-down communication or one-way information flow form of participation is described as being at the informative level and is characterised by passive roles and often minimal results.

A key informant from the KEEMA noted that although some inputs were sometimes elicited from the relevant assembly staff for the preparation of district and national plans and policies, when it came to implementation dictatorship set in, transparency and accountability suffered and corruption reigned. It can be argued that, just being consulted for inputs and being dictated to during implementation shows that interaction is at the consultation level in terms of Arnstein's (1969) ladder of participation. Arnstein argues that, the consultation level of the citizens' participation ladder demonstrates a token participation, which can be described as window dressing but not true participation that is mutually beneficial to the stakeholders. The Key Informant had this to say about

the Assembly's relationship or interaction with the government as far as ESM was concerned;

*What can we do? We are not consulted on some critical issues that affect ESM in this area. The policies and laws are handed down to us to implement without the corresponding required funds and logistics. There are a lot of things we cannot disclose to you about the attitude of the politicians and senior technocrats, most of whom yield to the dictates of their political and selfish interests. We deserve to be commended for our efforts in ESM given the attitude of the politicians and some senior technocrats, although we agree that a lot more needs to be done. I tell you, politicians and some superior technocrats would not open up for fruitful interactions. At the community level too, the structures are not working well and the general public have very negative attitude towards sanitation (An Environmental Health Officer, KEEAMA, 2015)*

The CBOs, leaders also blamed the government agencies for not interacting constantly with them on sanitation issues. Some opinion leaders in the study communities indicated that the government sanitation officers and officials, hardly interacted with them let alone involved them in decision making. According to the CBOs, “the government officials only come to instruct or inform them to do something as and when they think is necessary.” It is discerned from this evidence that the CBOs and the sanitation staff of the KEEAMA blame

each other for ineffective interactions for ESM. This is consistent with Saei's (2012) finding that sanitation actors tend to blame each other for their inefficiencies. Additionally, by reporting that the Assembly only comes to instruct or inform them to do something, credence is lent to Arnstein's (1969) ladder of participation. Specifically, it accords with the 'informing' rung or level of the ladder, which is characterised by one-way information flow without a channel for feedback. According to an opinion leader;

*The government or KEEA Assembly consults us only when consultation is unavoidable. They need to constantly dialogue with us because it works better than merely instructing or informing us about sanitation issues. Even the information is scanty and given on irregular and adhoc basis (Opinion Leader, Essaman, 2015).*

From the foregoing, it can be discerned that the interactions between the government and CBOs as well as among the government agencies themselves as far as sanitation issues are concerned, gravitate towards either the informative or at best consultative level, which can be described as tokenism. However, the theory of participation, according to Arnstein (1969) indicates that, when interaction among stakeholders is at the these levels, results are minimal but at partnership, delegated power and citizen control levels, participation is effective and so best results are achieved. It also shows that although the essence of the Districts Assembly concept is to decentralise or delegate power to the citizens, delegation of powers has not taken place in the true sense of Arnstein's delegated power and citizens' control.

A key informant from the Zoomlion Company reported of the company's engagement with the government through the municipal assembly was contractual in terms of payment for the company's services and procurement of equipment by the central government through the Municipal Assembly. According to the key informant, apart from these, there is no serious dialogue between the two sanitation stakeholders. The informant opined that;

*There should be, at least, occasional meetings of relevant Assembly staff, Zoomlion staff, traditional leaders, religious leaders, and other identifiable groups in the communities to dialogue on sanitation management issues. As for NGOs, if they want to build a toilet or educate people on sanitation, they do it without involving Zoomlion and I think it is not the best. The present situation where all sanitation actor are doing they please in the name of improving sanitation in this area is not the best. There should be better co-ordinations and collaborations.*

It can be discerned from the quote that the stakeholders were virtually doing their own things without actively involving others, or where there were interactions, they were either at the informative or consultative level as per the Ashby (1986), Biggs (1989), Rowe and Frewer (2000) model classification of interactions. This is not consistent with best practices in sanitation management, where all stakeholders are expected to collaborate and network with one another through constant interactions and dialogue. The situation does not augur well for holistic and synergistic approach to sanitation management in a manner which

von Betlanfly (1968) talks about in the systems theory. It implies that interactions among the sanitation actors was weak and needed to be strengthened to the collaborative or collegial levels, which, in participation theory, are described as the best in terms of association with fruitful results.

### **Summary of Chapter**

This chapter examined the role of key stakeholders in ESM in the study area. The key stakeholders were categorised broadly into three, namely the government, private sanitation companies including NGOs and CBOs. The government is responsible for the provision of legal and institutional framework and the budgetary support for sanitation management. However, it was found that although the government, through its agencies such as the MLGRD, EPA and the KEEA Municipal Assembly had provided some frameworks in terms of policies, laws and by-laws, these existed largely on paper. There was little application or enforcement of the policies and laws, while the government's commitment to human, financial and logistical support for effective sanitation management was also low.

There was limited NGOs presence as well as activity in ESM in the study area. Six out of ten communities did not report or record any NGO activity in ESM in them. Although the few NGOs were facilitating sanitation service delivery by providing some technical expertise, logistics and sensitisation programmes, NGOs were not adequately engaged with the sanitation sector in the study area. Besides, the NGOs and the private sanitation company (Zoomlion) tended to concentrate mainly on hardware aspect of ESM, paying little attention

to the software aspect, particularly with respect to regulation and sensitisation in their respective ESM endeavours. They were also not doing much in terms of policy dialogues and introduction of innovative technologies in ESM.

The CBOs were playing limited roles in ESM in spite of their great potential to facilitate innovative community-led ESM activities taking advantage of their integration in their respective communities. The CBOs' (traditional authorities, assemblymen and youth) roles as concerned actors in ESM were virtually limited to organisations and mobilisation of the residents for periodic communal cleansing exercises; while the faith-based or religious organisations were doing close to nothing as far as ESM in the study area was concerned. They neither engaged in sanitation policy dialogues nor advocacy. Although, their level participation in public sensitisation, regulation of sanitation behaviour and practice was low, they had the potential to scale it up to enable them contribute more meaningfully to the environmental sanitation improvement crusade.

Above all, the stakeholders failed to meaningfully interact and collaborate for holistic ESM. Interactions among the stakeholders occurred when interactions were unavoidable, which was a demonstration of weak application of the concept or principle of social capital, particularly networking and partnership for ESM. At best, the interactions among the stakeholders exhibited characteristics of consultative mode of participation according to both Arnstein's (1969) participation ladder, which is described as token or pseudo participation, and Ashby (1986), Biggs (1989) and Rowe and Frewer's (2000) classification of levels of participation, which is marked by little stakeholder input mainly



regarding value-laden issues. However, Ashby, Biggs as well as Rowe and Frewer have asserted that, for interaction to yield maximum benefit, including ESM benefits or effect, it should be at the collaborative level where stakeholders interact closely and regularly with more intense two-way information flow, share and incorporate each other's plans and ideas or at the collegial level which is the best in terms of production of results.

