UNIVERSITY OF EDUCATION, WINNEBA

ENVIRONMENTAL SANITATION BEHAVIOURS AND ATTITUDES OF RESIDENTS IN BIRIM CENTRAL MUNICIPALITY

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DECLARATION

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

Name…….

Candidate 'signature……

Date……..

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University of Education, Winneba.

Name of Principal Supervisor……..…

Supervisor's Signature: …… Date: ……..…..

Name of Co Supervisor……..……

Supervisor's Signature: …… Date: ……..…...

DEDICATION

I dedicate this thesis to my loving wife, Diana Nyarko, my lovely kids: Clement Owusu – Donkor and Jones Owusu - Donkor, as well as my dear parents, Mr. and Mrs. Owusu - Donkor and my brothers.

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

ACRONYMS / ABBREVIATIONS

BCMA	Birim Central Municipal Assembly
CLASS	Consumer Led Aspirational Sanitation Services
CLTS	Community Led Total Sanitation
CWSA	Community Water Sanitation Agency
DESF	District Environmental Sanitation Fund
EMS	Environmental Management Systems
EPA	Environmental Protection Agency
ESP	Environmental Sanitation Policy
GDP	Gross Domestic Product
GNI	Gross National Income
IBM- WASH	Integrated Behaviourial Model for Water Sanitation and Hygiene
MEST	Ministry of Environment, Science and Technology
MLGRD	Ministry of Local and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
MOH	Ministry of Health
NESPoCC	National Environmental Sanitation Policy Coordinating Council
NGOs	Non-Governmental Organisations
OG	Observation guide

PBC	Perceived Behaviour Control
PLE	Progress Linked Finance
SDGs	Sustainable Development Goals
SSIG	Semi Structured Interview Guide
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Behaviour
UN	Unites Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USEPA	United State Protection Agency
WASH	Water Sanitation and Hygiene
WHO	World Health Organisation

ABSTRACT

The purpose of this study was to explore environmental sanitation behaviours and attitudes of residents of Birim Central Municipality. Specifically, the study aimed at exploring the determinants of poor environmental sanitation, attitudes and behaviours of residents vis-à-vis sanitation, effectiveness of sanitation interventions likewise effects of poor environmental sanitation on residents in the Municipality. The study was descriptive in nature. It adopted the case study design, and the qualitative approach to inquiry was solely employed in the treatment of data. Interviews and field observations were the main data collection techniques used to obtain responses from twenty-two (22) participants who were purposively sampled. Data gathered were thematically analysed. The study identified six major determinants of poor environmental sanitation: poor enforcement of sanitation laws, attitudes and behaviours, population, cost, logistics and education. Three indicators summed up residents' attitudes towards environmental sanitation: littering, sanitation laws and indifferent attitudes. Eight sanitation intervention protocols (monitoring, community commitment, public education, stakeholders' collaboration, solid waste containers, sanitation management, dump site demarcation, drainage and sewage interventions, and bye laws) by municipal assembly were identified, some of which were found out as being considerably effective. Financial expenditure, loss of productive hours and health were realized as key adverse effects of poor environmental sanitation in the Birim Central Municipality. This thesis recommends a change in the attitudes and behaviours of residents, public education, intensification of stakeholder engagement, provision of enough waste containers and refuse receptacles, provision of permanent land-fill sites, periodic clean-up exercise, regular waste collection by public and private waste managers such as the Zoom Lion Company Ghana Limited.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

According to Aswathy (2015), environmental sanitation is a collection of actions and policies aimed at improving or maintaining the standard of core environmental conditions affecting the well-being of people. These conditions include a clean and safe water supply, clean air, efficient and safe waste disposal procedures, protection of food from chemical and biological contaminants, and suitable housing in safe and clean surroundings. Environmental sanitation is aimed at 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 the population (MLGRD 2009). The issue of environmental sanitation is of a major concern to all of us for obvious reasons.

