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STRATEGIES FOR IMPROVING AND SUSTAINING SANITATION: THE ROLE OF COMMUNICATION IN THE ACCRA METROPOLITAN ASSEMBLY

BY

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SEPTEMBER, 2015

DECLARATION

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

.....

Patrick Twumasi

(Student)

27/10/2015

.....

Date

CERTIFICATION

I hereby certify that the preparation and presentation of this dissertation were supervised by me in accordance with the guidelines of supervision of dissertation laid down by Ghana Institute of Journalism.

..... 27/10/2015

Mrs. Ewuradjoa Sangmuah-Tabbicca Date

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DEDICATION

I dedicate this dissertation to the glory of the Almighty God who granted me the strength to go through the programme without any sickness. I also dedicate this work to Madam, Beatrice K. Buckle for all her encouragement to pursue higher academic laurels.

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ABSTRACT

The research aimed at evaluating the current sanitation strategies of the Accra Metropolitan Assembly and examining innovative sanitation strategies for improving and sustaining sanitation: the role of communication in the Accra Metropolitan Assembly. Stakeholders in the sanitation industry within the Accra Metro, which is made up of the sub-Metros' District Environmental Health Officers and Workers, the Environmental Protection Agency (EPA) and the Water, Sanitation and Hygiene (WASH) Ghana were the subjects of the study. Out of a population of One hundred and ten (110), fifty (50) were randomly sampled. In the final analysis, the researcher found out that there was a significant level of low knowledge about the Ghana Environmental Health Sanitation Policy, which has been in the system for sixteen (16) years. The participation of stakeholders in the formulation of the sanitation policy was not appreciable as consultation took place at the Ministerial level leaving out the very players in the industry. The researcher also found out that, the Accra Metro was still using the old open dumping or crude dumping as well as discharging feacal matter directly into the sea without pre-treatment. Again, recycling which enable reuse and recovery of waste has not been employed extensively in the sanitation mix in the Accra Metro, as there is lack of funds. The findings are significant in the examination of the participatory theory of development communication.

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CHAPTER ONE

1.1 BACKGROUND

Human beings are mostly plagued by problems that result from the social arrangements within society. Typically, social or health problems have been thought of as social situations that a large number of observers felt were inappropriate and needed remedying (Montgomery, 1988).

Sociologist commonly assumed that social problems results from "bad" people - maladjusted people who were abnormal because of mental deficiency, mental disorder, lack of education, or incomplete socialization. In fact societies undergoing rapid change from the processes of migration, urbanization and industrialization were thought to have pockets or social disorganization (Montgomery, 1988). Eitzen and Zinn (1989) posits that certain areas of cities which undergo most rapid change were found to have disproportionately high rates of vice, crimes, family breakdowns and mental disorders as well as sanitation.

What could be defined as a social or health problem may differ by audience and by time; pollution for example has not always been considered a social or health problem. Then the question remains, how many people have to be affected before a situation could be considered as health or social problem? People from different social strata and other social locations such as region, occupation, race and age differ in their perceptions of what social or health problem is and once defined how it should be served.

Sanitation has been considered as an integral part of human ecology and defined as safe handling of excreta in the human environment (Agoramoorthy & Hsu 2009). However, referring to the claims of a Noble Laureate, Charles Richet noted that those who wrote on toilet habits were

often branded as vulgar. As a result only a few scholarly documentations exist on this issue (Avvannavar & Mani 2008).

Historically, the provision of access to water and sanitation for emerging urban communities formed the foundation upon which the superstructures of the public health systems of the developed world were erected (Tipping, 2006). The establishment of effective water and sanitation systems ended the periodic eruption of water and sanitation – related epidemics that tended to devastate the work force during the industrial revolution era. In contrast, in most developing countries today it has been estimated that water and sanitation – related infectious and communicable diseases constitutes over 50 percent of the cause of people attending public hospitals and clinics (Tipping, 2006). Access to improved sanitation has been widespread in most industrialised countries, while less than half of the people in much of sub-Saharan Africa and South-east Asia have access.

McFarlane et al (2009) claims that sanitation is a global crisis and was rapidly urbanizing. McFarlane et al defined sanitation as a process with an obvious every day rhythm of bodies, infrastructures, and institutional processes of disposal, treatment, and reuse. Sanitation could not be just access to or provision of a service that was important, rather what was more relevant was the quality of provision, in a manner that was convenient for all household members, affordability, and the elimination of contact with human excreta and other waste waters within the home and wider neighbourhoods.

Additionally, Evans (2004) explains improved sanitation to mean the hygienic disposal or recycling of domestic wastes while promoting health through prevention of human contact with the hazardous wastes. The issue of sanitation improvement goes hand-in-hand with

received more interventions and attention than sanitation (Clark & Gundry, 2004) in meeting the Millennium Development Goal (MDG) target 7 (C): to halve the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015. In fact, the provision of water and sanitation to poor and low-income communities in developing countries constitutes a major if not the strategic global development challenge of the 21st century.

The global sanitation crisis has been urbanizing, 23 per cent of the 2.6 billion people lacking adequate sanitation live in urban environments, usually in informal settlements (Black & Fawcett, 2008). In addition, Human Development Report (2006) highlights that lack of sanitation kills 3,900 children on average daily in Africa and Asia. Again, the world's urban population without access to safe source of drinking water would increase from 137 million in 2006 to 296 million in 2015 and those without access to improved sanitation would increase from 661 million to 898 million respectively (UNJMP,2008). Per the findings of the World Health Organisation (WHO), 1.8 million people die every year from diarrhoea diseases including cholera of these, 90 per cent are children under five, mostly in developing countries (WHO, 2004)

George (2009) claim that, 133 million people suffer from high intensity intestinal helminthes infections, which often lead to severe consequences such as cognitive impairment, massive dysentery or anemia. In addition Howard (2002) observes that many diseases are caused by food, water and hands that are contaminated by disease-causing organisms or "pathogens" that came from feaces. That was when faecal material was ingested, causing diseases such dysentery, cholera, typhoid and intestinal worm infections to occur, which is responsible for sickness and many deaths each year. Therefore, to meet the international target of halving the world's population without access to improved sanitation by 2015, adequate sanitation must be provided to 22 million people.

sustainability, which would ensure that whatever aspect of sanitation condition improved upon, has to be sustained. Hence, sustainable sanitation has been considered as a system that protects and promotes human health, does not contribute to environmental degradation or depletion of the resource base, is technically and institutionally appropriate, economically viable and socially acceptable (Bracken et al, 2005). Therefore, sustainable sanitation has been influenced by a number of factors that include, among others, demographic characteristics, availability, reliability, cost and convenience and household attitudes (Parry-Jones, 1999). Sanitation therefore, involves the principles and practices or collection, removal or storage and disposal or reuse of human excreta with the concept of privacy and dignity from a human rights perspective (COHRE et al, 2008). Again, sanitation has been defined as developing and maintaining a clean, safe and pleasant physical and natural environment in all human settlements; to promote the socio-cultural, economic and physical well-being of all sections of a population (MLGRD, 2010).

Globally, in the year 1990, 2.5 billion people, out of a global total population of 5.3 billion, lacked access to adequate sanitation. In 2008 the proportion had reduced but the total had grown to 2.6 billion of 6.7 billion (Lane, 2012). The global deficit in sanitation facility provision has led to one fifth of the world's population regularly defaecating in the open (Mara, 2012). Diarrhea, usually the result of food or water contaminated with faecal matter, kills a child every fifteen seconds and in each decade that passes the number killed exceeds all World War II fatalities (George, 2008). For instance in India, forty-two children die each hour due to inadequate sanitation (Kar 2012). Fatalities stated above vividly prove that, issues of sanitation have not been accorded the priority it deserves in many countries especially in the developing world (George, 2009). The situation of sanitation has become so daring for the reason that, water has

According to Tipping (2006), in 1970, approximately 63 per cent of the world population lived in rural areas, while only 37 per cent lived in urban areas. The ratio however, changed quite radically by the turn of the century, when there was approximately 46 per cent of the world's population in urban areas. Currently it's about 50 per cent, though by 2020 the population has been projected that approximately 56 per cent of the world population would reside in cities. Africa has had the highest rate of urban growth – over the period between 1975 to the year 2000 – at 4.21 per cent compared to Asia at 3.47 per cent, Latin America and the Caribbean at 2.76 per cent, Europe at 0.68 per cent and North America at 1.32 per cent. Hence, the projected rate of urban population growth from 2000 to 2030 in the less developed regions has been predicted to be 2.3 per cent in contrast to that of developed countries at 0.5 per cent. As urban populations have exploded, water supply and sewerage service delivery has failed to keep pace. Therefore, communities in cities and towns lack access to water and sanitation, and several towns are literally drowning in garbage due to the lack of waste management systems (UNCHS, 2001).

The generation of garbage in most cities and towns are as a result of lack of planning and innovative ways of dealing or handling with the ever increasing waste generated daily. Cities have slums that are not often the concentration of City Authorities. Many of the citizens living in urban slums are essentially outcasts. Old Fadama – a Hausa word which means a mashie and swampy area – also popularly called Sodom and Gomorra within the Accra Metro has always been ignored, when it comes to basic amenities. Sanitation facilities for Old Fadama have never been a major issue, as the inhabitants are left to the fate. The neglect of that slum at the heart of the Accra Metropolis has led to the clogging of the Korle Lagoon, which leads to flooding, whenever there is a heavy down pour. Slum dwellers often have no voice in municipal affairs and other political processes, and the basic needs and wider welfare as citizens are often not

considered. A generic definition of slum has been a "Contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services" (Tipping, 2006). Slums, shanty towns and favelas are known to be "the most visible manifestation of urban poverty" (WHO, 2005).

Africa has had the share of diseases related to insanitary conditions. In 1970 vibrio cholera struck West Africa starting with Guinea and then rapidly moved throughout much of the continent to affect other 30 countries including Ghana. In 1971 Sub-Sahara Africa reported that, approximately 150,000 people developed symptomatic infections with estimated Case Fatality Rate (CFR) of 10 per cent to 15 per cent or higher. Accordingly, Uganda recorded the first cholera outbreak in 1971 (Bwire et al, 2011). Cameroon also experienced the foremost cholera case in 1971 (Djomassi et al 2012). Subsequently, vibrio Cholera became endemic in Africa in regions where the appropriate conditions of temperature, humidity, rainfall, poor sanitation and population density existed. What ought to be clarified have to do with population and sanitation. Where population increase was not checked and sanitation strategies do not commensurate waste generation it would always result in faecal matter related disease infections and subsequent death.

Hence, since 1970, sporadic out breaks of cholera have continued to plagued Africa. Between 1993 and 1994 a total of 28 countries reporting cases of cholera in Africa to the WHO increased by 111 per cent. In fact, in 1994 Africa was the continent responsible for reporting the greatest proportion of cases worldwide. Therefore, cholera has spread in sub-Saharan Africa via well-known modes of transmission including contaminated water, food, and soiled hands (which in turn contaminated foods or fluids and amplify the inoculum) but also by activities such as body cleansing rituals during funerals and prolonged exposure to lake water. It has been established

that, poor sanitation and lack of hygienic house-hold practices is the major cause of water contamination along the supply chain, contributing to an estimated 88 per cent of diarrhea deaths worldwide (UNICEF/WHO, 2009). Accordingly, sub-Sahara Africa has been known to have the lowest level of improved sanitation coverage of 30 per cent of any region in the world, with no progress in urban areas of 43 per cent between 1990 and 2010 (WHO/UNICEF, 2012). Estimated level of access to water and sanitation by the region places the number and proportion of urban dwellers in Africa without improved provision for sanitation at 46 million (Tipping, 2006). International spending on water and sanitation, according to the Organisation for Economic Cooperation and Development (OECD), global funding for water and sanitation efforts has steadily increased since 1971 (Salaam-Blyther, 2012). Pledges in 2010, however, dropped from 2009 levels. In 2010, members of the OECD and multilateral agencies committed 7.8 billion dollars in 2009. It has become clear that funding for sanitation from donors has been reducing. Hence, the responsibility to fund the recycling of waste in parts of the world such as sub-Sahara Africa would rest with individual countries.

Again, global progression in achieving sanitation targets has been skewed. South Asia led primarily by India made substantial progress, having halved the proportion of its population using unsafe sanitary systems. For instance, in 2010, 69 per cent of people in South Asia had access to improved sanitation services, up from 46 per cent in 1990 (Salaam-Blyther, 2012). However, sub-Saharan Africa made the least progress, having decreased the proportion of its population engaged in insanitary practices by roughly 15 per cent. In 2010, about 30 per cent of people in sub-Sahara had access to an improved sanitation facility, up from 26 per cent. Nonetheless, open-defaecation rate was the highest across Southern Asia. 41 per cent of the people in South Asia practiced open-defaecation in 2010, down from 67 per cent in 1990.

Nevertheless, Southern Asia made greater strides than sub-Sahara Africa, which had lower rates of 25 per cent, but made the least progress in curbing the practice. Open-defaecation rates were particularly high among the poor that had the least access to sanitation services and were mostly likely to practice insanitary practices, including open-defaecation (Salaam-Blyther, 2012).

According to Murray and Lopez (1998) in spite of the many community-based epidemics of cholera, nosocomial out breaks with possible person-to-person spread secondary to overcrowded conditions and inadequate hygiene have been described as the contributing factor to the spread of vibrio cholera. The attitude still remains a major contributor to epidemics such as diarrhoea and cholera diseases and mortality in sub-Saharan Africa. However, the use of improved sanitation facilities could help to prevent the spread of diseases that are transmitted through human feaces.

Ghana has waste management difficulties that extend from the cities to the local municipalities, and refuse of all shapes and sizes has been a common site in both urban and rural areas. The difficulties are concentrated and complicated by population pressures in the few heavily populated cities of which Accra has been the most prominent. Sanitation has always been people or human related. Dealing with sanitation and ignoring the involvement of the citizens of a country or community would result in exercise in futility. Schumacher (2000) indicated that, if people are left out, if self-styled experts and high handed planners push citizens around, then nothing could ever yield real fruit. The need to involve citizens in strategy development and implementation remains paramount to provide continuity, ownership of a process and maintenance.

Controlling sanitation-related diseases has been crucial for achieving development goals since health improvements are reported to influence economic productivity in rural and urban areas

(Gallup & Sachs, 2001). Prof. Christopher Gordon, an expert on environment and sanitation claims Ghana loses 300 million United States dollars annually due mainly to poor sanitation and cautioned that the situation could cause greater problems if it was not addressed (Awiah, 2015, February 11). According to Prof. Gordon, the cost incurred was mainly as a result of the country's inability to turn waste into resources, poor sanitation delivery by the agencies responsible and the time spent on accessing water and sanitation. The Director, Institute of Environment and Sanitation Studies (IESS) of the University of Ghana contended that the amount could be used to purchase 500 megawatts of power to address the energy crisis Ghana has been faced with for the past three years. The poor sanitation situation according to Prof. Gordon was attributable to the non-implementation of the country's National Environmental Health Sanitation Policy. The National Environmental Health Sanitation Policy came into effect in 1999 and was reviewed a decade later in 2009. However, the implementation of the requirements remains outstanding. Unfortunately, the telling effect has been the constant flooding in parts of the country with the least down pour, with the capital, Accra always being the hardest hit. Thousands of properties and human lives are perennially destroyed.

Brief History of the Accra Metropolitan Assembly (AMA)

The seat of the Colonial Government was transferred from Cape Coast to Accra in 1877. In 1898, the Accra Town Council was formally established under the Town Council Ordinance of 1894. Again, in 1943, Accra Town Council was established through the Town Council Ordinance, after an initial attempt to establish same back in 1859 was repealed in January, 1861.

In 1944, a new constitution came into effect which saw members being elected to the council with Government appointing five and the Ga Native Authority appointing two members. In 1953

the number was enlarged to 31 with 27 representing the wards and four also representing the Traditional Authority. The membership of the Accra Town Council had previously being increased to 14.

The institution became wholly Government representation after Ghana attained independence and the 1953 constitution was amendment.