At the highest level of interaction, namely partnership or citizens' control by Aronstein's participation ladder; and collegial level by the Ashby, Biggs. Rowe and Frewer model, there is continuous open dialogue and stakeholders see themselves and their activities as complementary and mutually dependent. This level is also characterised by mutual confidence, transparency and accountability. However, no interaction between or among key ESM actors or stakeholders in this study was found to be at any of these levels, implying that stakeholder interactions or partnerships were too limited to benefit from the fruits of effective collaboration and partnership. That is, interaction and networking among the stakeholders were not as effective as the concept of social capital implies under the sustainable livelihood model, which is accentuated by the tenets of the systems theory under the principles of complementarity and synergy as encapsulated in the conceptual framework of this study.

## CHAPTER EIGHT

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### **Introduction**

This is the concluding chapter of the study. The chapter presents the summary, conclusions and recommendations based on the study. Other issues addressed in the chapter are the thesis' contribution to knowledge, limitations of the study and suggestions for further research.

#### **Summary**

The study was commissioned with the main objective to examine ESM practices and their implications for sustainable development in the catchment of Benya Lagoon in the KEEA Municipality of Ghana. Three specific objectives were set to help achieve the main objective. The first was to analyse the implications of ESM practices for the main livelihood activities, namely fishing, salt and tourism industries in the study area. The second was to explore the application of sanitation education, infrastructure and regulation as complementary strategies for ESM, while the third sought to address issues of stakeholder roles in improving ESM for sustainable development.

The study was underlain by the systems, behavioural, participation, sustainable livelihoods and common resource pool theories, underpinned by the pragmatist philosophy and guided by a conceptual framework, which sought to show the relationship between ESM and sustainable development. The framework demonstrated the relationships, interconnectedness, complementarities and synergies among the main tenets of the theories as well as relevant concepts

derived from the theoretical and empirical literature review. Among these key concepts are sanitation infrastructure, education, regulation, stakeholders, livelihood and sustainable development.

The study used the mixed method design to gather quantitative and qualitative data from multi-stakeholders at the household and non-household levels. While quantitative data were collected from 479 households, qualitative data were gathered from individuals, groups and institutions. Specifically, qualitative data were obtained from sanitation related CBOs, local and national level government private institutions. Qualitative data were also collected from community-based opinion leaders, including traditional leaders, youth leaders, assembly members and religious leaders.

Qualitative data were also obtained from individuals such as experts in salt production, fisheries and tourism as well as Executive Members of Salt Producers Association, chief fisherman and key informants from tourism and hospitality industries. The community-based groups were salt producers, fishermen and fish processors market women or traders, while the government institutions were the KEEA Municipal Assembly, Ministry of Local Government and Rural Development (MLGRD) and the Environmental Protection Agency (EPA). Specifically, data from these institutions were collected from EHOs from the KEEAMA and MLGRD, Planning Officer of KEEAMA, Municipal Engineer of KEEAMA who was also working with the Community Water and Sanitation department in the Municipal Assembly as well as a Senior Environmental Officer of the Environmental Protection Agency in the Central Region of Ghana. The

private sector organisations were the NGOs and Zoomlion Company Limited. Additional data/information were/was elicited from documentary review and observations.

While the household respondents were sampled using the multistage sampling technique, the non-household respondents were purposively selected. An interview schedule was used to collect data from the households, while indepth interview and focus group discussion guides were used to collect qualitative data from the key informants and focus groups respectively. Additional data were obtained from field observation and review of documents. Data were analysed using SPSS and Excel for descriptive statistics, including frequencies, percentages, graphs and charts as well as Pearson's chi square test for the quantitative data, while the qualitative data were analysed manually using the content and thematic approach and presented mainly in the prose or narrative mode and supported with photographs and quotations of illustrative relevance and essence.

As indicated, the first objective addressed implications of ESM the for main livelihood activities/resources in the study area namely, fishing, tourism and salt production. The key findings in respect of this objective were that:

- ESM practices in the study area were a threat to human, natural, physical and financial capitals for tourism, fishing and salt production as livelihoods activities. Thus, contrary to the tenets of sustainable livelihoods theory, ESM practices in the study area undermined the

sustainability of main livelihood activities, namely fishing, tourism and salt production

- While all expert views indicated that the EMS practices in the study area had health, productivity, income, employment security and resource sustainability implications for major livelihoods activities in the area, non-expert perspectives on same issues were mixed. Some non-experts converged in view with the experts, while others diverged in opinion from the experts.

The second objective examined the application of sanitation infrastructure, education and regulation as strategies for managing environmental sanitation. The following were the key findings that emerged with regard to objective two.

- Sanitation facilities such as toilets and waste disposal facilities were inadequate and poorly managed. About 63 per cent of households were dissatisfied with the management of sanitation regarding the frequency of Zoomlion's collection or removal of dust bins and containers for final disposal, adding that the containers/dust bins often overflowed forcing people to dump the excess waste around the bins/containers.
- Awareness and attitude regarding environmental sanitation were poor. About 95 per cent of households were not aware of or conversant with basic sanitation laws and conventions. While about 83 per cent of households had misconceptions about the rationale for the provision of public defecation infrastructure, 86 per cent were not aware that the law or

convention required people who lived close to the street to be responsible for sanitation of at least, a portion of the street close to their premises.

- While about 70 per cent of households were aware of the institution of National Sanitation Day, only nine per cent of them indicated ever participating in observing the day. Additionally, none of the 479 households sorted their solid waste, thus, undermining best practices in ESM, which according to literature, (Baabereyie 2009, Puopiel, 2010, Spencer, 2012) emphasised sorting of waste to allow for the 4Rs, namely reduction, recovery, recycling and reuse of waste.
- While 10.6 per cent, 35.2 per cent, 73.7 per cent and 94.4 per cent of household respondents with no, basic, secondary and tertiary education had access to home defecation facilities respectively, 26.6 per cent 84.6 per cent and 93.2 per cent of low, middle and high income households had access to home defecation options. The chi square tests confirmed that the relationship between level of education and access to home defecation facility as well as between income and access to same facility was significant.
- Public education on sanitation was found to be scanty, irregular, limited in scope and delivered through limited media. Community-based structures for ESM were underutilised, while sanitation behaviour change communication messaging was limited to human capital (health) implication of sanitation. Implications of sanitation for other livelihood assets such as natural, financial and physical capitals and for that matter

income, productivity, aesthetics, employment/job security and sustainability of the environment for future generation were not highlighted. This undermined the principle and essence of sustainable development.

- Sanitation laws were not strictly enforced and exacting compliance with the laws was also considered mainly from the punitive perspective, while the potency or potential of reward as a complementary strategy, was ignored or at best underutilised. This was contrary to the tenets of the systems and behavioural theories as well as conceptual framework, all of which stress complementarities of ESM strategies in order to make the management approach holistic and effective.