First and foremost, human beings will have to come to terms with the fact that the health and good living of the individual and the community anywhere on this globe is inextricably tied to good environmental sanitation. Next is the fact that the beauty of any earthly environment might not depend on only nicely constructed houses but more importantly, on the cleanliness and good sanitation practices of their surroundings. Another reason for so much importance being given to good sanitation emanates from the vital role it also plays in promoting economic growth of the individuals in a nation. This assertion is based on the fact that tourist attraction in any country, region or town can greatly be affected by the quality of prevailing sanitation conditions. Environmental deterioration, extinction of certain species, or pollution in many vital earth systems, such as air, water, soil, forest, and biological diversity have required countries

to develop policies for protecting and developing the earth and promoting global cooperation on these issues (Mensah et al., 2021).

Environmental issues have become globalized and have reached the stage where they present a threat to our life on earth. This phenomenon has led to the review of people's relationships with the environment, their attitudes and behaviours towards the environment, the duties and responsibilities assumed by the individual towards nature, and the redefinition of ecological culture and environmental awareness as well (Aswathy, 2015). The relationship of humans to the environment is reciprocal, in that the environment has profound influence on humans and at the same time, humans extensively alter the environment to suit their needs and desires. Some of these changes created new hazards to human existence.

The attitudes of humans towards the environment are still negative and contrary to the concept of sustainable development, which recognizes that economic growth and environmental protection are inextricably linked and that the quality of present and future life rests on meeting basic human needs without destroying the environment on which all life depends. Maintaining a sound and healthy environment has always been a challenge to man (Brundtland, 1987). For example, the different inputs from anthropogenic activities include energy generating heat, uncontrolled sound turning into noise, and other land using agencies that cause spoliation of the physical environment.

Various human activities that require planning and coordination demands a comprehensive and deliberate effort to keep the physical environment fit for the total man to function well. Hence, the management of built environment is determinant to the quality of man at any given time. Where this is undermined, there is bound to be poor physical conditions and the consequence is poor human output. Of particular interest is the physical environment. The physical outlook

of our environment is very important in contributing to healthy living exercise. It forms the fulcrum on which other activities revolve. This is because it creates an atmosphere of the mind for peaceful living.

Environmental sanitation has emerged as a serious worldwide phenomenon which is increasingly worsening each day in many developing countries due to human activities such as technological, industrial, commercial, social-economic and cultural practices and among others. Human attitude is said to be the main contributor to the environmental sanitation problems in which, if urgent attention is not taken to address the phenomenon, it might pose serious threats to sustaining life on earth (Geere et al., 2020). By looking at the scopes and the impacts of environmental problems, it is evident that the phenomenon has become a very pertinent issue on the international agenda (Abalo, 2016). It is capable of affecting human beings and all living species (Geere et al., 2020).

The future of human beings is critically dependent on proper management of the environment and its resources. However, today's environmental problems arise from the lifestyles of human beings who live in a geographical area and the various activities they undertake in relation to the environment being it economic, social, cultural, industrial or technical and the use of an advanced form of technology just to mention but a few. Reports indicate that five billion people, more than a third of the global population are currently living in extreme poverty or completely without a clean sanitation, a clear affront to human dignity (UN, 2019).

The life and health of both children and adults are being put at risk by unhygienic living conditions: Five thousand children less than 5years old die every day as a result of poor environmental sanitation (UNDP, 2019). Poor sanitation has a negative impact on an economy as illness reduces productivity. Additionally, the pollution of groundwater, lands, rivers, lakes

and oceans endangers the environment (Mohd et al., 2017). There has been a global concern about the quality of environment in which human beings live. Many International Conferences, Workshops and Seminars have been held on the impact of degraded environment on human beings and the need to promote environmental qualities (Brundtland, 1987).