Osagyefo Dr. Kwame Nkrumah, the first President of Ghana declared Accra a City and the Council on June 29, 1961. The Accra City Council was dissolved and a special commission was appointed, when the Greater Accra Area was created in 1964.

Tema was then joined to Accra and the commission was made administratively responsible for the Accra-Tema City Council under the leadership of an Executive Chairman.

Later, the special commissioner in charge of the Greater Accra Region was scraped and the Executive Chairman of the Accra-Tema City Council was charged with the responsibility not only for the Council but also for the administration of the Greater Accra Region which comprised;

Dangme Local Council

Shai Local Council

Ga Local Council

Accra-Tema City Council

However, the council was suspended and a Management Committee was put in place with an Administrative Officer as the Chairman after the 1966 coup. Unlike other Accra City Councils,

the Management Committee was placed directly under the local Government and on longer under the officer of the Head of State.

In 1982 a three member team was appointed to administer the affairs of the Council and on March 18, 1989, Accra was declared a Metropolis thus, it became the Accra Metropolitan Authority, after the 1981 Revolution. The Accra City Council was the first of 58 District Councils to be integrated into the New Local Government system to promote efficiency in the administrative machinery of the Council and to meet the ever-pressing demand for amenities and essential services by the rate payers.

The Local Government Act, 1993, (ACT 462) established the District Assemblies including the Accra Metropolitan Assembly then with 13 sub-Metros. In 2007 a Legislative Instrument (LI 1926) was promulgated by the Parliament of Ghana that removed two sub-Metros, Nungua and Teshie from the AMA leading to the inauguration of the Ledzokuku/Krowor Municipal Assembly in March 2008, thereby reducing the A.M.A's sub-Metros to eleven.

Currently, the La Sub-Metro has been carved off to be established as La Dadekotopon Municipal Assembly thereby reducing the A.M.A. to 10 sub-Metros with 11 constituencies due to Ablekuma south and Ayawaso West being divided into Ablekuma South and West constituencies and Ayawaso West and North constituencies respectively. This was affected by the Local Government Instrument, 2012, L.I. 2034.

Functions Act 462 (10) – the Assembly's functions have been effectively captured in its mission statement "To improve the quality of life of the people of the city of Accra especially the poor, vulnerable and excluded by providing and maintaining basic services and facilities in the areas of education, health, sanitation and other social amenities, in the context of discipline, a sense of

urgency and commitment to excellence". When expanded, it includes the construction and maintenance of educational and health facilities, social amenities like markets, toilets and the construction of drains among others.

The vision statement of the Assembly indicates "A new Accra, clean and environmentally sound where the city Authority mobilizes sufficient resources, both internally, and externally; and utilizing these resources judiciously to benefit the people of the city".

Accra the nation's capital serves as the economic, administrative, and cultural center of Ghana. The geographical position has allowed Accra to function as a natural port to the Atlantic Ocean, which has in turn made Accra an important destination point for many of the Ghanaian population and 30 per cent of the country's urban population. Accra a city of 4 million inhabitants has seen continuous population growth. The phenomenal growth has contributed to municipal waste production that far outstrips the city's capacity for containment and processing. Accra's modern day waste management deficiencies has the beginnings in the 1980s when Ghana fell into a period of economic decline (Thompson, 2010). Again, the contraction of the agricultural and mining bases in the hinterlands spurred migration to the cities. The urban centers like Accra gained popularity as potential places of employment for migrants (mostly workers from the North) with dependency on the agricultural work provided by Ghana's Cocoa Farms. Hence, by 1985 the city's only incinerator had been non-functional for 15 years and the pile-up of refuse particularly in the lower-income areas has been an eyesore as the population increased (Thompson, 2010).

Controlled dumping refers to the use of landfills as terminal endpoints for refuse, which has been the preferred method of disposal by the Accra Metropolitan Accra (Thompson, 2010). The

procedure remains the most affordable and requires the least maintenance. However, sanitary or engineered terminal end sites for Accra's waste deposition are non-existent. Ghana possesses only two engineered landfill sites in Tamale and Kumasi. Accra's landfills mostly consist of abandoned stone quarry sites, gouged natural depressions in the earth, old mining areas, or man-made holes in the ground. With the national capital lacking an engineered landfill site, coupled with a growing population and the absence of dust bins, the tendency to experience lingering flood can be assured during the raining season every year (Thompson, 2010).

Additionally, Accra generates between 1500 to 1800 tons of waste per day, but authorities have the capacity to collect only 1200 tons, which constitute 66 per cent per day. The Accra Metropolitan Assembly (AMA) recycles only 2 per cent of the solid waste generated at a recycling facility. Recycling has been practiced informally, but the recycling base of Ghana has generally been weak. Again, out of 1200 tons of garbage collected per day only about 10 per cent to 15 per cent always gets composited (Thompson, 2010). The challenge has led to refuse containers though full and spilling over the content being left at markets, while traders busily went about the business.

The capacity of City Authorities of the Accra Metropolitan Assembly (AMA) to handle waste generated daily remains a difficulty and a night mare. The situation keeps slipping from the Assembly's control as the population of Accra keeps growing. Innovative strategies are to be explored to counter the advancing waste problem overwhelming City Authorities and generating diseases.

Nonetheless, billions of dollars are committed to solve the developing world's sanitation problem but with little success. The failure has frequently been due to an inadequate

understanding of peoples approach to sanitation and the lack of education to motivate people to have toilets. The ongoing crisis has further been frustrating development to achieve Millennium Development Goals (MDGs) (target number 10) to help end the appalling state of sanitation in half by 2015 (WHO,2004).

The promotion of sanitation and hygiene in Myanmar provides good examples of how people could be motivated to construct sanitary latrines and adopt hygienic practices (Bajracharya 2003). 92 per cent of hospital cases in rural areas were on account of infections and parasitic diseases, especially for diarrhoea worldwide. Empirical studies have proved that hospitalization was one of the most significant reasons for indebtedness and abject poverty in rural areas (Mehrota 2008).

Additionally, without clean water and sanitary means of excreta disposal, faecal matter related diseases infections around the world would continue to soar. According to medical experts, ingestion of feaces has been the cause of cholera and diarrhoea (Smith-Asante & Anane, 2015, February 5). About 14 per cent of households in Ghana have access to improved toilet facilities, while five million people are defaecating in the open. The proper management of excreta acts as the primary barrier to prevent the spread of pathogens in the environment. Ghana needs one million latrines to push off open-defaecation (GNA, 2015, February 14). Following a writ by a coalition of Human Rights Organisations (HROs) to the Supreme Court in 2008, the Court instructed the City Authorities (Accra Metropolitan Assembly) to construct 1,500 water closets and KVIPs within the period. Again, among the Supreme Court's instructions to the City Authorities was to arrange subsidies for household that will convert pan facilities into water closets or KVIPs. However, that is yet to be done (Bokpe, 2015, September 28). Cholera was basically about drinking water and eating food that has been contaminated with feaces, which

has the pathogens alive in it. And with people still defaecating around anyhow, buying foods that are uncovered, sold along gutters and waste bins there is the potency of cholera infection increasing (Kale-Dery, 2015, March 20).

It is held that, human excreta and the lack of adequate personal and domestic hygiene have been implicated in the transmission of many infectious diseases including cholera, typhoid, hepatitis, polio and schistosomiasis (Carr 2001). Human excreta transmitted diseases predominantly affect children and the poor. Proper excreta disposal and minimum levels of personal and domestic hygiene are essential for protecting public health. In fact, in the Global Burden of Disease (GBD) study, Disability Adjusted Life Years (DALYs) were ascribed to 10 selected risk factors. Water, sanitation i.e. excreta disposal and hygiene accounted for the second biggest percentage of DALYs (Carr, 2001). Open-defaecation in Ghana especially at the national capital has being affecting environmental hygiene of the nation.

Open-defaecation in the national capital stems from the lack of places of convenience in homes. Permits granted for houses to be constructed require the provision of toilets to be part of the architectural design. However, many prospective home owners omit the places of convenience for extra rooms. Consequently, tenants are left with no option but to commit to free ranging or open-defaecation. Hence, according to a report, one person in six in Ghana has access to a household toilet. Additionally, five in every six Ghanaians must queue for public toilets (Duncan, 2015, August 12). The fact remains that, many of the citizens living in Accra live below the poverty line, which remains a challenge to patronize public places of convenience. The pressure laden on the public places of convenience (public toilets) coupled with the financial demands pushes many poor citizens to open-defaecation. For instance a publication in the November 12, 2014 issue of the *Daily Graphic*, four persons were arrested in a swoop by the

AMA task force and put before court. The reasons given for openly defaecating includes: "Before I was arrested, I had diarrhoea and had run out of money after visiting the toilet three times previously. So I decided to defaecate into the drain and while doing that I was arrested." Another culprit said: "I am not working and as such cannot afford that amount of money every day. That is why I bath in the open and use the drain any time the need arises."

The public places of convenience are also with the difficulty of being kept unhygienic. By Ghana's laws therefore, open-defaecation is an offence punishable by a fine or imprisonment or both (Public Health Act 851 (56), 2012). Yet, the practice persists. In Accra and some other towns and villages, attempts are being made by the local authorities to bring those caught openly defaecating to account for their anti-social and environmental pollution acts. The Accra Metropolitan Assembly (AMA) for example has tried to bring to book, home and commercial facility owners who do not provide toilet facilities on their premises. The effort has been like buying an Eskimo a refrigerator, for the fact that, permits are granted without recourse to rules and regulations stipulating the procedure of granting permits. It is one thing enacting laws and another enforcing same. Unfortunately, enforcement of laws has been the bane of authorities in Ghana and for that matter Accra Metropolitan Assembly.

Accra Metropolitan Assembly (AMA) must ensure that enacted bi-laws are enforced to stem open-defaecation, which causes sporadic outbreak of feacal matter related diseases, due to inadequate provision of both domestic and public sanitary facilities. In Ghana, the problem of open air defaecation is persistent. Not only has it been an environmental problem, destroying our beaches and water bodies, it has also being a serious public health problem with its close link to deadly diseases such as cholera, typhoid, diarrhoea and dysentery. In this twenty-first century,

cholera has almost become an annual epidemic in the country affecting thousands of people and killing hundreds especially in Accra.

Sanitation has not been just the presence of availability of facilities, although that was a start, but for it to be effective it was also the proper use and maintenance of the facilities (Carr, 2001). Littering has taken a high dimension, which has been due to the vivid absence of dust bins. Where dust bins are provided for pedestrian's usage, some citizens fill such bins with domestic waste. Ceremonial streets within the Accra Metropolitan Assembly are without dust bins, hence, establishing the institution of littering as the means of disposing off waste by pedestrians.

Civic books tend to limit the views of relations between the citizen and the state to those involving votes and politicians. It instills in most citizens that, they are entitled to pollute but the responsibility to clean rest with the government (Eitzen & Zinn 1989). In democratic dispensation citizens have a responsibility to side with laws and bi-laws to protect and uphold the well-being of the citizenry and the environment. Many occasions have witnessed citizens forced to walk a fine line on the issue of sanitation. Again, Eitzen and Zinn (1989) confirms that, sometimes citizens are forced to be free; often people must be compelled to act with humanity, however, there has always been ambiguity over the role of the use of force. The above occurs because; development should be people oriented (Schumacher, 1973), which has been ignored by City Authorities.

However, apart from the moral dilemma presented by and associated with the use of public resources to change public attitudes, changing mass behaviour has not been a simple task, and it could not be accomplished quickly. The most experienced advertisers would testify it is hard to change even relatively simple buying habits. If a social or health programme requires all new

behaviour or attitudes toward long-held individuals or collective values, a few well-chosen words of cleverly designed announcement are hardly sufficient (Rice & Atkin 2001). Even the most democratic of states sometimes had to permit officials to introduce coercive measures in order to encourage the desired attitudes. In the case of sanitation, habits are the main key issue that has to be dealt with.

Innovative ways to responsibly and orderly dispose waste on the part of City Authorities comes with deficit. For instance, the Accra Metropolitan Assembly (AMA) has been disposing of faecal waste matter directly into the sea without first treating it to reduce the pathogen level. It has resulted in the Environmental Protection Authority (EPA) opposing the Accra Metropolitan Authority (AMA) about the process of no pre-treatment of faecal waste before discharging into the sea.

Littering has been legitimatized in the national capital. Gutters have replaced dust bins and citizens are filling the drains with garbage without recourse to the consequence. Plastic bags are scattered everywhere which tends to obstruct the free flow of liquid waste any time there is a heavy down pour. Hence, during the raining season, flood becomes the medium that results in the spread of pathogens which remains the resultant vector of faecal matter related diseases. For instance, a water body that flows across the Metropolis, the Odaw River, has been under the cover of plastic waste. Additionally, the stench that emanates from the water body depicts the sought of waste that are poured in the course of the river. An issue of concern has to do with some part of the city considering the river at one point of its course as a gutter and being treated as such. Residents living along the course of the Odaw River that consider it as gutter sweep daily into it as well as dump both solid and liquid waste. The perennial act clogged the drain restricting the smooth flow of the river whenever there is a heavy down pour.

Trash tossed from commercial vehicles within the Metropolis has become a daily routine attitude, which has persisted without any punitive measures. Commercial vehicles are without dust bins, which have led to the perpetuation of the behaviour. Many of the Commercial vehicles within the Metropolis sweep the waste on to the streets and at the various car parks, which spill over into gutters. The Public Health Act 851 (56) of 2012 states that " A person who within the area of authority of a district assembly or any other public place or space causes or permits to be placed a carrion, filth, dirt, refuse or rubbish, or any other offensive or otherwise unwholesome matter, on a street, yard, an enclosure, or open space except at the places set apart by the local authority or the environmental health officer for that purpose commits an offence and is liable on summary conviction to a fine of not more than 250 penalty units, or to a term of imprisonment of not more than three years or to both". Then, why has the law not been made to bite? The unfortunate behaviour has been compounded by trucks which cart waste from the Metropolis to the various dump sites. The waste containers are not mostly covered, which leads to the wind blowing the garbage all along the routes to the dump sites.

The Government through the Ministry of Local Government and Rural Development (MLGRD) though has initiated the National Sanitation Day which falls on the first Saturday of every month the effectiveness leaves much to be desired. The programme serves as a rebranding of the popular traditional communal labour. Communal labour requires inhabitants of communities to step out to clean up the villages and localities every month, with especial day set aside through broad consultations with the inhabitants, subjects of the Chiefs and Queen Mothers. The involvement of citizens in the initiation of the National Sanitation Day has neither been broad enough nor has the citizens' participation been encouraging. Besides the lack of cooperation of the citizenry to the programme, the whole activity has become monotonous.

The process indirectly encourages littering with the hope of cleaning at the beginning of the succeeding month. The inability of city authorities to recycle both solid and liquid waste has resulted in heaps of refuse left after the National Sanitation Day clean up at locations of the Metropolis, only for same waste to end up in the drains again. Communication appealing to citizens to get actively involved has not been wholly effective. Hence, the day has always seen low turnout and suffered lack of interest. Nonetheless, the National Sanitation Day has increased sanitation awareness, however, attitudes remains same.

Many of the beaches in Ghana are littered and buried in human excreta as well as plastic waste. It has not only affected tourism revenues, but has also reduced recreational actives at the beaches. The scenario really places the country in a negative light. Plastic waste floods the beaches all the time, which deter beach goers. The development remains an eyesore. Ghana prides itself as a country with natural sandy beaches which over the years has contributed to domestic and foreign tourism. Tourism currently remains the country's third foreign exchange earner. However, open- defaecation along the country's beaches has been destroying all that.