The third objective was to examine the role of stakeholders in ESM. Major findings that emerged in relation to this objective were:

- Government, as represented at the national level by the MLGRD and local level by the KEEA Municipal Assembly did not demonstrate adequate commitment to sanitation by providing adequate funds, logistics and institutional support for ESM. This corroborates Acheampong (2010) and Sae (2012) findings but is inconsistent with the expectation of the conceptual framework regarding provision of adequate funds and logistics for ESM.
- Private sector and CBOs were found to be playing limited roles in ESM. While Zoomlion's efforts to improve sanitation were being frustrated by irregular contractual payments for their services by government and

negative attitude of the public to sanitation, in six out of ten communities, no NGO was found to be working to improve sanitation. Additionally, the private sector tended to concentrate more on hardware aspect of ESM than the software aspect which is equally important

- ESM endeavours were not adequately community-led. Community-based institutions and structures such as faith-based organisations, traditional authorities, youth organisations and other opinion leaders were found to be playing limited role as their participation in ESM was virtually limited to organising and providing communal labour but were doing very little with regard to advocacy and sensitisation. This is not in line with the tenets of participation and systems theories as well as the conceptual framework.
- There were weak and/or limited interactions, collaboration and networking among key sanitation stakeholders as partners in ESM. This undermines the tenets of the participation and systems theory as well as the conceptual framework, which emphasise co-ordination, co-operation, collaboration, complementarities and networking among stakeholders in ESM.

## **Conclusions**

The study has shown that the issue of sanitation management is a threat to sustainable development in the catchment of Benya Lagoon and by extension, Ghana. The environmental sanitation management practices in the study area, especially the waste disposal and defecation practices, constrained the promotion of tourism, fishing and salt production as livelihood activities. The sanitation practices in the study area impacted on the financial, physical, human, and natural



capitals and for that matter livelihoods in the study area. Though all the tourism, fishing and salt production experts who were interviewed maintained that the ESM practices in the area had health, patronage, productivity, income, employment security and resource sustainability implications, which affected livelihoods as well as the local and national economies, some residents did not see it as such and so did not care much to give sanitation management a priority or the needed attention.

On paper there were rules and structures that guided the application of infrastructure, education and regulations as complementary strategies for improving sanitation management but in practice the application of these strategies was limited and ineffective. Sanitation laws were not strictly applied, while the limited application considered exacting compliance to sanitation laws only from punitive perspective without complementing it with its motivational counterpart. ESM infrastructure, including faecal disposal options, solid and liquid waste management facilities and services were not only found to be inadequate but were also poorly managed. Sanitation education was not only inadequate, irregular and not sustained, but also limited in scope or messaging and delivered through limited channels or media.

The key sanitation actors or stakeholders, namely the governmental agencies, non-governmental organisations, private sector organisations, community-based organisations as well as households were found to be playing limited roles in ESM in the area. While the households did not consider sanitation (as) a priority, the government did not demonstrate enough commitment to

sanitation by providing adequate funds, logistics and the institutional structure and arrangements for ESM. Although the private sector and the NGOs had the expertise, they had limited presence in the area and concentrated more on the hardware aspect of ESM the software. Apart from these, there were limited interactions and collaboration among the key sanitation actors as partners in applying sanitation infrastructure, education and regulation as complementary strategies for improving sanitation management. in the study area.

. The limited effectiveness of the government and private sector structures, the weak collaboration among the stakeholders, the limited application of laws, policies and institutions as well as weak complementarities among sanitation infrastructure, education and regulation as strategies for improving sanitation, conspired to weaken efforts at improving sanitation for sustainable livelihood and development. This implies that, the systems and institutions were not working effectively to improve sanitation for sustainable development. Until the key sanitation stakeholders seriously commit and collaborate effectively to address the sanitation challenges through strategic and holistic infrastructural, educational and regulatory management, poor sanitation will continue to constrain development in the area and by extension, Ghana. The onus lies on the government, as represented at the local level by the municipal assembly, to partner more effectively and proactively with the other stakeholders (individuals, households, NGOs, CBOs and other private sector institutions) to ensure the maintenance of the desired sanitation standards for improved livelihoods and sustainable development.

## Recommendations

Based on the key findings and conclusions, the following recommendations are made for the consideration of stakeholders: individuals, households and institutions

1. Households should be encouraged by the government and the municipal assembly to prioritise environmental sanitation by providing sanitation facilities such as toilet in the house and patronising door-to-door or communal waste disposal services provided by the private sanitation companies and the assembly.
2. Community-based individuals and organisations, including traditional authorities, assemblymen, youth leaders, faith-based leaders and other opinion leaders are advised to spearhead ESM in their communities. Community-led sanitation management actions are likely to garner more support from the community members than externally motivated initiatives. Community leaders should spearhead advocacy action for respect for sanitation laws, provision and use of approved sanitation infrastructure, including household toilet, solid and liquid waste disposal facilities. This can be done through route marches, household and community level sensitisation programmes as well as monitoring mechanisms that take into account household and community sanitation needs and global best practices.
3. The NGOs and private sector are advised to intensify their role in ESM. In this connection,
  - NGOs are advised to play more intensive roles in ESM by committing more resources in terms of personnel, technical knowledge, equipment

and time for the provision of sanitation education, infrastructure and regulation. Their activities should not be restricted to few communities but should rather cover more communities in the area. They should also attach equal importance to both the hardware and software aspects of environmental sanitation since the two complement each other for holistic and effective sanitation management

- The Zoomlion Sanitation Company has to improve and intensify its waste management services to households, communities and institutions by providing adequate door-to-door and community services, including prompt and regular waste collection and disposal services . The company should also educate the public on the importance of sanitation, the company's role in ensuring proper sanitation and the their expectation from the public with regard to co-operation and collaboration. While the regular and timely evacuation of waste from the households and communities will help address the issue of unclean environment, the public education will help not only to elicit the co-operation of the public but also help to change people's poor attitude to environmental sanitation .

The KEEA Municipal Assembly should;

1. design and deliver innovative sanitation education and sensitisation programmes. In addition to health issues which border mainly on human capital, sanitation education should stress the linkage between sanitation and livelihood, particularly the implications of sanitation for the natural,

physical and financial capital. That is, the message should include the effect of sanitation on not only health, but also productivity, income, job security, sustainability of the livelihood resources, dignity and sanitation laws. The education should be delivered using multiple channels, including the mass media, posters, route marches, songs, drama, mobile vans, door-to-door, churches, mosques, traditional authorities and youth groups

2. Strictly enforce the sanitation laws as well as building regulations by applying sanctions and rewards as complementary law enforcement management strategies. In this regard, the Assembly should collaborate with the Regional Co-ordinating Council and MLGRD to ensure that ,while stringent sanctions are meted out to sanitation offenders, sanitation league tables are also maintained and award schemes instituted for households, communities, districts/municipalities and regions that maintain best sanitation standards. In these connections, the cleanest household could be honoured at the community level, cleanest community could be awarded at the district level, cleanest district honoured at the regional level and cleanest region awarded at the national level to inject healthy competition into the sanitation management enterprise.