UNICEF (2016) noted with regret that while developing countries are improving access to clean water, they are falling behind on sanitation goals (Abubakar, 2017). At one of its summits in 2004, the World Health Organisation and the United Nations International Children Education Fund in a joint report stated that "about 2.4 billion people will likely face the risk of needless diseases and death by the year 2016 because of bad environmental sanitation, decaying or non-existence of sewage system and toilet which fuels the spread of diseases".

While towns and cities in the developed countries like the United States of America and Europe have generally overcome the problem of waste accumulation and are now grappling with finding appropriate methods of treatment and disposal of their waste, developing nations and cities particularly in the third world, are still struggling with the basic problem of waste accumulation, treatment as well as its disposal (UNDP, 2019). As observed by (Browning et al., 2019), the main problems facing developing nations cities with regard to waste management and treatment are related to the collection of waste from the cities or towns environments, with between one-third and one-half of all the waste generated in the cities or towns in developing particularly third world countries remaining uncollected. Many of these developing nations are faced with inadequacies in the provision of waste collection and other environmental services in developing nations, cities and towns.

Recent studies in sub-Sahara Africa have shown that the issue of waste management has become intractable and therefore threatens to undermine the efforts of most countries and city authorities. Daramola et al. (2016) have observed that the city and town environment in most developing countries are characterised by heaps of garbage, overflowing waste containers, chocked drains, clogged streams and stinking gutters. UNICEF (2016) has therefore, aptly described the Third World urban environment as "among the most health and life threatening of all human environments." Musoke et al. (2016) contend that district and municipal authorities in most developing countries tend to concentrate their waste collection efforts in government officials and planned and wealthy areas. He further claimed that those living in poorer areas receive no or little service for waste removal even though waste collection operations are usually funded with public resources. This is due to the fact that it becomes extremely difficult to provide adequate waste disposal bins, designated sites and other related environmental services within the entire jurisdictions (Musoke et al., 2016). Aside this, waste disposal facilities, which are usually poorly maintained, are frequently seen in the neighbourhood of the poor and the vulnerable persons which imply the shifting of maintaining good sanitation to the poor in our society (Geere et al., 2020).

Despite developed countries' efforts in curbing waste accumulation and treatment issues, they still struggle or grapple with rapid accumulation of waste (Mensah, 2020). Whilst in the past, waste disposal was perceived as a problem linked to over population of nations, today, the question of urban waste problem and by extension, those of environmental sanitation pose some of the daunting tasks facing most African countries. According to Martinez (2016), nine out of every ten African cities face serious waste disposal problems.

The use of environmental resources and the consequent increase in waste generation has brought about the need for proper waste management. This is especially so since our environment also serves as a refuse repository. Environmental problems, besides posing severe risk on human population, are also capable of influencing damage on the ecological system in a locality. Bacteria actions from waste products emit unpleasant smell that can sometimes cause ill-health or, in some cases, death as was the case in La Cote d'Ivoire where a French Company discharged waste materials in the country's coastal boarders that reportedly, killed many people (Martinez, 2016).

Dadson, et al. (2013) identified similar trend of waste issues in Ghana especially in the area of waste generation and management. They found out that among the many waste issues confronting cities in Ghana include solid waste disposal. Other studies and reports on sanitation have revealed the worry this phenomenon leave city authorities in Ghana (Mensah, 2020). The problem seems intractable and can be likened to a 'monster' staring the city authorities in the face while they look on helplessly. Mensah (2019) sees it as 'a nightmare', and it would seem that many of the Sustainable Development Goals (SDGs) are far from achievable by the target year of 2030.