Adding, many official actions are intended to change public behaviour to produce outward compliance with law at the very least, and beyond that occasionally, to legitimize the law itself. Montgomery (1988) posits that, the concept of bureaucratic populism covers a whole spectrum of service. At one extreme, administrators could mobilize or expedite public participation and thus introduce basic changes in the polity. Relative to the National Sanitation Day (NSD) would require, the Metropolitan, Municipal and District Assemblies (MMDAs) to employ education on how to keep the country clean. The mechanism would discontinue the situation which leads to filth being generated for a particular day to be set aside for National cleaning. However, the extreme has to deal with the exploitative use of participation as the supplying of free labour

drawn especially from third-world communities that benefit from what has been produced. Though, in relation to the National Sanitation Day the out-come of the programme serves the interest of the populace. In other words, planning and a perfect communication mix would enable an implementation, such that choices are better matched to the economic constraints and management capacity of a given area. It would help to improve chances for sustainability of the planning of sanitation service delivery. For instance, a sanitation strategy meant for an area such as Cantonments cannot be implemented at Nima all suburb of Accra, due to the financial differences between the inhabitants of the two communities of the Metropolis.

Nonetheless, in every sanitation programme the people are the target and must be made to own it. Social marketing a communication tool, which has been defined as the adaptation of commercial marketing techniques to programmes designed to influence the voluntary behaviour of target audiences to improve their personal welfare and that of the society of which they are a part (Andreason, 1994), help grant key audiences the opportunity to own a programme and participate fully. It has the potential to improve sustainability of sanitation service interventions in underserved areas. According to Carr (2001), the evidences adduced above are essentially technological answers, albeit of varying complicity, it was important to remember that experience indicates that technology alone was inadequate to secure health gains. Without local interest, involvement and commitment, facilities may remain unused or fall out of use.

In spite of the above, communication remain key in dealing with every situation, especially if it relates to behaviour. Communication could not be underemphasized in an attempt to remedy any human related issue. Sanitation, a human related problem could be dealt with effectively using communication strategies, principles and mechanisms. Hence, Salmon (2006a) claim that, talking was equated with persuading and hearing with understanding and accepting. In other

words, it was not enough to create National Sanitation Day (NSD) where citizens are not persuaded, understand and accept environmental cleanliness as a necessity. But rather litter or dispose liquid and solid waste with impurity only to wait for the day of national cleaning.

Communication could be considered a comprehensive term, encompassing all forms of human interactions, from the interpersonal to the mediated one and from the one-way linear flow to the two-way dialogic processes (Grunig, 2008). Appropriately, there are means through which face-to-face or 'naked' communication could be used during the National Sanitation Day to affect positively the attitude of citizens concerning environmental cleanliness. The media and other sources represent the mediated means of conveying change and transformation in character and attitude. The Accra Metropolitan Assembly could also employ the medium to inform and educate the citizens to improve sanitation within the Metropolis.

The continuous political will on the part of Government has the potential to help deal with the challenges of sanitation of a country. Government would have to financially support various sanitation strategies to realize the environmental health of the country. However, politics should not stray into issues of sanitation, in fact, politicization of sanitation, according to Gerhager and Sahooly (2009) must be avoided at all times. Environmental health of the citizens could not be linked to any political ideology, which would create a divide, for the reason that, sanitation involves everyone within every community and must be all involving.

Additionally, the sanitation strategy for a particular community which has been successful could not possibly be applicable in another. Different group of people with varied demography would require a specific strategy to transform the sanitation problem. For instance, a strategy being operated at Old Fadama (Sodom and Gomorra) cannot be implemented at Alajo. When

authorities compare localities with the implementation of strategies operational elsewhere, the tendency the strategy would collapse remains assured. McFarlane et al (2014) concluded that, each community should be dealt with according to the peculiar sanitation challenge faced.

Nonetheless, issues concerning sanitation should be a bottom-up approach. The people or citizens must be involved from the very beginning in strategy formulation, since the communities are to own the strategy and continuously operate with improve sanitation. The idea should not emerge from outside the community, which usually presents the inhabitants as passive and unintelligent. Then ownership of the strategy and continuity suffers.

In addition, ecological sanitation toilets facilitates contribute to safe excreta disposal to improve human health, safe guard surface and underground water from pollution, and sanitized excreta and urine used to enrich soil productivity. To prevent the pollution of surface and underground water through open-defaecation, ecological sanitation a strategy which convert human excreta into soil moisturizer and reduce pathogens in the environment remains preferred. Pit latrines help prevent open-defaecation, however, underground water gets polluted. Hence, ecological sanitation, which transforms waste – human excreta – into soil conditioner, can help Accra Metropolitan Assembly to prevent the direct disposal into the sea of human excreta without pre-treatment.

Additionally, dry sanitation has been critical in achieving international targets of halving the world population without access to improve sanitation by 2015 and providing improved sanitation for all humans by 2030. This strategy helps to reduce waste in the environment, through the process of drying up both solid and liquid waste which will enable Accra Metro to maintain good environmental health.

According to Pasquali (2006) authentic communication, then was only that which was based on a symmetrical relational scheme, with parity of conditions between sender and receiver, and the possibility of one hearing or giving ear to the other, as a mutual means to understand one another. In the quest to turn around the sanitation situation in Ghana, the Metropolitan, Municipal and District Assemblies (MMDAs) would have to listen to and work on the feedback from the citizens. For the reason that, in any attempt to deal with sanitation in Ghana citizens remain Stakeholders' and the voices, knowledge and participation of same must be listened to.

The Accra Metropolitan Assembly (AMA) has recently taken some measures to deal with the sanitation problem of the Metropolis, which remains, one of the main causes of perennial flooding. Accordingly, 660 million United States dollars loan has been procured from Exim Bank of the United States of America for the construction of four transfer stations for waste collection, and re-engineer landfill sites, while providing the mechanism for processing waste into diesel (Amankwa & Mensah, June 20, 2014). Again, the Korle Lagoon and the Odaw River would be dredge to ensure free flow of water whenever it rains.

The AMA sponsored 28 individuals for an exchange programme with South Carolina in the United States of America for two weeks. It was made up of 16 Assembly Members, 10 business personalities and two staff of the Accra Metropolitan Assembly including the Mayor. In addition, 177, 000 houses within Accra Metropolis and offices are to be given dust bins (Amankwa & Mensah, June 20, 2014) to ensure proper disposal of waste and cut back on littering. In spite of the above excellent measures, attitude of inhabitants of the Metropolis remain key to the success of the project.

Education to equip citizens within the Metropolis on good sanitary behaviours stands with much discrepancy. Outrage programmes to sensitize the inhabitants of the Metropolis has not been effective. The Environmental Sanitation Officers are not visible enough to deter the general public from insanitary behaviours. The print and electronic media remain a medium through which the general public can be reached with a wide range of information and education materials. A walk through the Accra Metropolis would expose the lack of billboards, posters and signs that could help educate the public on sanitation. Activities that focus on hygiene awareness and behaviour of the people to address the issues of why excreta – related health problem exist (Peal et al, 2010) must be pursued with educational materials.

Toilet facilities provided by the Accra Metro Authorities at various locations of the Metropolis are unkempt and the stench that emanates from such places has been a disincentive to users, which also serves as a contributing factor to open-defaecation. The deterrent to patronize the unkempt facilities within the Metropolis has been put forward perfectly that, where facilities exist, the majority are either shared (Tumwebaze et al, 2013), not clean and not adequate enough to provide dignity and privacy (Van Der Geest, 2002). Therefore, sanitation interventions need to address the local demand to ensure that facilities built are used to realize the full public health benefits (Evans & Tremolet, 2010). In other words all engineered systems should be local – specific, thus appropriate for local conditions (Tipping 2006).

1.2 Statement of Problem

Ghana recorded the first cholera outbreak in the 1970s, as a result of a wide Sub-Saharan sub-continental outbreak that affected first Guinea and spread to 30 other countries.

In 1983, a decade later Ghana recorded cholera infection rate of 15,032. It resulted from the shortage of water and the fire outbreaks which forced many rural inhabitants to migrate to the cities or urban areas. Population growth or density without proper management of sanitation has always culminated in infectious diseases. Though in 1985 the infection recorded was only 17, the lowest in the country's history.

However, in 2013, Ghana recorded 22 cholera cases across the country, which gave an indication of an improvement in sanitation delivery. But, the infection of 28,975 coupled with 247 deaths occurring in all the ten regions of the country exposed once again the inefficiency in sanitation delivery and the effect vicious littering could pose. Apart from the Upper West Region that recorded infection in the tens – 36 – the rest of the nine regions were in the hundreds (Disease Surveillance Department, 2015).

Region Distribution, Cholera Cases as of 31st Dec, 2014

Region	**Cases**	**Death**	**CFR (%)**	**No. of Districts reporting**
Ashanti	287	3	1.05	27
Brong-Ahafo	1056	26	2.46	16
Central	3868	64	1.65	16
Eastern	1875	6	0.32	19
Greater Accra	20197	121	0.60	16
Northern	282	2	0.71	5
Upper East	294	9	3.06	10
Upper West	36	1	2.78	3

Volta	651	8	1.23	7
Western	429	7	1.63	11
Total (Ghana)	**28975**	**247**	**0.85**	**130**

(Disease Surveillance Department, 2015)

The Greater Accra Region, however, recorded the highest cholera infection among the other nine regions, 20,197 with a Case Fatality Rate (CFR) of 121 (DSD, 2015), with 16 Districts reporting incidence. The Region has had difficulties with sanitation disposal.

The Accra Metropolitan Assembly (AMA) which has the Central Business District (CBD) under its control has 10 Sub-Metros.

The tables below indicate that Accra began keeping data on cholera cases and death from 2008. In 2012 Accra Metropolitan Assembly (AMA) recorded 4,345 cholera cases with a CFR of 35. However, in 2014, the Accra Metro recorded 10,713 cholera cases with 76 Case Fatality Rate (CFR) an increment of 6,368 of the 2012 infection recorded. Again, the CFR for 2014 was 76 a fatality rate increase of 41 of the 2012 recorded death rate of 35. This has been as a result of ineffective and outdated waste disposal management.

CHOLERA CASES WITH DEATH REPORTED IN ACCRA METRO FROM 2008 TO 2014

ACCRA METRO	2008		2009		2010		2011		2012		2013		2014	
	C	D	C	D	C	D	C	D	C	D	C	D	C	D
TOTAL	810	7	894	6	0	0	6614	40	4345	35	0	0	10713	76
FATALITY (%)	0.83		0.67		0		0.60		0.81		0		0.71	

***C – Cases *D – Deaths (Accra Metro Health Directorate/Directorate Computer Unit, (AMHD/DCU), 2015)**

SUB-METRO BREAKDOWN

SUB-METRO	CASES 2012	CASES 2014
Ablekuma	774	2856
Ashiedu Keteke	424	884
Ayawaso	504	967
Okaikoi	1811	3967
La	336	-
Osu - Klottey	496	2039
Metro Total	**4,345**	**10,713**

(AMHD/DCU, 2015)

Additionally, Accra generates between 1500 to 1800 tons of waste per day, but authorities have the capacity to collect only 1200 tons, which constitutes 66 per cent per day. Accra Metropolitan Assembly (AMA) recycles only 2 per cent of the solid waste generated at a recycling facility (Thompson 2010). The remaining is dumped at landfills sites within and outside the Metropolis.

The congestion at the various landfill sites and the low recycling capacity has led to garbage left to decompose in the markets, lorry parks and streets. The exhaustion of land for open dumping has resulted in the Accra Metro traveling distances out of its jurisdiction to dispose waste.

Again, the inability of City Authorities to enforce permit requirements for prospective house owners to build place of convenience has negatively impacted on the environment through open-defaecation. Adding, the Accra Metropolis has also resulted to discharging human excreta directly into the sea without pre-treatment. This leaves pathogens in the environment thereby compounding feacal matter related diseases infection with its attendant death records.

The current disposal strategies have proved to be ineffective and outdated. Besides, there are no laws to deter littering in the streets and drainage dumping which leads to clogging of drains causing perennial flooding annually.

In spite of the above, the population of Accra Metropolitan Assembly (AMA) was 2.7 million in 2000 and was estimated to be between 3.4 and 3.9 million in 2007. Estimates for 2030 population range from 7.3 to 16.3 million people (Adank, 2011). Therefore, there is the need for modern reuse and energy generating strategies for waste management. Because, with the current deficit in waste management and the population projection, there will only be a bleak environmental health future: therefore, what are the strategies for improving and sustaining sanitation within the Accra Metropolis.

1.3 Objective

The infection and subsequent death concerning faecal matter related diseases such as diarrhea and cholera has reached an alarming proportion recently. Sanitation handling and disposal within the Accra Metropolis raises a lot of concerns and questions on the strategies employed by the

Accra Metropolitan Assembly (AMA); therefore the quest to find out the plausible strategies to counter sanitation in Accra Metropolis.

General Objectives

To examine strategies for improving and sustaining sanitation within the Accra Metropolis the role of communication

Specific Objectives

- To evaluate the knowledge of stakeholders of the strategies for sustaining sanitation within the Accra Metropolis
- To examine sanitation strategies for improving sanitation
- To recommend alternative strategies for proper sanitation disposal in the Accra Metro
- To analyze strategies for sustainable sanitation

1.4 Research Questions

In addition the following are research questions for this study;

1. Do stakeholders in sanitation within Accra Metro have low knowledge about the Ghana Environmental Health Sanitation Policy?
2. Improved sanitation strategies in Accra Metro, could it face out open-defaecation?
3. Does improved disposal of waste require the active involvement of other waste management outfit besides the Accra Metropolitan Assembly?
4. Sustainable sanitation would it lead to the drop of sanitation related disease hospitalization?

1.5 Significance of the Study

The study sought to bring to the fore the eminent dangers that, poor sanitation poses and how communication could help improve and sustain a healthy environment. Again, the research would espouse authorities to consult widely in employing strategies for sanitation.

The importance of the study is to alert the Accra Metropolitan Assembly, stakeholders in the sanitation industry and the Accra Metropolitan Health Directorate to be mindful of the negatives involved with improper sanitation disposal. Additionally, the study would urge all stakeholders in sanitation to collaborate effectively to execute the dictates of the Ghana Environmental Health Sanitation Policy, which has not been implemented fully, since it came into force in 1999 and was reviewed in 2009.

1.6 Scope of the Study

The current study covered the Accra Metropolitan Assembly (AMA) of the Greater Accra Region, which has ten (10) Sub-Metros and covers key areas including the Central Business District (CBD). Stakeholders in sanitation within the Accra Metro were also covered.

1.7 Chapter Organisation

The chapter was organised under sub-headings of background, statement of problem, research question, as well as significance of the study, scope and summary.

1.8 Summary

Sanitation problems of the Accra Metropolitan Assembly (AMA) has over the years deteriorated resulting in an increase in sanitation related diseases such as diarrhea and cholera. Out of the National cholera infection rate of 28,975 with a Case Fatality Rate (CFR) of 247 in 2014, the

Greater Accra Region had 20,197 infections and a CFR of 121. However, the Accra Metro recorded an infection of 10,713 with a CFR of 76. Disposal of waste both solid and liquid has primarily being open dumping or crude dumping (landfills) which remains the oldest form of waste handling.

Open-defaecation has equally become a difficult situation that the Metro Authorities are struggling to deal with. This is as a result of the inability of authorities to ensure that, landlords provide places of convenience domestically. Permits for buildings to be put up strictly require the provision of domestic toilets; however, this caveat has not been adhered to. Additionally, human excreta are disposed directly into the sea without pre-treatment. The situation leaves pathogens that are vectors of cholera and diarrhea in the environment. Household toilets cover only 15 per cent of the Ghanaian populace. Meaning less than one person in six in Ghana has access to a household toilet, while five in every six Ghanaians must queue for public toilets (Duncan, 2015, August 12).

Finally, education of the populace on sanitation has been on a low side, which has led to no change in attitude toward the environment. Littering goes on without recourse to any negative consequences, such as flooding and faecal matter related diseases infection.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

The present study was based on the Participatory theory a variant of the dominant paradigm or the modernization theory. Historically, the terminology Participation entered the development discourse in the 1950s (Rahnema, 1992). The trend started to catch up in the 1970s when new approaches aimed at giving people a bigger role in development efforts emerged to address the causes of past programme failures.

2.1 Review of Theoretical Framework

2.1.1 Participatory Theory

The World Bank (1995) identified four (4) types of participation; information sharing; consultation; collaboration; empowerment. The first two – information sharing and consultation - are considered low level participation, while the latter two – collaboration and empowerment - are also seen as high level participation.