The government, through the MLGRD/ Municipal Assembly has to:

1. Demonstrate more commitment to sanitation by providing the needed financial, logistical and institutional support for effective sanitation management. This can be done by finding innovative ways of financing sanitation and

eliminating or reducing corruption to the barest minimum through transparency, accountability and monitoring

2. Reconsider the observance of the Environmental Sanitation Day. The day's activities should include not only clean clean-up exercises as has been the case since it was launched to date but also intensive education on sanitation. The observance and celebration of the day should be further decentralised to engender more massive grassroots participation. Community-based structures such as the traditional authorities, youth organisations, religious organisations, market women should be well mobilised, organised and motivated to partner government and private sector organisations/institutions and other civil society organisations to participate actively in the observance of the day. The publicity, sensitisation and education on such occasions should be geared towards not only the short-term objective of the day but also long term objectives, which will make all citizens or residents appreciate and internalize the concept and principle of proper sanitation management in order to observe it as personal, household, community and national culture.

3. Initiate and facilitate processes to ensure collaboration among all the key stakeholders, namely the government agencies, private sector/NGOs and CBOs as partners in sanitation management. Occasional platforms for the actors or their representatives to share ideas and compare notes on the roles being played by each of the actors and to plan the way forward are imperative. Establishing this partnership will ensure complementarity of efforts so that the weaknesses of one stakeholder could be compensated for by the strengths of another, while at the

same time, avoiding unhealthy competition and duplication of roles or efforts. This will make each participating actor bring their respective comparative advantages to bear on the ESM system for effective address of sanitation challenges for sustainable development.

4. Ensure that in the long run, the citizens are well educated and the poor are economically empowered to reduce mental and income poverty. Evidence has shown that highly educated people have better attitudes to ESM than people with no or low education, while more high income earners tend to live in houses or residential areas with approved sanitation facilities than low income earners. Encouraging people to receive appreciable level of education by making quality education accessible, affordable and compulsory as well as creating enabling environment for decent jobs, would eventually bear on sanitation attitude, behaviour and practices through enhancement in knowledge and mentality as well as economic power

### **Contribution to knowledge**

Although a lot of studies have been done in the area of sanitation and/or waste management, extensive literature scoping revealed that virtually none had looked at its/their implications for livelihood activities/resources and sustainable development from the perspective of the local people and juxtaposed same with the perspectives of experts. One of the objectives of this study linked sanitation to livelihood from the perspectives of experts and local people through the implications of sanitation for livelihood resources such as the lagoon and the sea from which the bulk of fish and edible salt are produced. The juxtaposition of

experts' views with those of non-experts in the way it has been done in this thesis was not found in any of the studies reviewed and, therefore, this is a unique contribution to methodological approach to sanitation management studies.

Most authors and researchers have highlighted the health and productivity implications of ESM, which border mainly on human capital without explicitly stretching the argument to sanitation's implications for other livelihood assets. For this reason, sanitation education or sensitisation programmes, including behavioural change communication messaging have often been limited to the implications for health and productivity which border on human capital. However, this study has, in addition to this, highlighted the linkage between ESM and other livelihood assets, particularly financial, natural and physical capital which had hitherto been virtually overlooked or understressed.

Additionally, most studies on improving sanitation have found and concluded that, inadequate sanitation facilities, low level of sanitation education, lack of law enforcement and other institutional factors are at the base of poor environmental sanitation. However, in addition to these, this study has found that poverty, specifically income and mental poverty, underlie the causes of poor sanitation practices in the study area and by extension, Ghana. Hitherto, poor attitude had often been cited by researchers, academics and sanitation management practitioners as the cause of poor sanitation situation in most developing countries but they failed to link it to mental poverty.

Furthermore, concerning regulation as a complementary strategy to education and infrastructure for ESM, the aspect that had hitherto been



emphasised in both theoretical and empirical literature was the application of sanctions or punishment to exact compliance with sanitation laws. Although it is common knowledge that punishment and rewards, like the two sides of a coin, complement each other, the potential and potency of rewards as a sanitation behaviour change management tool seemed to have sunk into oblivion until this study. The discovery and subsequent recommendation of the application of rewards as a complementary tool/strategy to sanctions in sanitation management is, by and large, a novelty and, therefore, constitutes an enhancement in the frontiers of knowledge.

Although the idea or principle of complementarity is implicit in the systems and participation theories, bringing it to bear on ESM was not found to have been explicitly done in any of the empirical literature that was reviewed. Thus, the import and relevance of the principle being brought to bear on the complementarities among sanitation education, regulation and infrastructure as ESM strategies, as well as stakeholders' roles in ESM in this thesis, is a unique contribution to ESM knowledge. Thus, the findings add on to the existing empirical literature, while the entire study contributes to the discourse on ESM for enhanced livelihood and sustainable development.

### **Limitations of the study**

This study examined ESM practices in the catchment of Benya Lagoon, Ghana. It concentrated mainly on defecation and waste disposal practices. Although much effort was made to cover a wide range of issues on, it is acknowledged that a single study cannot exhaust all the relevant issues in environmental sanitation management. Due to time constraints, issues of funding

environmental sanitation management were not deeply delved into, although this is crucial in sanitation management.

The study, to a very large extent, considered waste as a nuisance that needed to be gotten rid of but to a limited extent as a resource that could be used as raw material for other useful ventures. The purpose was to ensure proper waste disposal for healthy environment for sustainable livelihoods and development and as the first step towards considering waste as a resource, which also needs a whole study to delve into it. Additionally, issues of corruption as well as transparent and accountable sanitation governance came up strongly as some of the factors that hindered effective ESM in the area but they could not be investigated in detail due to time constraint.

Furthermore, the study applied simple analytical tools and techniques for both the qualitative and quantitative data. While the main rationale for this was to make the analyses simple, intelligible and crystal clear to any average reader for consumption and possible application, the use of more rigorous statistical tools of analysis could have been considered, not for better analyses or more reliable results, but just for academic sophistication.

### **Suggestions for further research**

Based on the limitations of the study, it is suggested that other studies be commissioned to investigate in detail, waste as a resource but not as a nuisance; that is, the resource dimension of solid and liquid waste. Also worthy of further investigation is the issue of transparent and accountable sanitation governance

since corruption came up as one of the factors that hindered effective sanitation management but the issue could not be explored in depth or detail due to time constraint.