The UNDP Sustainable Development Goal 6 which talks about clean water and sanitation and Goal 3 which also talks about good health and wellbeing clearly states that, 71% of the global population, 5.2 billion people, had safely-managed drinking water in 2015, but 844 million people still lacked even basic drinking water. 39 % of the global population, 2.9 billion people, had safe sanitation in 2015, but 2.3 billion people still lacked basic sanitation. 892 million people practiced open defecation. 80% of wastewater goes into waterways without adequate treatment (UN 2019). The Sustainable Development Goals (SDGs) recognize the fact that

environmental sustainability is part of global economic and social well-being. However, achieving the goal three (good health and wellbeing); the seventh goal (affordable and clean energy) and part of the sixth goal (to halt and begin to reverse by 2030, the incidents of malaria and other major diseases), of the Sustainable Development Goals (SDGs) largely depends on the country's efforts to ensure a clean and healthy environment. Unsafe water and poor sanitation result in countless deaths among children and a huge burden of disease such as diarrhoea, dysentery, malaria, and other parasitic illnesses. Poor sanitation is a conduit for these diseases.

Achieving the SDGs and the eradication of poverty remain the highest priority of the government of Ghana. The impact of poor environmental sanitation on cities and in communities threaten the achievement of the SDGs. SDG 6 (clean water and sanitation) is precisely about linking environmental protection to poverty reduction through sustainable development. Ghana's National Environmental Sanitation Policy 4 spells out the guidelines and gives power to District Assemblies to promulgate bye-laws to address environmental issues in their locality in an effort to reduce environmental pollution (MLGRD, 1999).

Reflecting on the Millennium Development Goals (MDGs), some of which implementation and targets set the baseline for most African States' efforts towards environmental sanitation, the Sustainable Development Goals (2015 – 2030) come into direct focus. The SDGs were established by the United Nations General Assembly in 2015 as an expansion and continuation of the Millennium Development Goals MDGs (2000 – 2015), which had reached their targeted date of implementation.

There are 17 SGD Goals, Goal 6 specifically calls for clean water and sanitation for all people. The official wording for Goal 6 is "Ensuring availability and sustainable management of water and sanitation for all" (UNDP 2015. 1). Andersson et al. (2016) argue that SDG 6 is closely linked with other Sustainable Development Goals such as Goal 3 which talks about "good health and wellbeing of all persons", Goal 7 looks at "affordable and clean energy", Goal 13 also looks at "climate change"/action and Goal 14 and 15 addresses "life below waters" and "life on land". All these goals provide further impetus for promoting good environmental sanitation.

It also gives power to the Judiciary to establish and empower Community Tribunals to prosecute offenders against sanitary bye-laws and regulations, but the enforcement of these environmental bye-laws to regulate the activities of the inhabitants have been largely unsuccessful. Hence, some communities still face the challenges of poor environmental sanitation resulting from poor or unhygienic habits and practices. Thus, the deteriorating environmental quality in some communities calls for solutions in order to reduce its impact on the health of the residents. Bad attitudes and poor hygiene, persistent behavioural risks, poor basic sanitation, and new and emerging diseases are contributing to a deadly mix that is changing the classic picture of healthy residents in Ghana.

One major problem in most communities in Ghana is insanitary environmental attitude among the populace. It is becoming increasingly clear that not only are residents refusing to heed the messages in the media and the educational fora organised by the Ministry of Health (MOH) and some Non-Governmental Organisations (NGOs) on the need to keep our environment clean. Surprisingly, it also appears to give the impression that, the results of these policy interventions have fallen on deaf ears as people are still resisting the need to change their attitudes and

behaviours towards keeping the environment clean. Consequently, many people are apparently determined to continue to conduct businesses normally in a filthy environment and do not care about contracting diseases including cholera and malaria (Mensah, 2019).

Another environmental controversy associated with urbanization includes, production of waste and indiscriminate disposal of waste, building along water areas, waste collection problems among others. Currently, Accra is full of chocked drains and suffers from indiscriminate waste disposal, and uncollected refuse in central waste containers. It has become the habit of both young and old to litter their surroundings; a few mentioned places include Kwame Nkrumah Circle, Kaneshie, Makola, Tema station, and the like.