However, the present study was focused on Mefalopulos (2003) four (4) types of participation; passive participation; participation by consultation; functional participation; empowerment participation. Mefalopulos (2003), held the view that, actors must be empowered functionally in putting together strategies to alter a situation permanently. The involvement of the various stakeholders such as the Sanitation Inspectorate Division of the Metropolitan, Municipal and District Assemblies (MMDAs), Environmental Protection Agency (EPA), Community Water and Sanitation, Water, Sanitation and Hygiene and the citizens would enhance sanitation within

the Accra Metropolitan Assembly (AMA). The search for different and better vision in development practices is linked to people's participation and empowerment. Sanitation has always been population related hence, to be able to deal with it effectively, the citizens should be involved, especially, the technical officers such as the Sanitation Inspectors of the Metropolitan, Municipal and District Assemblies (MMDAs). Therefore, stakeholders are to be involved at the levels of collaboration and empowerment (Mefalopulos, 2003), which are considered high in participation. The inclusion of stakeholders in solving sanitation problems empowers and leads to ownership, thereby, enhancing sustenance of proper implementation of sanitation strategies.

Participatory communication has been termed as what denotes the theory and practices of communication used to involve people in the decision-making of a development process. Therefore, communication could be considered as a comprehensive term, encompassing all forms of human interactions, from the interpersonal to the mediated ones and from the one-way linear flow to the two-way dialogic processes (Grunig, 2008). One-way communication would always result in lack of adequate consultation, which would affect collaboration to keep to proper sanitation principles. Hence, communication has been defined as the process where people interactively create, sustain and manage meaning (Conrad & Poole, 1998).

Linear or one-way communication limits the involvement of communities and peoples' participation in decision-making and strategy formation. Two-way communication results in dialog between experts and communities or a group of people. The interaction or discourse between experts and communities bring about consensus where the recipients' of a programme commit to the maintenance and ownership of such. Authentic communication, then, was only that which was based on a symmetrical relational scheme, with parity of conditions between sender and receiver, and the possibility of one hearing or giving ear to the other, as a mutual will

to understand one another (Pasquali, 2006). Therefore communication; means a process of creating and stimulating understanding as the basis for development rather than transmission of information (Aguaga, 1977).

2.1.2 Social Marketing Theory

The study was also based on the social marketing theory of the 1970s. It has been seen as a logical extension of the persuasion theories. It represents an effort to increase the effectiveness of mass media to bring about change. There are steps that help to reach the people to effectively influence the attitudes.

- Methods for inducing audience awareness of campaign topics
- Method for targeting messages at specific audience segments that is most receptive or susceptible to those messages.
- Method for reinforcing messages within targeted segments and for encouraging these people to influence others through face to face communication
- Methods for cultivating images and impressions of people, products or services
- Methods for stimulating and inducing information seeking by audience members
- Method for inducing desired decision-making or positioning
- Methods for activating audience segments especially those that have been targeted by the campaign

According to the theory messages for different segment of the society should not be uniform. Thus accordingly, methods for cultivating, stimulating and inducing could not be the same.

Social marketing theory allows a researcher to develop different material for different group of people in an attempt to bring about social change. Different settlements with corresponding

varied economic status, such as East-Legon an urban elite community and Nima or Ashaiman and Old Fadama (Sodom and Gomorrah) considered as slums will have attitudinal differences to sanitation. Therefore, information to groups to improve and sustain sanitation cannot be same. Hence, messages targeting audiences should be varied and positioned based on the prevailing circumstances in a particular sanitation condition. There are instances where billboards as well as radio and television (media mix) are employed to bring about social change. Therefore, it will require the involvement of the target audience to determine what material is relevant and the method of presentation.

However, the present study was focused on Takahashi (2010) application of social marketing tools to environmental behavioural change. Takahashi (2010) indicates that, social marketing aims at reducing the economical, psychological and physical distance between the desired behaviour and target audience.

Social marketing has been one of the approaches that have carried forward the premises of diffusion of innovation and behaviour change models. Since the 1970s, social marketing has been one of the most influential strategies in the field of development communication.

In the area of development communication, social marketing theory did not come out of diffusion or participatory theories, the traditions that dominated the field in the early 1970s. Social marketing was imported from a discipline that until then had little to do with modernization or dependency theories, the then-dominant approaches in development communication. Social marketing grew out of the disciplines of advertising and marketing in the United States. Social marketing consisted of putting into practice standard techniques in commercial marketing to promote pro-social behaviour.

The origins of social marketing hark back to the intention of marketing to expand its disciplinary boundaries. It was clearly a product of specific political and academic developments in the United States that were later incorporated into development projects.

The emergence of social marketing responded to two main developments: the political climate in the late 1960s that put pressure on various disciplines to attend to social issues and the emergence of nonprofit organisations that found marketing to be a useful tool (Elliott 1991).

At the core of social marketing theory is the exchange model according to which individuals, groups and organisations exchange resources for perceived benefits of purchasing products. The aim of such interventions is to create voluntary exchanges, which is based on trust of behavioural change on persuasion being aware of what is expected of the target audience.

The issue of sanitation has got to do with attitudinal disposition. Therefore, social marketing reaches the target audience with an appropriate change options in a demonstrative medium. This will include the means of illustrations on what to do with garbage at the community level. Messages are developed based on the problem facing society at every point in time. However, Takahashi (2010) indicate that, though social marketing has been used to enhance the patronage of condoms for the prevention of HIV, the application of the theory to environmental health is still in the early stage.

2.1.3 Conceptual Framework

The conceptual framework for this behavioural change activity was participatory and social marketing theories these antecedents have provided the roots for Change Communication. Such theories are viable foundations for developing comprehensive communication strategies and programmes. The theories articulated the concept and process of wide promotion of change

among the designated target audience as a whole and/or the well-structured segmentation of these targets.

The change in behaviour phase for a pre-determined audience often involves the person, society or identified institutions or groups. It is not a simple conventional linear process, but can entail a series of steps, sometimes forwards, other times backwards and even avoiding some of the designated steps. There are times when targets which have adopted the expected behaviour may relapse into the previous ways of doing things. There is therefore the call for knowing where the majority will be in any such situation.

2.2 Related Studies

2.2.1 Stakeholders participation in strategy formulation and Sanitation Strategies

Oti (2012) studying the creation of affordability within sanitation market through subsidies as a way of reaching the poor found that variety of sanitation applications are found to work hence, information on sanitation should be improved. The research also looked at unimproved sanitation facilities as where facilities do not ensure hygienic separation of human excreta from human contact. Pit latrines without a slab or platform, hanging latrines and bucket latrines; shared sanitation facilities of an otherwise acceptable type shared between two or more households are considered unimproved. However, the study established that, only facilities that are not shared or not public are considered improved. While improved sanitation facilities: ensure hygienic separation of human excreta from human contact. Such facilities include flush or pour flush with piped sewer system and septic tank (Sanitation Ladder WHO 2008).

People with decent sanitation have fewer disease and take fewer days off work; such don't have to pay for funeral of their children that die from cholera or dysentery. They save on medicines

and the state save because it's not providing expensive hospital care (George, 2008). Every dollar invested in sanitation brings an average 7 US dollars return in health costs averted and productivity gained (George, 2008). For instance when Peru had cholera outbreak in 1991, the government used one billion US dollars in containment measures post facto, when prevention would have only cost 100 million US dollars (George, 2008). It goes to confirm that, globally, if universal sanitation were achieved by 2015, it would cost 95 billion US dollars, but it would save 600 billion US dollars globally (George, 2008). Again, during the first ten weeks of the epidemic in Peru, losses from agricultural revenue and tourism were thrice greater than the total money spent on sanitation during the previous decade (George 2008).

Top-Down

Oti (2012) also found out that, old "top-down" type of programming and project implementation left in its wake thousands of unusable costly installations in the form of derelict water treatment plants and broken hand pumps leaving the communities in the same or worse health conditions as before. Failure to involve stakeholders in promoting environmental sanitation has led to less motivation and education in maintenance and ownership of programmes and strategies. This has been confirmed by Cairncross (2004) that, sanitation programmes usually start with sanitation technology which the promoters see as a "solution" to problem defined by outside experts. This has often led to the promotion of technology which is unaffordable and inappropriate. Instead, it is wiser to make the effort to understand the problems experienced and defined by the poor, and then seek solutions which people need and want. Sanitation marketing is used as a tool to generate demand within communities for latrine installation by researching consumer motivations and desires and sequently marketing products that match their needs.

Hence, the study gave four reasons that marketing sanitation has been essential; marketing ensures that people chose to receive what they want and are willing to pay for; marketing is financially sustainable, as opposed to subsidy, especially when funding can better promote sanitation options and costs to customers; marketing is cost effective and can be taken to sale. Therefore, Cairncross (2004) has indicated that, provision of hardware is not enough: marketing allows a true behaviour change to take place because those who purchase sanitation tend to value it and will maintain it.

Ghana Environmental Health Sanitation Policy

Ghana Environmental Health Sanitation Policy was first published in 1999. A decade later in 2009 the document was reviewed and received cabinet approval on 31st March, 2010. The Environmental Health Sanitation Policy was initiated by the Ministry of Local Government and Rural Development (MLRGD) to enable Ghana to meet the Millennium Development Goal (MDG) target year on sanitation of 2015 (MLGRD, 2010).

The policy also came up with the concept of "Polluter-Pays" to raise revenue for financing environmental sanitation. However, the model has the capacity to raise the needed revenue, but the disposal of the waste generated daily on that course has posed challenges to the managers of the environment. The nation has been faced with the situation where waste materials of other countries are imported into the country. The importers pay at the various habours, but the disposal of the waste generated presents the real difficulty.

The National Development Planning Commission (NDPC) according to the policy is required to team up with the Metropolitan, Municipal and District Assemblies (MMDAs) to issue guidelines on sanitation. The NDPC is required to capture the priorities of the Districts Environmental

Sanitation Strategies and Action Plans (DESSAP) into a sanitation measure to be implemented at the various Assemblies. The responsibility lodged on the commission, however, has not properly been executed.

The principal components of the policy mention among others as; collection and disposal of waste - liquid or solid - and other hazard, storm water drainage, cleansing of thorough fares, markets and other public spaces, and control of rearing and straying of animals. Others are inspection and enforcement of sanitary regulations which has not been effective, monitoring the observance of environmental standards and environmental sanitation education. Unfortunately, the effective implementation of the dictates of the principles of the policy has not been operational enough to transform environmental sanitation challenges Ghana is faced with.

Status of Environmental Sanitation in Ghana

According to the policy, Accra, Kumasi, Sekondi-Tarkoradi, Tamale and Tema hold 19 percent of the population of Ghana and generating 3,200 tons of solid waste per day (MLGRD, 2010). 105 localities in Ghana representing 34 percent of the population also generate 5,000 tons each day. Also, 76 percent of households still rely on improper waste collection and disposal methods, with only 5 percent relying on house-to-house collection.

Again, according to the Multiple Indicators Cluster Survey (2006) 61 percent of the populace use improved variety of household latrines ranging from Water Closet (WC) connected to sewer or septic tanks, Ventilated Improved Pit (VIP) latrines and pit latrines with slabs. The disposal of the sewer waste remains a challenge to the Accra Metropolitan Assembly (AMA) due to lack of recycling strategy to reduce the concentration of feacal waste in the environment. The survey,

report also indicated that, there are improved facilities in urban areas, 83 percent as against less than 45 percent for rural areas.

Adding, Ghana Living Standards Survey (GLSSV, 2006) gave sanitation coverage for urban to be 26.6 percent and rural areas at 21.9 percent. However, Ghana Demographic and Health Survey, (DHS, 2008) gave a nationwide coverage of improved sanitation facilities of 11.3 percent. Additionally Water Closet (WC), Ventilated Improved Pit (VIP), Aqua privies and Kumasi Ventilated Improved Pit (KVIP) has been estimated around 76 percent. 5 percent Pan (bucket) toilets, although banned are used by the population.

The Medium-Term Development Policy Framework (MTDPF, 2010-2013) findings on studying the environmental health of the nation called for the prioritization of environmental sanitation services as a key requirement for improving quality of life. Again, the Growth and Poverty Reduction Strategy (GPRSII) (2006-2009) placed emphasis on environmental sanitation as a major component of the human resources pillar. For the reason that, the policy found out, less than 15 percent of the septage generated in Accra and Kumasi - the two (2) largest cities in Ghana - was effectively treated. In effect, according to the policy, volumes of septage were currently discharged into many water courses and streams; the situation has led to the aggravated cholera infections nationwide with the Accra Metropolis being the hardest hit.

Strategies for Improving Environmental Sanitation in Ghana

The Policy considered the promotion of physical planning in both rural and urban areas as well as land acquisition for final treatment and disposal of waste in major towns and cities.

Some of the strategies also included building capacity of Environmental Health Sanitation Directorate of the various Metropolitan, Municipal, District Assemblies (MMDAs). The nation

will also have to restrict the formation of new slums and implement an efficient and effective management of drainage systems. However, none of the strategies according to the Policy mentioned above seeks to focus on recycle or reuse approaches. Hence, the challenges facing the MMDAs and for that matter the Accra Metropolitan Assembly in waste - liquid and solid - will persist, without any feasible means of transforming the current situation facing the nation.

Areas of Strategic Environmental Policy

The Ghana Environmental Health Sanitation Policy focus areas have to do with capacity development, which would deal with institutional development including human resource and institutional strengthening. However, the capacity development of the Metropolitan, Municipal and District Assemblies (MMDAs) has suffered as a result of the transferring to the Assemblies environmental sanitation functions by ministries and central government agencies without the accompanying budgets, personnel and equipment. There has also being lack of needed man power including engineers, planners and administrators to enhance policy formulation and research at the local level.

The other focus is Information, Education and Communication (IEC), the positive respond of sanitation strategies will depend largely on how information is disseminated. Therefore, participation by citizens depends on effective education and communication process. Unfortunately, the education aspect of citizens has not been forthcoming. It has a vacuum, which needs urgent attention.

Legislation and regulation is another focus area which has weak and outdated as well as poorly enforced environmental sanitation legislation. The absence of a legislation to punish citizens flouting the sanitation regulation affects the environmental health. Ineffective legislation of the

country has affected the challenge to prevent transboundary dumping in a free-trade regime. Old electrical gadgets are imported only for such to generate waste that creates problems for the MMDAs to dispose. However, on the contrary such waste is being imported into the country, due to lack of legislation to prevent its entry.

In addition, levels of service are also another focus. It has to do with polluter-pay strategy which generates waste that remains difficult to deal with.

Sustainable financing and cost recovery is part of the focus areas. Sanitation sustainability requires funding to maintain facilities. The major constraint in the provision of sustainable environmental sanitation services continues to be low levels of funds allocated to the sector. Again, low remuneration and poor conditions of service is making the sector unattractive to professionals such as engineers, planners and administrators for planning, management, policy formulation, implementation and research.

Research and development focuses on continuous improvement in the provision of environmental sanitation facilities, requires commitment to research and development to identify and adapt to appropriate technologies and modern technique for change-management. Regrettably, the research and development sector has not kept pace with technological advancement. Therefore, there is lack of developing appropriate technologies to avoid groundwater contamination from poor environmental sanitation practices.

Another policy focus area is monitoring and evaluation, when implemented will bring about effectiveness of policy actions. The monitoring and evaluation systems have not been wholly effective, which is affecting the benefits of the policy. Systems are to be established to ensure that dictates of the environmental policy get implemented as stipulated, but it has not been

applied. Hence, the policy has remain a paper strong, but implementation weak and uncoordinated.

The goal of the Environmental sanitation Policy has been to develop a clear and nationally accepted vision of environmental sanitation as an essential social service and a major determinant for improving health and quality of life in Ghana. It would then require innovative strategies to deal with waste, through recycling, for instance, to generate power, rather than the obsolete means of disposal.