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## APPENDICES

### APPENDIX A: INSTRUMENTS FOR DATA COLLECTION

**Title of Thesis:** Environmental sanitation management and sustainable development:  
Evidence from the catchment area of the Benya Lagoon in the  
Komenda-Edina-Eguafo-Abrem Municipality, Ghana

**Principal Investigator:** Justice Mensah

#### INTERVIEW SCHEDULE FOR HOUSEHOLDS

##### *Informed Consent (General Information about the Research/Study)*

Hello, my name is ..... We are conducting a study on Environmental Sanitation and Sustainable development. The study, which will be used solely for academic purpose, is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment area of Benya Lagoon, Ghana. In order to obtain the relevant information for this study, you are invited to take part in the study as an interviewee. The interview will take between thirty minutes and an hour and will centre on your household sanitation management practices. The information you will provide will be treated as confidential. That is, no one else except the Principal Investigator will have access to the information. The interview entails no cost to you except your time but you will not be remunerated for your participation. However, the results of the study will benefit you, your household, community and country since they will be useful in addressing the environmental sanitation challenges in the catchment of Benya Lagoon and by extension, Ghana. Participation in this research is voluntary and so you can withdraw at any time of the interview if you so wish. In case you want additional information about this study you may contact Prof. P.K. Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279.

#### **Respondent's agreement**

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent/interviewee.

Signature/Thumbprint.....

Date of interview.....

**Section A: Background (Demographic) data on respondent.**

1. Name of community.....

2. Sex of respondent: Male  Female

3. Age ( in completed years).....

4. Marital status: a. Single  b. Married  c. Widowed   
d. Separated  e. Other .....

5. Occupation of respondent:.....

6. Religion: a. Christian  b. Moslem  c. Traditionalist   
d. Other .....

7. Level of education completed

a. None  b. Primary/Basic   
c. Secondary  d. Post Secondary (Tertiary)

8. Level of Income (monthly net income) .....

9. Household size .....

**Section B : Sanitation Infrastructure Management**

Now, I would like to continue by asking the main questions

10a. Please, do you have toilet facility in your house/dwelling place?

Yes  No

10b. If no to question 10a, why?

.....

10c. (i) If yes to question 10a, what type of facility is it? a. Water closet

b. KVIP  c. Pit latrine  Bucket/pan latrine

d. Other .....

(ii) Do you use it? Yes  No

(iii) If no to question (10 ii), please give reasons for not using it

.....

11.(a) Is it your most preferred toilet facility? Yes  No

(b) Give reason(s) for your answer.....

12. If no to question 11, what is your most preferred toilet facility? .....

.....

13. Give reason(s) for your preferred toilet facility

.....

14. If you do not have a toilet facility in your house, where do you go to toilet?

a. Public toilet  b. In the bush

c. At the beach  d. Neighbours toilet

- e. Near the lagoon  f. Other .....

15. If you use the public toilet, do you pay for the service? Yes  No

16. If yes to question 15, how much do you pay for each visit? .....

17. Is the toilet fee affordable to you? Yes  No

18. Give reasons for your answer .....

19. Are you satisfied with the cleanliness of the public toilet environment?

Yes  No

20. Give reasons for your answer to question 19

.....

21 (a). In your view, who is the public toilet primarily provided for?

- a. The residents of the community
- b. The transient population (people in transit)
- c. Both the residents and the transient population
- d. Other (Please specify).....

(b) Give reason(s) for your answer to question 21 (a)

.....

22. Who do you think should be responsible for cleaning your immediate environment, including gutters abutting your house or property, if any?

.....

23. Give reasons for your answer to question 22

.....

**Waste disposal practices**

24. How do you dispose of your household refuse?

- a. open dump
- b. house to house collection
- c. burning
- d. burying
- e. communal container
- f. Other .....

25. If your method of refuse disposal is open dump, are you satisfied with the

location of the dump site      Yes       No

(If no, skip to question 29)

26. Give reasons for your answer

.....

27. Who is responsible for cleaning the open refuse dump?.....

28. How regularly is the dump site cleaned

.....

29. If your method of refuse/waste disposal is communal refuse container,

is the location convenient to you ?

30. Give reasons for your answer to question 29

.....

.....

31. Who is responsible for emptying the container when it is full?

.....



32. How often is the container emptied?

.....

33. If you are utilising house-to house collection services, who is responsible for collection of the dust bin when it is full?

.....

34. Are you satisfied with the services of the waste collector? Yes  No

35. Please, give reasons for your answer to question 34

.....  
.....

36. Please, do you pay for the service Yes  No

37. If yes to question 36, how much do you pay?.....

38. Is the fee affordable to you Yes  No

39. If no to question 36, give reasons for not paying?

.....  
.....

40. If you are not utilizing house-to-house refuse collection system, are you willing to pay for such services? Yes  No  Undecided

41. Give reasons for your answer

.....  
.....

42. Please do you sort your solidwaste into different containers? Yes

No

43. Give reasons for your answer

.....

.....

**Section C : Sanitation Education Management**

44. How do you get information on environmental sanitation?

(Tick all that apply)

Source/medium of information	Tick all that apply
Television	
Radio	
Newspaper	
Books	
Internet	
Faith-based organisations	
Municipal Assembly	
Traditioanal authorities	
NGOs	
Private Sanitation Companies	
Health institutions	
Educational institutions	
Others (Please list them)	

45. Are public sensitisation programmes on sanitation

carried out in the

community? Yes  No  Not sure

46.(a) If yes to question 45, who carries out such programmes?

.....  
.....

46 (b) Who are the targets of the sensitisation programmes?

.....

46 (c) In what language(s) is the sensitisation carried out? .....

46 (d) In what language would you prefer the sensitisation programmes to be carried out? .....

47. How often are such programmes carried out?

.....

48 (a) What messages/issues are usually talked about during such programmes?

.....

(b) Are there other issues, which you think should be talked about in the sanitation education or sensitisation? If yes, what are they?.....

49. (a) Are you aware of the institution of environmental sanitation day in Ghana?

Yes  No

(b) Is the national sanitation day relevant? Yes  No

50. Is the national environmental sanitation day observed in this community?

Yes  No  Not Sure

51. If yes to question 50, how is it observed?

.....  
.....

52. Have you participated in the national sanitation day since it was instituted?

Yes  No

53. Give reasons for your answer

.....  
.....

54. What message(s) need(s) to stressed to make people adopt and maintain acceptable attitude to sanitation?

.....  
.....

**Section D: Sanitation Regulation Management**

55 (a). Are you aware that there are laws on sanitation management practices in this

community? Yes  No  Not Sure

55 (b) If yes to question 55 are you conversant with the laws?

Yes  No  Not Sure

56. If yes to question 55, how would you rate the level of enforcement of the laws in this community

a. Zero  b. low  c. average  d. high

57. Please give reasons for your answer

.....  
.....

58. How would you assess compliance with sanitation laws in this community?

- a. Zero compliance                       b. Low compliance   
c. Average compliance                       d. High compliance

59. Give reason for your answer

.....  
.....