Residents of Ghana often remove garbage from the gutters and dump them along the streets which then move back in to the gutters by rain, pedestrians or wind. When poor practice such as this is curtailed, it will then conform to the definitions according to (Baabereyir, 2009). WHO (2017) defines sanitation as the practice of collection, reuse and disposal of human excreta and domestic waste with the overall objective to protect the citizen's health. In an attempt to keep the environment clean, it is the human lives that are paramount.

A visit these days to most towns and cities in Ghana will reveal environmental sanitation problems in such areas. Examples of these problems are heaps of uncontrolled rubbish, empty polythene bags, chocked drains, indiscriminate littering and open defecating at unauthorised places such as bushes and along the beaches. One cannot boast of Accra as primate city due to the waste the city is grappling with. Kumasi, once referred to as garden city has now also turned into "waste city. "Sekondi-Takoradi being referred to as twin and oil city in public cycles has now also turned into "waste city" (Amoah et al., 2014).

The daily news on cholera epidemics in the cities especially Accra is as result of poor environmental sanitation. Unless there is realignment of attitudes and behaviours of people towards environmental sanitation, environmental problems will continue to affect human life negatively. In many parts of the city, streets are partially or wholly blocked by waste. Similarly, open space, market places are clogged with waste. In most cases, drains are clogged or totally blocked and many compounds are hemmed in by waste (Boateng et al., 2006).

Environmental sanitation issue has so degenerated that it is common to find among old and young people, educated and uneducated alike relieving themselves side by side in the open and polluting the environment. Even churches, mosque, shrines and universities are struggling to keep their environment clean. It is therefore no wonder that Ghana continues to slip further on its sanitation performance. According to World Health Organisation (WHO, 2017) reports, Ghana is currently the 7th dirtiest country globally and more than 28,000 people die as a result of air pollution in the country (Kofi-Tse, 2015). Ekong (2015) report on air pollution in Africa countries revealed that Ghana has the second dirtiest air in Africa.

Knowing Ghana's status in environmental sanitation issues, sanitation initiatives have been developed and implemented nationwide. First Saturdays of every month have been devoted to clean up the heaps of waste that have been blatantly piled up by the public gutters, along the streets and other open spaces in the preceding month. Come to think of it, residents are left to dump waste indiscriminately throughout the month while authorities look on unconcerned and then on national Sanitation Day, we gear up to clean it up. What happens in between the one-month period during which heaps of wastes are allowed to accumulate and for how long can we keep this up? (Monney, 2018).

Undoubtedly, this back-and-forth phenomenon cannot be a panacea to the insanitary conditions in our communities until the foundation of this problem is identified and tackled, any effort in addressing it would be futile (Monney, 2015). Poor environmental sanitation is a societal problem primarily caused by human attitude and behaviour and therefore an attitudinal change would be a significant contribution to solving it.

Another disturbing phenomenon is the manner in which adults urinate openly anywhere and anytime of the day. Sometimes passersby need to halt for them to finish the shameful and indecent exposure of their bodies before these passersby can move on especially when it involves females. In some areas, there are heaps of refuse at dumping sites. Refuse containers get full and refuse begins to flood over to the ground as people continue to dump more garbage swarms of flies' hover over the refuse. Even in areas where communal containers are available, they are left to overflow with waste for a long period before being picked up eventually. This has resulted in some communal container sites evolving into refuse dump sites due to the mountains of uncollected waste accumulated over such cases, residents are tempted to dump waste into gutters and other areas instead of making the trip to the aesthetically displeasing and stinking container sites.

Reckless littering of the environment makes the environment unpleasant and unhealthy to live in. Some itinerant traders and market women refuse to pick their garbage after selling. Garbage containers are found not emptied for months and the whole country is engulfed in filth and it is no longer appealing. Unfortunately, there is a growing concern about negative attitude of residents towards the management of environmental issues in the Birim Central Municipality and the country as a whole. This grievance emanates from the fact that efforts being made at

ridding the town of filth has always been thwarted by actions of residents. The management of environmental sanitation issues continues to be a challenge.