Informal Urban Sanitation

McFarlane et al (2014) researching into informal urban sanitation; everyday life, poverty and comparison, held the view that, sanitation was a key dimension of urban poverty and wide-ranging set of processes. The research work conducted at Mumbai, India, looked at, patronage, self-managed processes, solidarity and exclusion and open-defaecation. The study noted that, neighborhoods that are poor and underserviced, are urbanizing faster than cities more generally (Davis, 2006) tends to resort to open-defaecation. Therefore, Fawcett and Mannan (2011) espouse the view that, considering poor neighborhoods which are underserviced, there should be spatial variation means, such that a comparative approach was particularly valuable in researching sanitation. Hence, the caution that comparison could not help solve the issue of sanitation. What pertains in one community or among a group of people on sanitation attitudes would be definitely different from the other. Therefore, should a community be serviced under the pay-as-you-go or polluter-pay-system, same could not be administered elsewhere, due to differences in financial capabilities, population distribution and the will of such inhabitants to cooperate with measures of that nature.

Bottom-up Intervention

In a study conducted by Mehta and Movik (2012, cited in McFarlane et al, 2014) noted that top-down interventions applied to sanitation crisis are mistakes that have been made in the past. It has to deal with building socially inappropriate infrastructures or insisting on forms of sanitation practices that do not fit with cultural conditions, or using engineering technique and technologies that benefit wealthier and more powerful groups over others. Top-down approaches or interventions, has Governments or authorities designing strategies for sanitation without consulting widely. Hence, the strategies are applied to communities without taken into consideration the practices of a particular group of people. Communities, therefore, could not own such strategies and work with it. Sanitation strategies, therefore, requires broad consultation; thus bottom-up interventions which is stakeholder involving rather than top-down, which creates experts (active) as against an uninformed (passive) recipient communities. Ownership suffers; sustenance and maintenance would not gain attention either.

Community-Led Total Sanitation (CLTS)

Community-Led Total Sanitation (CLTS) strategy was initiated in Bangladesh in 1999, as an innovative methodology for eliminating open-defaecation (Kar, 2005). The popularity has been due to how simple the approach was implemented. CLTS uses a participatory approach to empower local communities to stop open-defaecation and promote the building and use of latrines through community-led action instead of subsidies. Community-Led Total Sanitation drive involves participatory mapping of neighbourhoods to understand current practices of open-defaecation and sanitation more broadly and then organizing communities into self-help groups to build and maintain toilets.

CLTS as a strategy works with the whole community rather than individuals and focusing on stopping open-defaecation rather than construction of a particular type of latrine. The strategy has been active in Asia and Africa, as it has led to large construction of latrines. In Bangladesh where Community-Led Total Sanitation started, 16,000 rural communities have been declared Open-Defaecation Free (ODF) and the approach has now been recognized as a National Policy (MOLG, 2005). Community-Led Total Sanitation (CTLS) great strength approach has been in the triggering of behaviour change and mobilizing community action to enforce the change required.

In Ghana a total of 136 communities in 12 districts in the Volta Region have attained Open-Defaecation-Free (ODF) status of which nine achievements was with the support of Plan Ghana, a Non-Governmental Organisation (NGO). However, only 27 communities in four districts have officially been certified by SNV, the Dutch development agency, as having attained ODF status as of October 30, 2014, after verification by the Environmental Health and Sanitation Directorate (EHSD) (Smith-Asante & Anane, 2015, February 5). The Municipalities and Districts are Kpando (Six Communities), Kadjebi (10), Ho (2) and Plan Ghana- assisted communities (9). According to Smith-Asante and Anane (2015, February 5) 741 communities have been exposed to the Community-Led Total Sanitation strategy of which 600 communities had successfully stopped defaecating in the open. Though the Volta Region recorded 400 cholera cases and Case Fatality Rate (CFR) of six in 2015, none of the communities with the Open-Defaecation-Free (ODF) status had recorded any infection.

Research on the results of Community-Led Total Sanitation at a scale in communities of Central and West Africa (Bevan, 2011), shows a success rate-percentage of communities that were declared ODF after the implementation of the methodology – 39 per cent. While in East Africa

and the Pacific a recent review over 12 countries showed a 12 per cent rate of success (UNICEF, 2013). In addition, evidence from some countries shows that achieving ODF status was not a guarantee of continued use and maintenance of hygienic latrines in the long term (Evans et al, 2009). Hence, CLTS could be seen as a process to eliminate open-defaecation, the first step in the sanitation ladder (WHO & UNICEF, 2013).

Therefore, Gupta and Pal (2008) indicates that, the outcomes of the Community-Led Total Sanitation campaign have been evaluated in terms of ; construction of toilets without subsidy even by marginalized households; improvement in health and hygiene; financial savings in terms of reduced health cost.

However, objections have been raised about land; since pits would have to be dug any time the previous gets used up. Again, the issue of underground water pollution has also come-up severally. As well there has been the issue that, Community-Led Total Sanitation does not have the capacity to handle complex sanitation problems. However, CLTS provides the immediate solution to open-defaecation.

Atkinson (2007) identified that, participatory processes produce successful results, only where solutions emerge from the inputs of local stakeholders and not solely from 'conventional wisdom' or 'prescriptive' planning.

2.2.2 Improving Sanitation Strategies

Household-Centered Environmental Sanitation

Luthi, McConville and Kvarnstrom (2010) in a study into community-based approaches for addressing urban sanitation challenges found the challenges of sanitation service delivery are

worsened by the fact that, many poor urban residents live in unplanned and underserved informal settlements commonly known as slums or in expanding peri-urban areas. The research also found that, the focus in the rural sanitation sector was often simply on hygiene and behaviour change and encouraging communities to move towards Open-Defaecation-Free (ODF) environments. That was the first step towards participation in sanitation services that ensure hygienic separation of human excreta from human contact.

Rising tensions and recent riots in South Africa's townships in July 2009 (BBC News Africa, 2009) demonstrated the service delivery backlogs in urban areas. For the reason that, urban Administrators do not have the capacity to train for the many marginalized areas. UNFPA (2007) also share the view that, urban areas in developing countries are especially at risk as it is predicted that 95 per cent of the urban population growth will take place in the developing world over the next two decades, and 80 per cent of the world's urban population will be located there by 2030. The confirmation is reflected in the most recent United Nations Joint Monitoring Programme reports that predict that the number of the world's urban population without access to a safe source of drinking water will increase from 137 million in 2006, to 296 million in 2015 and communities without access to improved sanitation will increase from 661 million to 898 million, respectively (UNJMP, 2008)

Luthi et al (2010) also raised the concern of "One size fits all" in sanitation, which cannot work successfully. It has to do with Urban Authorities deploying a single strategy to all settlements. Such measures will not work and where it does, the effectiveness has always been in doubt, for the reason that, slums are unplanned settlements; hence, a strategy for a well-structured settlement cannot be applied to slums.

Household-Centered Environmental Sanitation (HCES) Approach

Household-Centered Environmental Sanitation (HCES) is an urban focused sanitation strategy, which remains the foremost for urban sanitation sustainability. HCES is a multi-sector planning approach geared towards service delivery in poor urban areas. It integrates water supply, storm-water and sewage management; facilitates the incorporation of input for diverse actors and utilize the concept of urban zone for enhancing the implementation of decentralized options.

Therefore, successful implementation of the Household-Centered Environmental Sanitation (HCES) approach requires the dissemination of information on affordable and sustainable sanitation options to authorities responsible for improving environmental services, such as municipal officials, urban planners and community representatives of chiefs. Hence, Household-Centered Environmental Sanitation (HCES) has been identified as the environmental sustainability concept based on circular resource management systems, addressing environmental sanitation problems as close as possible to the very sources. Therefore, emphasis is placed on source conservation and waste reduction.

Household-Centered Environmental Sanitation approach belongs to the family of communicative planning frameworks that focus on participatory bottom-up methodologies where planners solicit the participation of a variety of stakeholder's in a democratic planning process (Hamdi and Goethert 1997). Murray (2009) concluded with the view that, participatory tools as well as social marketing has also been proposed severally for sanitation methodologies, and structured planning approaches have the potential to improve the sustainability of sanitation service interventions in underserved areas.

However, Murray (2009) indicates that, Household-Centered Environmental Sanitation (HCES), which has been regarded as urban sanitation strategy could operate effectively through a combination with the Community-Led Total Sanitation (CLTS). CLTS has been acclaimed internationally as rural focused, (Murray, 2009) help improve and sustain sanitation service delivery.

Luthi et al (2010) concluded, agreeing with Murray (2009) that, Household-Centered Environmental Sanitation (HCES) and Community-Led Total Sanitation (CLTS), has complementary features making a combination of both approaches ideal for tackling sanitation in a sustainable manner. Community-Led Total Sanitation (CLTS) cannot maintain a more complex sanitation. The CLTS has mainly been operational in the rural areas and remains renowned for that purpose. Hence, wherever Community-Led Total Sanitation (CLTS) complements the Household-Centered Environmental Sanitation (HCES) which also works perfectly in the urban communities, the sanitation outcome results has always been resolute.

Ecological Sanitation (Ecosan)

Tumwebaze et al (2011) in a cross-sectional study conducted in Kabale Municipality in Western Uganda, randomly selected 806 households out of 9,431 found that, Ecological Sanitation (EcoSan) was designed to cater for all the different categories of people based on varied individual income levels. The cost of owning Ecosan facility, which prevents underground and surface water pollution, depended on the financial make up of an individual. High salary earners could get a higher grade of EcoSan toilet.

Additionally, the research into ecological sanitation and factors affecting its uptake in Kabale Municipality, found out that, poor sanitation and hygiene remain global challenges to improved health, environmental sustainability and poverty eradication especially in developing countries.

Again, the research work established that, population has everything to do with sanitation problems. As population increases there should be innovative and comprehensive means of disposing waste-both liquid and solid. Hence, the study calls for extensive recycling process.

Ecological Sanitation (EcoSan)

Ecological Sanitation (EcoSan) began in Ugandan Districts of Kisoro and Kabale in South-Western Uganda in 1997. Ecosan has been termed as a closed-loop system, in which human excreta was considered a resource (Esrey et al, 1991). To increase people access to sanitation, innovative approaches such as Ecological Sanitation (Ecosan) which improve sanitation and recycle nutrients in excreta for agricultural production remains vital (Austin & Vuuren, 2001, UNESCO, 2006). The Ecosan strategy ensures feaces are separated from urine and processed locally on site until the excreta has been freed of pathogens (Drangert, 2001). The Accra Metropolitan Assembly has a legal case instituted against it by the Environmental Protection Authority (EPA) due to the direct discharge of human excreta into the sea. The Accra Metro method of discharging liquid waste keeps pathogens in the environment coupled with open-defaecation, leading to contamination, which brings about faecal matter related infections.

The Ecosystem loop forms a set of barriers between feaces, flies, fields and fluids by containment of the feaces in a chamber or shallow pit where pathogens are reduced to an acceptable level before being used as fertilizer (Esrey & Anderson, 2001). In other words human excreta get recycled for reuse. The main objective of ecological sanitation innovation include

reduction of the health risks related to sanitation, contaminated water, prevention of the pollution of surface and ground water, increasing soil fertility and optimizing the management of nutrients and water resources (Schuen & Parkinson, 2008). Hence, scaled up sanitation reduces sanitation-related diseases in the population (Windberg, 2009). Ecosan facilities in Uganda are estimated to be over 8,000 of which the Government of Uganda has at least 3,000 and 5,000 built by private organisations (Oketch, 2009). In deed Ecological sanitation toilets have been found to improve environmental sanitation.

Ecological sanitation (Ecosan) approaches also promote food security through contribution to increased agriculture production when the sanitized human excreta are applied to the soil as soil conditioner and urine as fertilizer (Muellegger, 2005). Tumwebaze et al (2011) concluded that, Ecosan contributed about a quarter of the total sanitation coverage in developing countries, with more than half of sanitation problems. Therefore, it has been ascertained that Ecological Sanitation toilets facilities contribute to safe excreta disposal to improve human health, safe guard surface and underground water from pollution, and sanitized excreta and urine used to enrich soil productivity. There was the need therefore, to promote affordable and cost-effective Ecosan designs to cater for all the different categories of people based on income levels.

In spite of the safe and hygienic environment, that Ecosan provides, the cost involved in building the facility remains a challenge. Hence, in order to attain the full benefit of Ecological Sanitation in Ghana there must be governmental intervention.

2.2.3 Disposal of Sanitation

Solid Waste Management in Kampala

Nyakaana (2010) researching into solid waste management in urban centers in Kampala posits that, the failure by Kampala City Council to collect all the solid waste has attracted a new wave of immigrants, the marabou storks, rats, flies and other rodents. Again, the study reached the conclusion that, for effectiveness of waste management, the local government should turn to strategies of incorporating private enterprises into the system, and drawing in local communities so as to make the whole sanitation management more effective.

The study found out that, there is not a single best solution to waste disposal, but a wide range of possibility exists and recommended particularly recycling. However, the study established that, solid waste is at the core of urban environmental problems.

In Uganda, the rapid and often unauthorized growth of urban areas has in many cases outpaced the ability of the authorities to provide adequate housing, roads, water supplies, sewers and collection of solid waste. The most pervasive impression of Kampala is that of filth and squalor, unkempt streets and lanes, scattered dumps of accumulated trash and refuse which removal and disposal appear to be beyond the capacity of the authorities who are currently in-charge.

The study also identified that, city waste generated is largely composed of 70 per cent vegetable matter from discarded foods. Two broad categories of waste were outlined in the research, thus, residential and commercial. Household waste contains mainly wet organic materials 70 to 80 per cent. Today only 10 per cent of the households in the city are served by the Kampala City Council (KCC), while the remaining waste is disposed of by the generating household. Unfortunately, as to how the household dispose the uncollected wastes was not stated by the

study. Many of such waste ends up in drainage systems thereby clogging them resulting in to flood whenever there is a heavy down pour.

According to the World Bank (1999) cities such as Jakarta, Dar-es Salam and Kampala collect and dispose of only 10 per cent, 34 per cent and 20 per cent of garbage respectively. This is due to the fact that, in the low and middle income countries, where Uganda falls, management of municipal wastes consumes 20 to 50 per cent of the city's budget, but this only manages a fraction of the solid waste generated.

Nyakaana, claimed that in Kampala just like in most other centers in developing countries, material considered refuse by western standard is re-used (Sharon, 1993). Old tire are made into sandals, old tin containers into paraffin candle holders, plastic containers into feeding troughs for chicken and scrap metal is fabricated. Hence, the researcher recommended strongly for recycling.

Municipal Solid Waste Management in Puerto Rico

Pérez (2010) studying landfills and incinerators, comparing the hazards posed by the toxic emission associated with the disposal of municipal solid waste found out that, approximately 9,860 tons of municipal solid wastes (MSW) are generated in Puerto Rico (the Island) everyday (ADSPR, 2003). However, according to the Puerto Rico solid waste authority (ADSPR, from its Spanish acronym), approximately 15.3 per cent of this mass is presently segregated for recycling (ADSPR, 2008). The remaining 8,351 tons per day is disposed of in landfills. The result has led to approximately 2,000 acres of opened or closed landfills (ADSPR, 2003), for an average rate of 20 new acres of landfill per year. However, land economy comes into question whether this

disposal strategy is sustainabled. This strategy has the tendency to pollute and take over large tracts of lands.

Again, landfills are permanent repositories of garbage, where materials slowly decompose over hundreds of years (Rathje and Murphy, 2001). However, during this time they generate copious amounts of landfill gas, which consists mostly of the greenhouse gasses methane and carbondioxide, with trace amounts of other contaminants some of which are toxic (USEPA, 2005).