60. If sanitation laws are not obeyed or the degree of compliance is low  
what do you think is/are responsible for that?

.....  
.....

61. How can compliance with sanitation laws be improved:

.....  
.....

62. Do sanitary inspectors come round to inspect the sanitary conditions in this  
community?

- Yes                       No                       Not Sure

63. If yes to question 62, how many times have the sanitary inspectors visited  
your house since last year? .....

64. As a far as you can remember, how long has been their last visit?

.....

65. What should be the punishment for throwing refuse or defecating around the Benya Lagoon?

- Community Service                       Fine                       Imprisonment
- Other.....

66. Give reasons for your answer

.....

.....

67. Are you willing to report your neighbour(s) for sanitation offence such as depositing refuse where he or she is not supposed to?

- Yes                       No                       Undecided

68. Give reason(s) for your answer

.....

.....

69. Kindly indicate your preparedness or otherwise to contribute to improving sanitation in this community in the following ways ( Tick as appropriate)

Form of contribution	Tick as appropriate		
	Yes	No	Undecided
Making financial contribution towards sanitation improvement			
Sensitising neighbours or other people on sanitation issues			
Participating in communal labour for sanitation			

improvement			
Being a member of sanitation committee to plan and implement sanitation projects and programmes			
Being a member of sanitation task force to ensure enforcement and compliance with sanitation laws			
Participating in a route march for sanitation improvement			
Any other forms of contribution			

70. Kindly rank the following sanitation management tools/strategies in order of importance or priority using first, second and third in that order of importance or priority and give reason(s) for your ranking

Sanitation management strategy/tool	Ranking	Reason(s)
Sanitation education and awareness creation		
Provision of access to sanitation facilities		
Sanitation regulation and law enforcement		

**Section E: Role of stakeholders in sanitation management**

71 Kindly indicate what the following actors are currently doing and what you expect them to be doing to improve sanitation in this community.

Actor/stakeholder	Current role	Expected role
Municipal assembly		
NGOs		
Private Sanitation Companies e g Zoomlion		
Traditional authorities		
Faith based-organisations Eg churches/mosques		
Youth organisations		
Educational institutions eg primary/secondary/tertiary institutions		
Health institutions		
Others		

**Suggestions**

72. What suggestions would you make for improving environmental sanitation in this community? .....

.....



INDEPTH INTERVIEW GUIDE (IDI) FOR ENVIRONMENTAL SANITATION  
MANAGEMENT STAFF OF KEEA MUNICIPAL ASSEMBLY (ENVIRONMENTAL  
HEALTH OFFICERS, MUNICIPAL ENGINEER, PLANNING OFFICER,  
COMMUNITY WATER AND SANITATION OFFICER)

**Informed Consent (General Information about the Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development. The study is solely for an academic exercise and is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain relevant information for this study, you are invited you to take part in the study as a key informant. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one apart from the Principal Investigator will have access to the tape or information you will provide. Please, the interview entails no cost to you except your time but you will not be remunerated for your participation. The result of the study will benefit you and your Municipality as well as Ghana since it will be useful in addressing the environmental sanitation challenges in the community involved and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

## Section A: Background information about respondent

Name of Respondent (Optional)

Designation

Name of Municipal Assembly

Phone Number (Optional)

Age in completed years

Educational Level

Starting time.....

## Section B: Main Interview Questions

Please, at this juncture I would like to proceed with the main interview.

1. How do you find sanitation practices in the catchment of Benya Lagoon?  
*Probe for defecation and waste disposal practices in the area*
  
2. Please, would you say that defecation and waste disposal practices in the catchment of Benya Lagoon affect the development of the area? Please explain your answer (*Probe for effect on tourism, fishing, salt production and their associated livelihoods*)
  
3. How is your outfit ensuring that the following are in place and are being applied to promote sanitation in the catchment of Benya Lagoon?  
  
A) *Sanitation infrastructure* (Probe for availability, access and use of household and public toilet, waste disposal facilities such as household and communal dust bins, refuse dump sites and drainage facilities etc.)

B) *Sanitation regulations* (Probe for existence and application of laws on defecation, waste disposal and building/construction of structures). Request for copies of by-laws and other relevant documents

C) *Education/sensitisation* (Probe for content/message, channels, target, frequency etc) of sanitation education

4. Which actors does your department engage with to ensure proper maintenance of sanitation and how do you collaborate to with them?

Probe for collaboration and interaction with government, private sector (Zoomlion company), NGOs, CBOs such as traditional authorities, youth groups and FBOs

5. What challenges do you face in helping to improve sanitation in the catchment of Benya Lagoon? (*Probe for attitudinal, logistical, staffing/human resource, funding and other institutional challenges*)

6. What suggestions would you make for improving sanitation in the catchment of the Benya Lagoon? (*Probe for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement management).*; *Probe also for the roles that the various stakeholders should play in effective sanitation management*)

**End of Interview**

**Record Time**

**Informed Consent (General Information about the Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as a key informant. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

**Section A: Background information about respondent**

Name of Respondent (Optional)

Designation

Name of Organisation

Phone Number (Optional)

Age in completed years

Educational Level

Starting time.....

**Section B: Main Interview Questions**

1. How do you find the state of environmental sanitation in the catchment of Benya Lagoon with respect to defecation and waste disposal?
2. Would you say environmental sanitation affects the development of the catchment of Benya Lagoon? *(Probe for effect on tourism, fishing, salt productions, productivity, health etc)*
3. How is your outfit contributing to sanitation management environmental in the catchment of the Benya Lagoon *(Probe for role in law enforcement, education and sensitization as well as provision, use and maintenance of sanitation infrastructure such as household and public toilet, waste disposal and drainage infrastructure.)*
4. What challenges do you face in your attempt to improve sanitation in the catchment of Benya Lagoon? *(Probe for attitudinal, logistical, personnel and other institutional challenges).*

5. Which actors does your outfit engage with in managing sanitation and how do you collaborate with them? *(Probe for interactions, collaboration and networking with government agencies ( e.g. MLGRD, KEEA Municipal Assembly), NGOs, CBOs such as traditional authorities, youth groups and faith based organisations)*
  
6. What suggestion would you make for improving sanitation in the catchment of the Benya Lagoon? *Probe for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement) management).; Probe also for the roles that the various stakeholders should play in effective sanitation management*

**End of Interview**

**Record Time**

INDEPTH INTERVIEW GUIDE (IDI) FOR ENVIRONMENTAL PROTECTION AGENCY (EPA) KEY STAFF

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as a key informant. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent’s agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

**Section A: Background information about respondent**

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

Starting time.....