Additionally, the study revealed that for economic and regulatory reasons modern incinerators are designed to extract as many resources as possible from Municipal Solid Waste. This could generate power at an approximate rate of 0.029 megawatts per ton of Municipal Solid Waste, as well as generate steam for industry (Renova, 2000). But 8,351 tons of wastes are disposed of at landfills. It goes to confirm that, in spite of the modern design of incinerators not many states have the capacity to operate them. Article VI Section 19 of the constitution of Puerto Rico states that the public of the commonwealth is to have "The most effective conservation of our natural resources, as well as their greatest development and utilization for the benefit of the community"

Communities that hosts a landfill has the long-term liability of haven the underground storage of waste slowly decomposing refuse with the ensuing emissions and leachate discharges to the ground and groundwater. However, according to the Environmental Public Policy of Puerto Rico, Act 416 which came into effect on the 22nd September, 2004, requires the evaluation of the environmental impacts, including socioeconomic impacts, before the state issues any permit, regarding the creation of waste disposal. Unfortunately, this law is not adhered to. Pérez (2010) conclude that, combing recycle, compost and incineration, it will reduce the stream of waste.

2.2.4 Strategies for Sustained Sanitation

Waste Reduction Management

Post (2007) investigating into waste reduction strategies in solid waste management in Jamaica found out that, sustainable waste management should be at the household and community level. The study also identified four principles of waste hierarchy laying emphasis on order of environmental priority thus minimizing waste; maximizing environmentally sound waste reuse and recycling; promoting environmentally-sound waste disposal and treatment and extending waste service courage.

Sustainable solid waste management according to Post (2007) has been affirmed by the United Nations Millennium Development Goal (MDGs), adopted by 189 countries and signed by 147 Heads of State and governments during the UN Millennium Summit in September, 2000 (UNDP, 2007). Agenda 21, came into being at the Rio Declaration on Environment and Development, explicitly affirmed that, environmentally sound management of wastes was among the environmental issues of major concern in maintaining the quality of Earth's environment and especially in achieving environmentally sound and sustainable development in all countries (UNDESA, 2005). Hence, Chapter 21 of Agenda 21 emphasized that reducing wastes and maximizing environmentally sound waste reuse and recycling should be among the first steps in waste management. This concept was introduced by Agenda 21 and illustrated by the waste hierarchy, which is a stepwise approach to waste management.

Accordingly, the practice of reducing waste requires individuals to acknowledge the impacts of the waste generated and then make conscious decision to generate less, whether it is through reusing materials, altering consumer behaviour or composting food and yard waste. However,

the study identifies that, the cultures of waste reduction has not been established yet on a large-scale in Jamaica. This is evidenced by the proliferation of litter, especially plastic and the limited extent to which recycling, composting and source reduction occurs. Research has shown that the environmental attitudes of the public have been increasing and expanding to include a variety of demographic groups in developed countries, other than just the urban, well-educated, the affluent groups (Mainieri et al. 1997).

Post (2007) also identified that, where waste management is left in the hands of household, it has always resulted in a myriad of waste storage containers. In affirming this, Gage (1998) found that in the low-income areas any convenient container was typically used, including small plastic bags, milk create and cardboard boxes. On the other hand, in the middle and high-income communities, welded expanded metal receptacles located at the curbside were used to store bagged waste until collection occurred. However, the low-income communities which generate more waste rather are not provided with metal containers for proper waste storage and disposal leading to spilling of waste in the environment. Therefore, Gage (1998) proposed that container type determines how long the waste can be kept before collection, for instance the smaller the container, the shorter the period, since odor develop as the waste begins to decompose. Again, plastic bags, if used alone and not collected frequently, are vulnerable to scavenging animals, like dogs and rats that break open the bags in search of food and thus scatter the waste.

The research indicates that, in areas that do not receive collection services by the Northeast Parks and Markets Waste Management Limited (NEPM) households utilize other disposal methods, such as burning, burying and dumping. All the alternatives at the disposal of households pollute the atmosphere and underground water.

Dry Sanitation (DS)

Cordova and Knuth (2005) researched into barriers and strategies for dry sanitation in large-scale and urban settings agreed with WHO and UNICEF, (2000) as well as the World Bank (1994) that, through illness and decreased productivity, lack of water and proper sanitation was intimately related to the perpetuation of poverty, and thus affects economic, social and human development. Hence, to meet the international target of halving the world's population without access to improved sanitation by 2015, adequate sanitation must be provided to 22 million people. That would require annual investments of almost double what was seen in the 1990s from now until 2015 (WHO&UNICEF, 2000).

Additionally, the research studied 50 practitioners and professionals associated with Dry Sanitation (DS) and using quantitative survey also studied 284 users as well. The research concluded that, Dry Sanitation was critical in achieving international targets of halving the world population without access to improve sanitation by 2015 and providing improved sanitation for all humans by 2030.

Inadequacies of Conventional Sanitation

Waterborne sewage has been conventionally accepted as appropriate sanitation, but it's not certain economically or environmentally feasible as a universal solution or it could be sustained for long time-scale. Cordova and Knuth (2005) identified that, water borne sewage discharges, whether centralized or decentralized, regularly leach nutrients and pathogens into water resources. Only 35 per cent of waterborne sewage in Asia, 14 per cent in Latin American-Caribbean, and 0 per cent in African cities were reported by the regions to be treated in waste water treatment plants (WHO & UNICEF, 2000).

Costner et al, (1990); Otterpohl et al (1997) and Revkin (2002) noted that, wastewater treatment plant failures, over-loads and sewage system leaks are common worldwide. Septic systems, which are also classified as adequate sanitation, are the third most common sources of ground water contamination in the United States of America and known contributors of pathogens and nutrients to ground and surface water (USEPA, 2002). The liberation of pathogens into the environment constitutes a problem. The disposal of sewage sludge has become problematic as landfill space becomes scarce due to less or no recycling. Incineration generates air pollution concerns, which is believed to compromise the health of citizens. Land application is thwarted by high levels of heavy metals and other contaminants and public health concerns regarding waste reuse are growing (Rockefeller, 1996; National Academies 2002)

Dry sanitation (DS) has been promoted in its modern form since the 1940s with the creation of the Swedish "Clivus Multrum" and its commercialization, initially for remote and water front cottages (Costner et al, 1990, Esrey et al 1998). Kalbermatten et al (1980) noted that, Dry Sanitation (DS) gained worldwide momentum during the 1970s, among individuals with 'back-to-the-land', self-sufficiency and environmental philosophies, as well as with the appropriate technology drive for low-income sanitation provision. Small-scale use of Dry Sanitation (DS) in cities began in the 1980s, however, large-scale urban experiences of DS increased in the 1990s (Drangert, 1997, Del Porto & Steinfeld, 1999).

However, there are barriers to large-scale and urban Dry Sanitation (DS). The first level of barrier deals with issues relating to Dry Sanitation (DS) itself; that has to do with a technology with which users are initially unfamiliar. The technology ensures that, waste both solid and liquid are dried up and converted or recycled for reuse. The strategy can be used in water lock areas, which is not familiar, hence, users do not adopt and adapt easily. The second barrier has to

do with problems encountered when increasing the scales of programme operation in both rural and urban contexts. The urban arena has been the most challenging one and where most doubts about the viability of Dry Sanitation (DS) are raised (Stockholm Water Fronts, 2001 & Pollard, 1997).

The other issue has to do with the fact that, the large-scale urban programmes are the newest experiences in modern Dry Sanitation (DS), and the ones for which understanding is perhaps least well developed, thus the strategy need specific research to determine how best it can be used on large-scale. Delving into Dry sanitation for urban areas is due to the fact that, the urban programmes have all three types of barriers, so studying urban experiences provides insight into the full set of problems. Again, urban areas tend to set the standard of what is socially acceptable and institutionally supported, so that if urban areas have effective and acceptable Dry Sanitation (DS) systems, rural areas will likely also accept it.

The third barrier has to do with issues specific to urban settings-such as high density housing and urban expectations of modernity and reliable provision of public services. However, rapid urbanization coupled with population growth makes the need to provide for urban sanitation increasingly urgent.

There are two sphere to the barriers stated above, which has to do with operational and structural aspect of Dry Sanitation (DS) implementation as sanitation strategy. Operational sphere has to do with pragmatic, logistical or operational problems programmes face, which are within the realm of programme managers and community implementers to address. That is with good programme planning and implementation the barriers can be minimized. Additionally, the structure also has to do with contextual, sectorial, institutional and or underlying constraints affecting Dry

Sanitation (DS) programmes that are not, for the most part, within the ability of individual programme managers or community implementers to address. In other words, DS require the concerted effort of the broader range of actors. Cordova and Knuth (2005) concluded that, Dry Sanitation (DS) was critical in achieving international targets of halving the world population without access to improve sanitation by 2015 and providing improved sanitation for all humans by 2030.

Land fill sites are becoming limited in the Accra Metro (Thompson, 2001); hence Dry Sanitation (DS), a strategy, which help recycle both solid and liquid waste, remains the preferred irrespective of the challenges involved. The research identified Dry Sanitation (DS) as a reliable sanitation strategy for both rural and urban communities.

Sustainable Sanitation System

Bouabid (2004) analyzing requirements for sustainable sanitation systems in low-income countries claimed that central governments have failed to provide the basic sanitation services to people leaving in rural areas, and in poor neighborhoods of large cities or shanty towns in Low-Income Countries (LIC).

In the Millennium Development Goals (MDGs) numbered 7 is to "Ensure environmental sustainability: water and sanitation" (UNGA, 2001). Sustainability is widely used term in different context. However, in development, sustainability means that; there exists an improvement of quality of life for most of the population and the ecosystem is conserved. Sustainable development has also been defined by the Brundland Commission as, a development that meets the needs of the present generation without compromising the ability of future generations to meet their own (WEDC, 1987). The study indicates that this could be achieved

only if economic and social systems encourage environmental stewardship of resources for the long term, acknowledging the interdependency of social justice, economic well-being and environmental preservation (Haughton, 1999). In other words, indiscriminate dumping has the capacity to affect environmental sustainability.

Again, the research identified morbidity and mortality as the consequences of deficiencies in municipal sanitation. This is to affirm the fact that, sanitation-related diseases like cholera and diarrhea form a vicious cycle of poverty. The inaccessibility of basic services also constrains economic growth and development, which in turn limits the resources available for investment in simple sanitation services.

The study also found out that, every year about 6 million people go blind from trachoma disease. However, trachoma can be prevented by improving sanitary conditions and hygiene practice, (UNICEF/WHO, 2000). Additionally, about 200 million people are infected with schistosomiasis of which 10 per cent suffer severe consequences. While adequate sanitation could reduce infection rate by 77 per cent and water, hygiene and sanitation interventions reduce diarrhea incidences by 25 per cent and mortality by 5 per cent.

Bouabid (2004) posits that eight capacity factors have been identified as playing a major role in the sustainability and development of sanitation services in Low-Income Countries (LIC) such as service, institutional, human resource, technical, economic, financial energy, environment and institution capacities.

The study stated that, municipal solid waste, commonly known as trash or garbage, consists of everyday items such as food, product packaging, grass chipping, furniture, clothing and bottles. However, there are major differences between solid waste generated in developed countries and

in developing countries. The differences are not only in the quantities of solid waste but also in the type of waste. In developing countries the waste generated is dense and has high moisture content. It basically originated from fruits and vegetables. On the other hand, in developed countries solid waste is much paper and plastic. Thus the differences have profound effects on the technology that can be successfully applied for both collection and disposal.

2.3 Hypotheses: Based on the above reviews the present study hypothesized that: **H_1:** There is low knowledge of the Ghana Environmental Sanitation Policy among stakeholders within the Accra Metro; **H_2:** Household-Centered Environmental Sanitation strategy and private sector involvement in sanitation will decrease open-defaecation; **H_3:** There will be a decrease in feacal matter related diseases with improved sanitation disposal; **H_4:** Recycling of waste will lead to sustainable sanitation within Accra Metro.

2.4 Operational Definition

- CLTS: Community-Led Total Sanitation is a rural community based sanitation strategy
- HCES: Household-Centered Environmental Sanitation is an urban sanitation strategy
- DS: Dry Sanitation is a sanitation strategy that separates urine from human excreta
- Participatory: Where beneficiary communities of development are involved in the planning and execution of projects.
- Ecosan: A sanitation strategy which recycle both liquid and solid waste into fertilizer.

CHAPTER THREE

METHODOLOGY

This chapter presents and discusses the research approach, population of the research, study area, research methodology, data collection steps and research tools. It also presents the statistical analysis.

3.1 Population

The target population for the present study was made up of one hundred and fifty (150) District Environmental Sanitation Officers of the Accra Metropolitan Assembly and Environmental Health Practitioners within the Accra Metro. The population share similar interest in changing and improving environmental health in Ghana and among Ghanaians.

Environmental Health field officers or Inspectors were opted for in the current study, because, players within the sanitation industry is quite broad. Hence, the target population for the study is an aspect of rather a large group, which can also help to research into sanitation to obtain information that has the capacity to improve environmental health in the Accra Metropolitan Assembly (AMA).

3.2 Sample

Fifty (50) environmental health practitioners were randomly selected using the cluster sampling technique. The sampling was made up of the Environmental Sanitation Officers (Nsamansaman) of the Accra Metropolitan Assembly and the 10 sub-Metros, Community Water and Sanitation field Officers, the School Health, and Environmental Education Programme (SHEEP) of the

Ministry of Education (MoE), Water, Sanitation and Hygiene (WASH) and the Environmental Protection Agency (EPA).

The cluster sampling technique was opted, for the reason that, it allows the population to be divided into a number of units, or clusters each of which contains individuals having a range of characteristics. The method has been particularly useful when a population was dispersed and requiring a great deal of effort and travel in getting the survey information.

3.3 Instrument for Data Collection

The present study used questionnaire for data collection. The data collection method of questionnaire was opted for mainly, because of the flexibility in the collection of data. Questionnaire allows respondents to attend to such instrument at the convenience without interrupting participants' normal schedules.

The questionnaire was made up of twenty (20) items to test four (4) hypotheses. The questionnaire was made up of open and close ended questions.

Scoring: In the current study every "Yes" was scored two (2) and one (1) for each "No" this was used to test the knowledge about the Ghana Environmental Sanitation Policy, improved sanitation strategies, waste disposal strategies and sustainable sanitation strategies.

3.4 Research Design

The research design of the present study was a one-shot approach, in which questionnaire was used to collect data. The questionnaire was to test the strategies for improving and sustaining sanitation; role of communication in the Accra Metropolitan Assembly. The survey research was opted; because survey helps self-report measurement techniques to question people about

themselves. Again, survey research was used, because survey studies the sample not in its own right but as a means of understanding the population.

3.5 Procedure

The pretested (piloted) questionnaires were administered to the participants. Each participant was to a questionnaire. The questionnaires were hand-delivered. The participants are able to read and write therefore, participants attended to the questionnaire without any assistance. For reliability and validity the questionnaire was test-tested.

3.6 Statistical Data Analysis

Quantitative statistical analysis was used to analyze data collected. Nonparametric Chi-Square test was used to analyze the data. X^2 test is frequently used when level of measurement on a variable under consideration is clearly nominal. However, X^2 test can also be used when level of measurement was ordinal. Pie and bar charts were also employed to help analyze the data, thereby complementing the Chi-square analysis. The Statistical Package for the Social Sciences (SPSS) version 20 was used to analyze data collected.

CHAPTER FOUR

4.0 PRESENTATION OF FINDINGS AND ANALYSIS OF RESULTS

This chapter discussed strategies for improving and sustaining sanitation, the role of communication in the Accra Metropolitan Assembly. It presents results gathered from the field and gives statistical interpretations using Chi-Square, bar and pie charts and subsequently lays discussions on the results of the study. The combination of Chi-Square, bar and pie charts is to help analyze the results from the field efficiently. A total of fifty (50) questionnaires were distributed, all were returned, scored and analyzed.

4.1 PRESENTATIONS OF FINDINGS AND ANALYSIS

The study analyzed the strategies for improving and sustaining sanitation within the Accra Metropolitan Assembly in relation to the role of communication.

RESULTS OF THE HYPOTHESIS TESTED

Table 4.1:
Chi-Square test for goodness-of-fit result for participants' responses on the item 'have you cited the Ghana Environmental Health Sanitation Policy'

Citing of the Ghana Environmental Health Sanitation Policy	**Observed N**	**Expected N**	**Residual**	**Chi-Square**	**df**	**p**
No	31	25.0	6.0			
Yes	19	25.0	-6.0			
Total	50			2.880	1	.090

The table above provides the X^2 test for goodness-of-fit for participants' responses on the item 'have you cited the Ghana Environmental Health Sanitation Policy' revealed that the observed data did not significantly depart from the expected frequency of no difference across the

response category, X^2 (1, N=50)=2.880, p=0.090 (2-tailed). Although 31 of the participants prefer "No" not to have cited the Ghana Environmental Health Sanitation Policy it does not show that it is a significant preferred option, since 19 of the other respondents chose "Yes" to have cited the Ghana Environmental Health Sanitation Policy.

Figure 4.1: Contribution to the first Environmental Health Policy preparation in 1999 and review in 2009

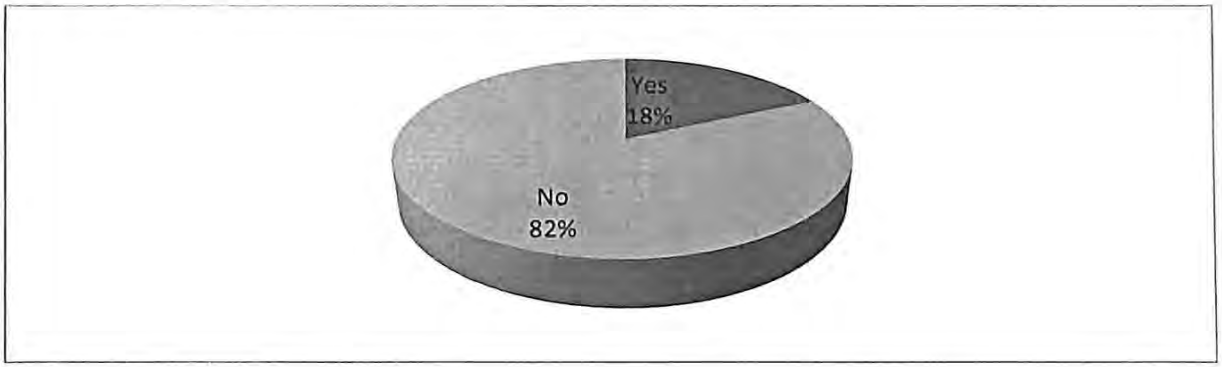


Figure 4.1 above illustrates that nine (9) respondents, representing 18 per cent indicated to have contributed to the preparation of the Environmental Health Policy in 1999 as well as its review in 2009. Forty-one (41) respondents representing 82 per cent in contrast were not consulted in the formulation and review of the Policy document. The results from the findings indicate that, the document was not widely subjected to views from stakeholders in sanitation.

Table 4.2

Chi-Square test for goodness-of-fit result for participants' responses on the item 'Household-Centered Environmental Sanitation (HCES) strategy can eliminate open-defaecation in Accra Metro'

HCES strategy eliminating open-defaecation	Observed N	Expected N	Residual	Chi-Square	df	p
No	16	25.0	-9.0	6.480	1	.011
Yes	34	25.0	9.0			
Total	50					

The table above provides the X^2 test for goodness-of-fit, for participants' responses on the item 'Household-Centered Environmental Sanitation (HCES) strategy can eliminate open-defaecation in Accra Metro' revealed that the observed data significantly departed from the expected frequency of no difference across the response category, X^2 (1, N=50)=6.480, p=0.011 (2-tailed). 34 of the participants prefer "Yes" it does show that it is a significant preferred option, since 16 of the respondents chose "No" to the capability of Household-Centered Environmental Sanitation strategy to eliminate open-defaecation in the Accra Metro.

Figure 4.2: Education of the Populace on Sanitation

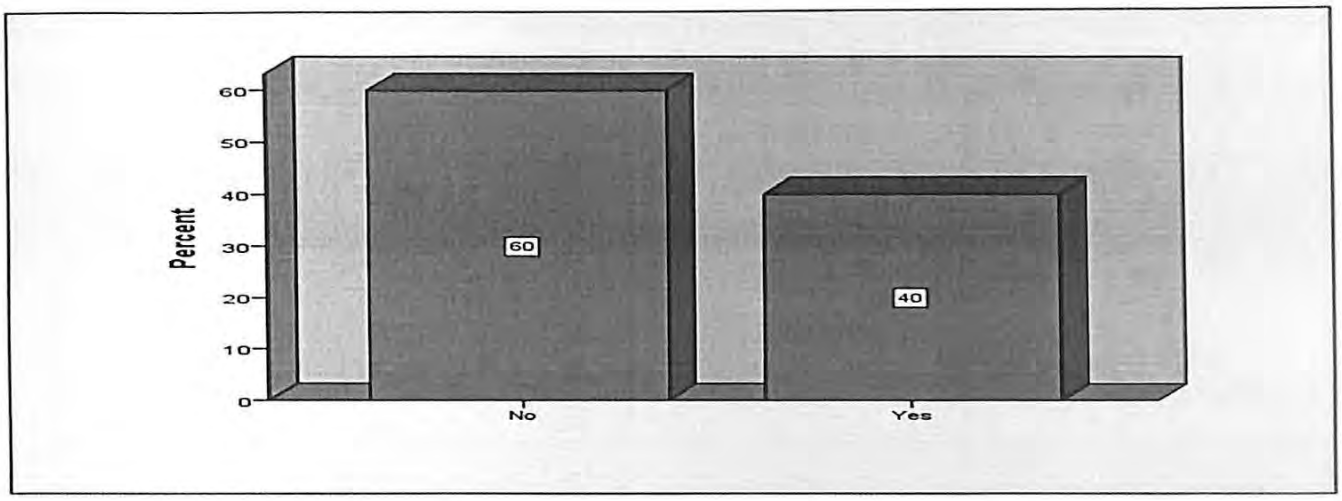


Figure 4.2 above illustrates that out of fifty (50) respondents, twenty (20) representing 40 per cent answered "Yes" that, the Ghanaian Populace has been educated appreciably on sanitation. However, thirty (30) respondents, a representation of sixty (60) per cent opted "No" that education on sanitation of Ghanaians has not been appreciable. The findings depict the attitude of the citizenry to environmental health in Accra Metro.

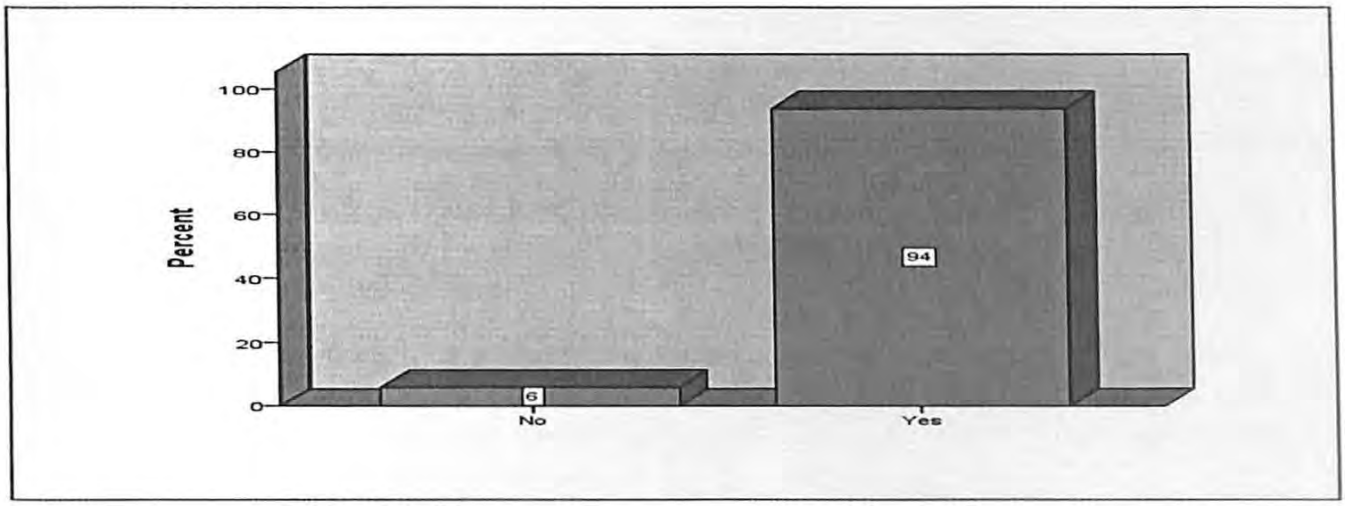
Table 4.3

Chi-Square test for goodness-of-fit result for participants' responses on the item 'Dry Sanitation has the ability to reduce pathogens in the environment'

Dry Sanitation can reduce pathogens in the environment	**Observed N**	**Expected N**	**Residual**	**Chi-Square**	**df**	**p**
No	7	25.0	-18.0			
Yes	43	25.0	18.0			
Total	50			25.920	1	.000

The table above provides the X^2 test for goodness-of-fit for participants responses on the item 'Dry sanitation has the ability to reduce pathogens in the environment' revealed that the observed data significantly departed from the expected frequency of no difference across the response category, X^2 (1,N=50)=25.5920, p=0.001. 43 of the participants prefer "Yes" it show that it is a significant preferred option, since 7 of the other respondents chose "No" indicating that Dry sanitation cannot reduce pathogens in the environment.

Figure 4.3: Recycling as a means of waste disposal in AMA



From figure 4.3 above, forty-seven (47) out of the fifty (50) respondents, representing 94 per cent answered 'Yes' to opt for recycling as waste disposal strategy for Accra Metro. Three (3) respondents representing 6 per cent objected to Accra Metro opting for recycling calls for the provision of the necessary technology to enhance the process to improve sanitation.

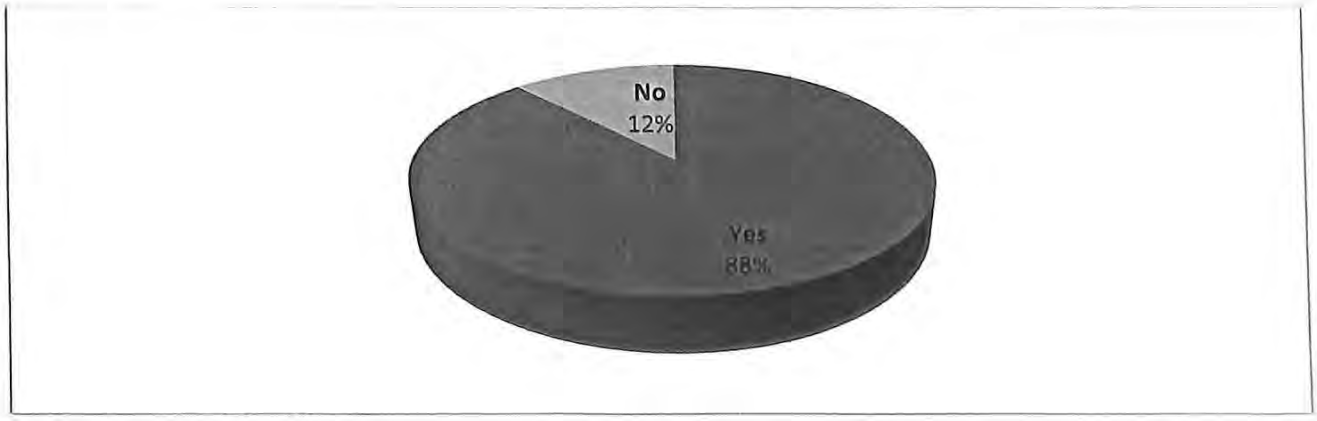
Table 4.4

Chi-Square test for goodness-of-fit result for participants' responses on the item 'waste recycling and compositing has the capacity to sustain sanitation in Accra Metropolis'

Recycling and compositing can sustain sanitation in Accra Metro	**Observed N**	**Expected N**	**Residual**	**Chi-Square**	**df**	**p**
No	8	25.0	-17.0	23.120	1	.000
Yes	42	25.0	17.0			
Total	50					

The table above provides the X^2 test for goodness-of-fit for participants' responses on the item 'recycling and compositing has the capacity to sustain sanitation in Accra Metropolis revealed that the observed data significantly departed from the expected frequency of no difference across the response category, X^2 (1, N=50)=23.120, p=0.0001 (2-tailed). 42 of the participants prefer "Yes" it does show that it is a significant preferred sanitation strategy, since 8 of the other respondents chose "No" to recycling and compositing haven the capacity to sustain sanitation in the Accra Metropolis.

Figure 4.4: Waste reuse and recycling are the first step in waste management



From figure 4.4: above, forty-four (44) respondents representing 88 per cent answered 'Yes' of the potential of the combination of reuse and recycling to be considered the first step in waste management. Six (6) respondents also representing 12 per cent contrary do not hold the same view. The results indicate that, education on waste reuse and recycling should be increased, though respondents that disagree with waste reuse and recycling as waste management option are in the minority.

CHAPTER FIVE

DISCUSSION

The aim of the present study was to examine strategies for improving and sustaining sanitation the role of communication within the Accra Metropolitan Assembly. This was examined by testing the following hypothesis posed in the earlier chapters: **H_1:** There is low knowledge of the Ghana Environmental Sanitation Policy among stakeholders within the Accra Metro; **H_2:** Household-Centered Environmental Sanitation strategy and private sector involvement in sanitation will decrease open-defaecation; **H_3:** There will be a decrease in feacal matter related diseases with improved sanitation disposal; **H_4:** Recycling of waste will lead to sustainable sanitation within Accra Metro.

The results of the study supported hypothesis: **H_1:** which asserted that, there is low knowledge of the Ghana Environmental Sanitation Policy among stakeholders within the Accra Metro was thus supported. The results revealed that stakeholders though have heard about the existence of the Ghana Environmental Health Sanitation Policy, same have not seen the document before. Again, many of the stakeholders have being working for up to a decade; however, consultation leading to the policy formulation did not include stakeholders in the sanitation industry. The present study is in line with Oti (2012) and McFarlane et al (2014) findings that, old "top-down types of programming and project implementation left in its wake thousands of unusual costly installations in the form of derelicts water treatment plants and broken hand pumps leaving the communities in the same or worse health conditions as before. Failure to involve stakeholders in promoting environmental sanitation has led to less motivation and education in maintenance and ownership of programmes and strategies.

The Ghana Environmental Health Sanitation Policy came into effect first in 1999 and was reviewed in 2009. However, stakeholders in sanitation at the grass root were not consulted and the document has also not been made readily available to same. Consultation was at the top, while the everyday Environmental Health Officer as well as the District Environmental Health Directors' (DEHO's) was ignored. The outfits that deal with the everyday sanitation issues were not included in the buildup of the Policy, hence, ownership and application of the document stands to suffer. This is enough prove why the Policy exist while the Metro still faces severe environmental health challenges, which has resulted in sanitation related diseases and subsequent deaths.

The findings is also in line with Mehta and Movik (2012) which findings noted that, top-down interventions applied to sanitation crisis are mistakes that have been made in the past. Top-down approaches or interventions, has Governments or authorities designing strategies, for sanitation without consulting widely. Hence, the strategies are applied to communities without taken into consideration the practices of a particular group of people. The involvement of stakeholders that engage the citizens could help include in the Policy some of the cultural attitudinal behaviours of the populace. Further research should go into the reasons for the top-down approach which was applied in the formulation of the Ghana Environmental Health Sanitation Policy and the reasons behind the selection of the entities during the consultation stage leading to the preparation of the document.

The present study supported the research conducted by Luthi (2010) which indicated that community based approaches for addressing urban sanitation tasks found the challenges of sanitation services delivery are worsened by the fact that, many poor urban residents live in unplanned and underserved informal settlements commonly known as slums or in expanding

peri-urban areas. Hence, **H_2:** which stated that, Household-Centered Environmental Sanitation strategy and private sector involvement in sanitation will decrease open-defaecation was supported. The study found that, the focus in the sanitation sector was often simply on hygiene and behaviour change and encouraging communities to move towards Open-Defaecation-Free (ODF) environments. A step away from ODF is the first step toward participation in sanitation services that ensure hygienic separation of human excreta from human contact.