**Section B: Main Interview Questions**

Please, at this juncture I would like to proceed with the main questions

1. What is the scope of your responsibilities as far as sanitation management in Ghana, and the catchment the Benya Lagoon in particular, are concerned?
2. Would you say defecation and waste disposal practices in the Catchment area of Benya Lagoon in the KEEA Municipality affect the fishing, salt and tourism industries? Kindly explain why and how so
3. How is your outfit promoting sanitation in the catchment of the Benya Lagoon (*Probe for role in law enforcement, education and sensitization as well as provision, use and maintenance of sanitation infrastructure such as household and public toilet, waste disposal and drainage infrastructure; interaction/collaboration with other key stakeholders*)



4. What challenges do you face in your attempt to improve sanitation in the catchment of Benya Lagoon? (*Probe for attitudinal, logistical, staffing and institutional challenge challenges*).
5. Which actors do you engage with to ensure proper maintenance of sanitation and how do you collaborate with them? (*Probe for collaboration with government, private sector, NGOs, CBOs etc*)
6. In what ways can environmental sanitation in the catchment of the Benya Lagoon be improved? *Probe also for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement management). Probe also for the role that the various stakeholders should play*

**End of interview**

**Record Time**

FOCUS GROUP DISCUSSION GUIDE (FGD) FOR FISHERMEN, FISH PROCESSORS, SALT MINERS, CANOE/BOAT BUILDERS ETC)

**Informed Consent (General Information about the Research/Study)**

Hello, my name is .....We are conducting a study on Environmental Sanitation Management and Sustainable Development. The study is intended solely for purpose and has the objective to examine sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment area of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited to take part in the research as members of important economic activity groups in this area. If you agree, you will be required to take part in a discussion with 7-11 other persons with similar experiences. The discussion will be tape-recorded, but the information you provide will be treated as confidential. That is, no one else except the Principal Investigator will have access to the tapes or the information. The discussion which will take about an hour to complete has no cost implications for you except your time but you will not be remunerated for your participation. The result of the study will benefit you and your community as it will be useful in addressing the environmental sanitation challenges in the catchment of Benya Lagoon. Participation in this research is voluntary and so you can withdraw at any time if you so wish. In case you want additional information on this research, you may contact Prof. P. K. Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this research on telephone number 0208195279 .

**Respondent’s agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumb-print .....

## Section A: Background Information about Respondents

Name of Community

Name of respondents

Phone Number

Age at Last birthday

Educational Level

*Record starting time.....*

## Section B: Main Interview Questions

At this juncture, I would like to start continue with the main questions.

1 How long have you engaged in salt production /fishing/fish processing/  
boat building etc?

2 How do you find environmental sanitation in this community?

3 How do defecation and waste disposal practices in this community affect  
your work or business? (*Probe for effect on tourism, salt production, fishing  
related activities, the Benya Lagoon with regard to health, productivity, income  
patronage of product, sustainability of employment etc.*)

4 Which actors are involved in sanitation management in this community?

*(Probe for involvement of individuals as well as community and institutional  
actors such as the youth FBOs, NGO, Private sanitation companies and the  
Municipal Assembly with particular reference to interactions, collaboration and  
networking)*

5 What are the actors doing to improve sanitation in this community?

*(Probe for roles in provision and maintenance of sanitation infrastructure ,  
sensitisation and law enforcement)*

6 In your opinion, what should be done to ensure a clean, sanitary environment in this community? *Probe for suggestions on the role of the various stakeholders (Probe also for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement) management)*

IDI GUIDE FOR KEY STAFF OF TOURISM-RELATED FIRMS (HOSPITALITY FIRMS AND THE GHANA MUSEUMS AND MONUMENTS BOARD)

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as a key informant. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time but you will not be remunerated for your participation. The results of the study will benefit you and you, your firm this community and Ghana as it will provide useful basis in terms of empirical evidence useful for addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time of the interview if you so wish. In case you want any additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

## **Section A: Background information about respondent**

Name of Firm

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

*Record starting time.....*

## **Section B: Main Interview Questions**

Please, at this juncture I would like to continue with the main questions.

1. Is there anything about sanitation in this community that needs attention?  
*(Probe for open defecation and waste disposal practices, drainage system etc*
2. How do the defecation and waste disposal practices in this community affect your operations? *(Probe for implications for patronage, income, health, productivity, employment and sustainability of the industry*
3. What are the various stakeholders doing about sanitation in this community? *Probe for role of Government, the Municipal Assembly, NGOs, Zoomlion, CBOs etc*
4. What suggestion do you offer for improving environmental sanitation in this community? *(Probe for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement) management)*

**End of interview**

**Record time**

INDEPTH INTERVIEW GUIDE (IDI) FOR EXPERTS IN TOURISM,  
FISHING AND SALT PRODUCTION

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as an Expert in Tourism/Salt Production/Fishing. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

## **Section A: Background information about respondent**

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

*Record starting time.....*

## **Section B: Main Interview Questions**

Please, at this juncture I would like to continue with the main questions.

1. Please, in your opinion what factors contribute to sanitation challenges in Ghana as a whole and the catchment of Benya Lagoon in *particular* (Probe for weaknesses in policy, sanitation education, law enforcement, infrastructure management as well as attitudinal, funding and logistical challenges etc.)
2. Please, would you say defecation and waste disposal practices have any effect tourism/fishing/salt production? Kindly explain why and how. (Probe for implications of sanitation for tourism, fishing and salt production with respect to health, productivity, sales/patronage of products, income, employment and sustainability of the respective industries)
3. How best can environmental sanitation (defecation and waste disposal practices) in the catchment of Benya Lagoon be improved for sustainable development? (Probe for best practices in sanitation infrastructure



*management, sanitation education management and sanitation  
regulation management)*

**End of Interview**

**Record time**

IDI GUIDE FOR COMMUNITY BASED ORGANISATIONS' LEADERS  
(YOUTH GROUPS AND FAITH BASED ORGANISATIONS LEADERS)

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as an Opinion Leader in the community. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

**Section A: Background information about respondent**

Name of Community

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

*Record starting time.....*

**Section B: Main Interview Questions**

Please, at this juncture I would like to continue with the main questions

1. How do you find the state of environmental sanitation with respect to defecation and waste disposal in this community?
2. Please, would you say defecation and waste disposal practices affect the development of this community? Please, explain your answer *(Probe for effect on tourism, fishing, salt productions, productivity, health etc)*
3. How are you (as a Community-Based Organisation Leader and your members) involved in improving sanitation in this community? *(Probe for role in law enforcement, education and sensitization as well as provision and maintenance of sanitation infrastructure such as toilet, waste disposal and drainage infrastructure etc.)*
4. Which actors do you interact or collaborate with to ensure proper maintenance of sanitation and how do you collaborate to solve the

sanitation problems? Probe for collaboration and interaction with government, private sector, NGOs, other CBOs

5. What challenges do you face in helping to improve sanitation in this community? *(Probe for challenges with respect attitude, logistical needs funding, co-operation and collaboration with the government and the private sector (NGOs, CBOs etc))*
6. What are your suggestions for improving sanitation in this community? *(Probe for suggestions on the role that should be played by the various stakeholders - government, private sector, NGOs, and CBOs)*

**End of Interview**

**Record Time**

IDI FOR TRADITIONAL LEADERS (CHIEFS/QUEENMOTHERS, ELDERS)  
AND ASSEMBLYMEN/WOMEN

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as a Traditional Leader. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....

**Section A: Background information about respondent**

Name of Community

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

*Record starting time.....*

### **Section B: Main Questions**

At this juncture, I would like to proceed with the main interview questions

1. How do you find sanitation practices in this community? (Probe for defecation and waste disposal practices in the community)
2. Would you say that defecation and waste disposal practices in this community affect the development of the community? Please explain your answer (Probe for effect on tourism, fishing, salt firms/industries with particular reference to health, productivity, patronage of products, employment, income and sustainability of the industry)
3. How are the traditional authorities involved in sanitation management in this community? *Probe for role in law enforcement, infrastructure management, sanitation education/sensitisation*
4. How are you ensuring that the following are in place and are being used to promote sanitation in this community?

A) *Sanitation infrastructure* (Probe for ensuring availability, access and use of household and public toilet, waste disposal facilities such as household and communal dust bins, refuse dump sites and drainage facilities etc.)

B) *Sanitation regulations* (Probe for application of laws on defecation, waste disposal and building).

C) *Education/sensitisation* (Probe for content/message, channels, target, frequency etc) *of sanitation education*

B) Which actors do you engage with to ensure proper maintenance of sanitation in this community and in what ways do you collaborate with them? (*Probe for collaboration/interaction with the Municipal Assembly, NGOs, CBOs such as youth groups and FBOs such as churches and mosques etc*).

C) What challenges do you face in your attempt to help improve sanitation in this community?

5 What suggestions would you make for improving sanitation in this community? (*Probe for suggestions on what should be done by the various stakeholders*) *Probe also for suggestions for infrastructural (facilities), education (sensitisation) and regulation (law enforcement) management*).

**End of Interview**

**Record time.....**

**IDI GUIDE FOR CHIEF FISHERMAN AND CHAIRMAN OF SALT  
PRODUCERS ASSOCIATION**

**Informed Consent (General Information about the Research/Study)**

Hello, my name is.....We are carrying out a study on Environmental Sanitation Management and Sustainable Development, The study which is purposely for an academic exercise is aimed at examining sanitation management practices and their implications for the main livelihood activities and sustainable development in the catchment of Benya Lagoon, Ghana. In order to obtain information for this study, you are invited you to take part in the study as a key informant. The interview, which will take between thirty minutes and an hour, will be tape-recorded, but the information you provide will be treated as confidential, That is, no one else except the Principal Investigator will have access to the tapes or the information you will provide. Please, the interview entails no cost to you except your time and you will not be remunerated for your participation. The results of the study will provide evidence-based information that will be useful in addressing the environmental sanitation challenges in the catchment of Benyal Lagoon and by extension, Ghana. Participation in the study is voluntary and you can withdraw at any time if you so wish. In case you want additional information about the study, you may contact Prof. P.K Agbesinayale, the Director of Institute of Development Studies of the University of Cape Coast who is also the Principal Supervisor of this study on telephone number 0208195279 .

**Respondent's agreement**

I .....having understood the purpose of this research as explained to me, agree to participate as a respondent.

Signature/Thumbprint.....



**Section A: Background information about respondent**

Name of Community

Name of Respondent (Optional)

Designation

Phone Number (Optional)

Age in completed years

Educational Level

**Section B: Main Questions**

At this juncture, I would like to proceed with the main interview questions

1. How do you find defecation and waste disposal practices in this community?
2. How do these sanitation practices affect you/your work as salt producer/ fisherman? *(Probe for implications for health, productivity, employment, income/sales as well as sustainability of the lagoon and the sea etc*
- 4 Which actors are involved in managing sanitation in this community?  
Probe for involvement of stakeholders such as Municipal assembly, NGOs, Faith-based organisations, Youth, Traditional Leaders etc.
- 5 What have the actors been doing to improve sanitation in this community?  
*Probe for role in sanitation education, regulation, provision and maintenance of sanitation facilities*
- 6 What suggestions would you make for improving sanitation in this community?

**End of interview**

**Record Time.....**

## OBSERVATION GUIDE

Interviewer should observe the following and take pictures where necessary:

### **A: Waste disposal infrastructure, behaviour and practices**

1. Refuse/waste disposal behaviour and practices of the residents and the transit population
2. Availability, location and conditions of waste bins, gutters and drains, waste streams
3. Dump sites (location, conditions and hazards posed such as odour, houseflies, pests, vultures pigs etc.)
4. Salt ponds/pans
5. Benya Lagoon
6. Sanitation equipment such as vehicles, shovels

### **B: Defecation practices**

1. Defecation in the open, especially in and around the lagoon, beach, bush and other unapproved places
2. Availability, number and conditions of public toilets

### **Checklist for documentary review**

1. Policy, objectives, vision, schedule of activities
2. Assignment of roles and responsibilities to sanitation stakeholders
3. Coverage of sanitation issues regarding infrastructure, education, regulation as well as funding for sanitation programmes

## APPENDIX B

UNIVERSITY OF CAPE COAST  
COLLEGE OF HUMANITIES & LEGAL STUDIES  
FACULTY OF SOCIAL SCIENCES  
INSTITUTE FOR DEVELOPMENT STUDIES

Telephone: 03321-32983/35410/37105

Fax: 03321-32982

Website: <http://ucc.edu.gh>

Email: [ids@ucc.edu.gh](mailto:ids@ucc.edu.gh)



Post Office Box 01  
University of Cape Coast  
Cape Coast

Our Ref: IDS/40/Vol. 4/194  
Your Ref:

Date: 21<sup>st</sup> January, 2015

### TO WHOM IT MAY CONCERN

#### LETTER OF INTRODUCTION

We write to introduce to you Mr. Justice Mensah, a student pursuing Ph.D (Development Studies) programme with Registration Number SS/DSD/09/0002 at the Institute for Development Studies, University of Cape Coast.

He is writing his thesis on the topic: "ENVIRONMENTAL SANITATION MANAGEMENT AND SUSTAINABLE DEVELOPMENT: EVIDENCE FROM THE COMMUNITIES IN THE CATCHMENT AREA OF THE BRENVA LAGOON IN ELMINA, GHANA".

We shall be grateful if you can accord him all the necessary assistance that he requires for his thesis.

Thank you.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Glona Sagoe'.

Glona Sagoe

Chief Administrative Assistant

For: Director

cc: Director, IDS, UCC.

INSTITUTE FOR DEVELOPMENT  
STUDIES  
UNIVERSITY OF CAPE COAST