Household-Centered Environmental Sanitation (HCES) combines with Community-Led Total Sanitation (CLTS) to do away with open-defaecation (free ranging). HCES is a multi-sector planning approach geared toward service delivery in poor urban areas. It integrates water supply, storm-water and sewage management; facilitates the incorporation of input for diverse actors and utilize the concept of urban zone for enhancing the implementation of decentralized option. Household-Centered Environmental Sanitation approach belongs to the family of communicative planning frameworks that focus on participatory bottom-up methodologies where planners solicit the participation of a variety of stakeholders in a democratic planning process (Hamdi & Goethert, 1997). This is confirmed by Atkinson (2007) that, participatory processes produce successful results, only where solutions emerge from the inputs of local stakeholders and not solely from conventional wisdom or 'prescriptive' planning.

The findings is also in line with Tumwebaze (2011), which indicated that, Ecological Sanitation (Ecosan) strategy ensures feaces is separated from urine and processed locally onsite until the excreta has been freed of pathogens. The application of the Ecosan facility: ecosystem loop forms a set of barriers between feaces, flies, fields and fluids by containment of the feaces in a chamber or shallow pit where pathogens are reduced to an acceptable level before being used as fertilizer (Esrey & Anderson, 2001). In other words human excreta get recycled for reuse. The

cost of putting domestic water closets (WCs) and patronizing public toilets lead to open-defaecation. However, with improved strategies open-defaecation can be stopped. It will require the collaborative effort between the citizens and the Accra Metropolitan Assembly. The Accra Metro will involve the communities about the need to patronize new improved toilet facilities and the associated benefits. Research should go into how best Ecosan and Household-Centered Environmental Sanitation can help to adequately handle open-defaecation in the Accra Metro.

The findings was also in line with Nyakaana (2010) which indicated that, for effectiveness of waste management, the local government should turn to strategies of incorporating private enterprises into the system and drawing in local communities so as to make the whole sanitation management more effective. Presently the Accra Metropolitan Assembly is overwhelmed with the volume of waste generated daily. Hence, in order for the Assembly to get the head around sanitation disposal, private enterprises should be involved. This will require the availability of regular funding.

The present study supported **H_3:** which stated that, there will be a decrease in feacal matter related diseases with improved sanitation disposal. The findings supported the study of Perez (2010) which indicated that, employing landfills or open dumping or crude dumping will cause land scarcity. Currently, Accra Metro has exhorted most of the landfill sites. Hence, trucks travel outside the jurisdiction of the Metro to dump waste, with feaces being disposed directly into the sea. Perez specified that, when private enterprises get involved, varied strategies such as reduce; reuse, recycle and recovery can be employed. However, these innovative strategies are capital intensive. The Accra Metropolitan Assembly is currently cash trapped; hence, any innovative means of sanitation strategy which is financial intensive will only remain on paper. Applying innovative strategies will enable sanitation management to go through the three stages in the life

of waste; generation, collection and disposal. Employing all these strategies significantly according to the study reduces the amount of waste that reaches dump sites, extending the duration of their use and reducing collection and disposal costs. However, feacal matter related diseases do not originate only from poor sanitation lack of personal hygiene has also the tendency to cause infection. This includes, regular hand washing with soap after visiting the toilet, shaking hands at funerals and sanitizing hands right after handling dead bodies. Again, Cordova and Knuth (2005) also indicated that, Dry Sanitation (DS) help maintain sustainable environmental health which in turn reduces poor sanitation related diseases. Dry Sanitation is a technology that ensures liquid waste is dried up and converted or recycled for reuse. It can be used at water locked areas. Many of the Accra Metro jurisdictions are water lock; hence, dry sanitation strategy has the potential to help sustain sanitation.

Finally, $\mathbf{H_4}$: Recycling of waste will lead to sustainable sanitation within Accra Metro, was supported. The result supported the study conducted by Post (2007) and Bouabid (2004), which stated that, sustainable waste management should be at the household – community level. Sustainability means that, there exists an improvement of quality of life for most of the population and the ecosystem is conserved. The study also identified four principles of waste hierarchy laying emphasis on order of environmental priority thus minimizing waste; maximizing environmentally sound waste reuse and recycling: promoting environmentally-sound waste disposal and treatment and extending waste service courage. Sustainable development then is that which meets the needs of the present generation without compromising the ability of future generations to meet their own (WEDC, 1987). This could be achieved only if economic and social systems encourage environmental stewardship or resources for the long term, acknowledging the interdependency of social justice, economic well-being and environmental

preservation (Haughton 1999). Hospitalization of citizens stands to drop with sustained sanitation strategies that protect the environment. That is when sanitation is handled with environmental sustaining strategies. In other words, indiscriminate dumping has the capacity to affect environmental sustainability.

5.1 CONCLUSIONS

The present study found out that though the Ghana Environmental Health Sanitation Policy has been in existence for sixteen (16) years, many of the stakeholders in sanitation have not cited it. The policy came into effect in 1999 and was reviewed a decade later, 2009. However, many stakeholders were not consulted. Environmental Sanitation officers and District Environmental Health Directors' (DEHOs') were not contacted and consulted both when the policy was first being generated or during the review. The lack of involvement of the grassroots and many Environmental Health Officers in such a policy leave a wide gap, resulting in lack of ownership of such documents and continuity in implementation.

The study also has revealed that, despite the fact that many of the stakeholders were not consulted in the policy formulation; the document is not readily available. Then, stakeholders do not have a working document.

The Ghana Environmental Health Sanitation Policy revealed that, the decentralization of sanitation handling to the Metropolitan, Municipal, Districts and Sub-metros is not accompanied with finance. Finance remains centralized while research is very low. Decentralization of sanitation handling should be accompanied by finance to promote consistent research into innovative means of sanitation handling within the Metropolis.

The study also found out that, education of the population on sanitation by Accra Metro and many of the stakeholders in sanitation has not been appreciable. The wanton disregard to sanitation rules is evidenced by the low education carried out by stakeholders. The researcher suggests that education of the population should be intensified to keep sanitation awareness at all-time high. Ghana's report on the country's performance on the Millennium Development Goals on sanitation indicated that 48 per cent of the population has access to sanitation much lower than the 84 per cent target set in the Millennium Development Goal (Abdul-Rahaman, 2015, September 23). Hence, the scaling of education will increase the knowledge of the citizens about the responsibility to environmental health (Abdul-Rahman, 2015, September 23).

Again, dust bins are to be made visible across the Accra Metro with an accompanying education to ensure its usage. Drains are clogged with waste which results in the perennial flooding leading to lose of lives and property.

Open-defaecation remains a major problem within Accra Metro. This is due to the absence of task force to ensure that landlords provide toilets domestically. Public places of convenience should be kept hygienic to promote patronage. Most of the public toilets are unkempt, while the fee to access it keeps increasing without consideration to economic status of the attendants.

In a report by Smith-Asante and Ngnenbe (2015, September 18) blamed lack of political will and prioritization of sanitation on behalf of politicians as the bane of the country's sanitation problems. Other factors cited include technical challenges, the lack of coordination in the sector, lack of funds and the improper utilization of funds. Again, the report put forward the country's goal of 54 per cent set for the MDG original target of 84 per cent on sanitation was not achieved (Smith-Asante & Ngnenbe, 2015, September 18). The researcher suggests that, there should be

political prioritization to ensure the allocation of enough funds. The sector needs prioritization to improve and sustain sanitation. The World Vision Ghana, a Non-Governmental Organisation (NGO) has between 1985 and 2010 invested over 60 million United States dollars to ensure among other things sustainable water, sanitation and hygiene services. World Vision is again investing a further 30 million United States dollars from 2011 to 2016 (Smith-Asante & Ngnenbe, 2015, September 18). Then, what is the investment package of the Government of Ghana through the Ministry of Local Government and Rural Development and the Accra Metropolitan Assembly to ensure improvement in sanitation.

Landfill or open dumping otherwise known as crude dumping has restricted the Accra Metropolitan Assembly's dump sites within her jurisdiction. With all dumpsites closed, trucks have been transporting waste to kpone katamanso and Ajen kotoku all outside the AMA's jurisdiction. This calls for innovative technologies in waste disposal to be researched into to improve and sustain the current sanitation situation. Because storing waste in landfill is the oldest and still the primary waste especially solid waste Management Strategy in many countries (Rodionov & Nakata, 2011). However, it has the capacity to create land scarcity. Hence, waste should be managed in a way that minimizes risk to human and long term impacts on health; as well as being safe, waste management must also be sustainable (McDougall et al, 2001). For the reason that, sustainability is a condition in which economic, social and environmental factors are optimized, taking into account indirect and long term impacts (Soufan, 2012).

Another significant factor that contributes to the problems of solid waste in a developing country is the lack of proper collection and transportation facilities (Pradhan, 2008). This is what keeps hampering Accra Metro when it comes to transporting waste outside the Metro's jurisdiction. Human activities create waste and it is the way wastes are handled, stored, collected and

disposed of which can post risks to the environment and public health (Zurbrugg 2002; Atienza, 2008). Therefore, feacal matter related diseases infections and subsequent death rate can reduce only if politicians will consider sanitation as a priority.

5.2 Limitations and Recommendations

5.2.1 Limitations

The participants of the study were dispersed across the Accra Metro; hence, it took dose of financial resources to collect data. Again, due to the locations of the participants the researcher spent time traveling around to distribute questionnaire. The willingness of the participants to readily respond to the study was not appreciable. The number of participants involved in the study resulted in the researcher incurring high stationery cost. This goes with the fact that, the researcher had no sponsorship for the study.

5.2.2 Recommendations

The Accra Metropolitan Assembly has over the years stuck to the old open dumping which is also referred to as crude dumping leading to land scarcity within the Metro. Landfill strategy for waste disposal in Accra Metro has left tons of waste seated at the various markets and car parks, which has exposed the inhabitants of the city to perennial infection of feacal matter related diseases such as cholera and diarrhea. This has created the problem where the Metropolitan Authorities have to transport waste at long distance to dispose. The additional cost which the Metro Authorities are incurring through transporting waste to areas outside her jurisdiction calls for innovative strategies in handling sanitation. Therefore, Accra Metropolitan Assembly should invest into innovative strategies, which will prevent the current dump sites from facing similar congestion in future.

There must be political prioritization to ensure the provision of funds to enable the Accra Metro to operate efficiently in waste handling. The lack of political will to invest in the Metro in the area of sanitation basically caused the nation's inability to achieve the Millennium Development Goal on sanitation target of 84 per cent (Abdul-Rahaman, 2015, September 23). This does not place Ghana in the realm of a nation that pride herself as the gateway to the West African Sub-region. Governments should be lobbied by the Accra Metro Authorities to understand the need to commit funds to improve sanitation, more so in the national capital Accra. This will help end or reduce the damage caused the annual flooding in Accra, which destroy human and property.

Research is also another area where attention should be focused. A thorough study of the Ghana Environmental Health Sanitation Policy is a clear feature of research to help improve and sustain sanitation. However, the needed funding and commitment to this requirement has not been forthcoming. This has resulted in the Metro employing the same old means of sanitation disposal. Research into advanced strategies such as Dry sanitation, Ecological sanitation, Community-Led Total Sanitation, Household-Centered Environmental Sanitation, recycling, waste reduction, waste reuse and waste recovery strategies will help sustain sanitation in the Accra Metro. The current waste management dispensation is not serving the need of the ever increasing population of Accra.

The population of the Accra Metro is increasing, this will require more advanced strategies of handling waste such as what population boom brings. The current rate of urbanization has put pressure on every social amenity in the capital, thereby contributing to the tonnage in the waste generated each day. This calls for more strategic planning to avert any future catastrophe. Because, the current waste generation of 1500 to 1800 daily, with the Metro Authorities able to

cart 1200 and recycle only 2 per cent is enough indication that, there is every need for the Accra Metropolitan Assembly to go a step ahead in the management of waste in the Metro.

Education is also another area that the Accra Metro Health Directorate should invest time and funds. There is the urgent need for education on sanitation to be delivered on various platforms to advance the role of citizens in curbing sanitation related diseases. Dust bins should be provided and education on the benefit of the bins usage advanced to keep the city clean. This will require a research to know the educational demography of the city's inhabitants to arm the Environmental Health Education to know the language medium to employ for value on investment into public education.

Dust bins should be provided and emptied daily or regularly to inspire it usage. Citizens should be cautioned against the attitude of dumping domestic waste into these pedestrian bins. Nyavi (2015, October, 9) reported attitude of residents and traders of Madina in the La Nkwantanang Municipal Assembly (LANMMA), the two entities haven turned the Madina-Accra Road and other streets in the Municipality into refuse dump. This clearly indicates that, education on sanitation has not been appreciably delivered. Hence, there is education deficit.

Punishment of sanitation offenders should be stiffer to deter others with the intention to dispose waste at places not designated as refuse dump. Such measures will restrain citizens from converting roads and car parks into dump sites. Littering as well as passing urine at unauthorized places should be dealt with according to laid down by-laws of the Accra Metro. The Public Health Act 851 (56) of 2012 states that " A person who within the area of authority of a district assembly or any other public place or space causes or permits to be placed a carrion, filth, dirt, refuse or rubbish, or any other offensive or otherwise unwholesome matter, on a street, yard, an

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APPENDIX I

SCHOOL OF GRADUATE STUDIES AND RESEARCH (SoGaR)

GHANA INSTITUTE OF JOURNALISM (GIJ)

STRATEGIES FOR IMPROVING AND SUSTAINING SANITATION: THE ROLE OF COMMUNICATION IN THE ACCRA METROPOLITAN ASSEMBLY

Dear Sir/Madam,

I am graduate student of the Ghana Institute of Journalism (GIJ) pursuing Master of Art in Development Communication, seeking information on the strategies for improving and sustaining sanitation in the Accra Metropolitan Assembly. The exercise is purely academic and consequently any information derived will therefore be treated as confidential.

QUESTIONNAIRE

1. How long have being in your current job?

   6 months-2 years 3-5 years 5-10 years

2. Are you aware of the existence of the Ghana Environmental Sanitation Policy?

   Yes No (Please tick)

3. Have you cited the document before?

   Yes No (Please tick)

4. Did you contribute to the first preparation in 1999 and the review in 2009?

Yes No (Please tick)

5. Do you believe the Ghana Environmental Sanitation Policy can help transform sanitation in Accra Metro?

   Yes No (Please tick)

6. Has the education of the Ghanaian populace on sanitation been done appreciably?

   Yes No (Please tick)

7. Have dust bins been provided for the Accra Metropolis?

   Yes No (Please tick)

8. Have you heard about Household-Centered Environmental Sanitation (HCES) strategy?

   Yes No (Please tick)

9. Do you believe Household-Centered Environmental Sanitation (HCES) strategy can eliminate open-defaecation in Accra Metro?

   Yes No (Please tick)

10. Do you think landfill and incineration disposal are the best sanitation strategies for Accra Metro?

    Yes No (Please tick)

11. Do you believe Community-Led Total Sanitation (CLTS) strategy has the capacity to aid the proper disposal of liquid waste?

    Yes No (Please tick)

12. Do you agree Accra Metro choose recycling as the means of waste disposal?

    Yes No (Please tick)

13. Has open dumping (landfill) disposal of waste by Accra Metro the potential to cause land scarcity?

Yes No (Please tick)

14. Does Ecological Sanitation (Ecosan) have the potential to improve liquid waste in Accra Metropolis?

Yes No (Please tick)

15. Do you think Dry Sanitation have the ability to reduce pathogens in the environment?

Yes No (Please tick)

16. Do you believe waste source reduction and reuse can help maintain environmental health in Accra Metro?

Yes No (Please tick)

17. Has waste recycling and composting the capacity to sustain sanitation in Accra Metropolis?

Yes No (Please tick)

18. Do you agree that waste reuse and recycling be considered as the first step in waste management?

Yes No (Please tick)

19. Has human resource and financial capacity of Accra Metro has any effect on sustainable sanitation?

Yes No (Please tick)

20. Do you consider the current sanitation strategy (ies) of the Accra Metropolitan Assembly as the best option?

Yes No (Please tick)

Thank you for your time.