1.2. Statement of the problem

Ghana's commitment to achieving the SDGs and sustainable development goals on environmental sanitation are not in doubt. Despite several institutional and structural mechanisms to protect the environment, there is plenty evidence of environmental problems everywhere in the country. Although the effects are grave, it appears the problem persists.

The nation's safe sanitation is very important for our health. It helps by preventing infections which lead to people being mentally and socially sound. The sanitation targets of the Sustainable Development Goals are that, everyone should have a "safety- managed" sanitation facility by 2030 and that open defecation be eliminated by the year 2023. The magnitude of this target is enormous largely because about 5.6 billion additional people will need safely-managed sanitation by 2030 and 1.3 billion people will need to switch from open to fixed defecation in a constructed facility also by 2030 (UNICEF/WHO, 2019).

Poor environmental sanitation which many believe to be the handiworks of humans by virtue of their attitudes and behaviours (Kumah et al., 2020) has crept into several communities globally. Despite efforts to address the problem through scientific research, the problem still pertains across the length and breadth of districts and municipalities in Ghana as well. Whiles, several studies are concluding on deliberate human actions as a contributor to the phenomenon, similar quantum of researches tend to throw light on failure of institutional machineries to combating this situation (Mensah et al., 2021). It appears that poor environmental sanitation

continues to be a 'buzz' term owing to the fact that researchers find it difficult to vividly unearth the very source of this problem.

Furthermore, a handful of studies have attempted to use theories to explain the rationale behind nature of poor environmental sanitation through people's actions and inactions towards sanitation practices. Unfortunately, these works seemed to have over relied on philosophies and constructs that explain the interaction between intentions, behaviour and attitude (Ajzen & Fishbein, 1980) at the expense of theories, models and principles that describe influencers of human intentions (Drebeilbis, 2013). This presupposes that previous works might have fallen short of a holistic theoretical coverage as far as investigation into the problem of poor environmental sanitation is concerned.

Again, many researchers have looked at environmental sanitation controversies from more quantitative lenses. They believe that matters of the environment ought to be objectively presented rather subjecting them to subjective analysis. For this reason, variables such as attitudes, beliefs, perceptions, behaviours among others which ideally should have been narratively interpreted for deeper understanding are presented and explained in numerical terms (Kumah, et al., 2020; Seidu, 2018; Sadiq et al, 2018). This indicates that the phenomenon's inquirers have not committed the study of environmental sanitation to an approach to research that would comprehensively reveal the tenets of the situation. Lastly, but more importantly, environmental sanitation issues in urban settings seem to have received ample attention among researchers (Amoah et al., 2014; Boateng et al., 2006). It appears that evidence of the situation as pertained in peri-urban areas continue to remain relatively scanty.

As earlier hinted, poor environmental sanitation arguably has found its way into almost every single community in Ghana of which communities in the Birim Central municipality in the eastern region of Ghana are not spared. Presently, the municipality is experiencing unprecedented poor sanitation problems. Notably, considerable sanitation problems in schools, market places, lorry stations and other institutions in the municipality are difficult to ignore. Nonetheless, it appears residents and people have turned blind eye on the issues.

From observation, open spaces, private and public spaces are littered with garbage which in most cases blocked drains thereby creating conditions for disease vectors and posing health risks to residents. Despite efforts directed towards addressing the issue of poor sanitation in communities in the Birim Central Municipality through the Ministry of Health and Water sanitation encouraging and providing guidelines for sanitation in communities, everywhere is littered with water sachets, pieces of paper and broken furniture, among others. Where attempts are made to sweep, heaps of refuse are uncontrollably dumped haphazardly and jumbled up together unsorted with both degradable and non-degradable materials which mix up and cause mind-blighting stench; harboring mosquitoes and pests such as rats and cockroaches. This is not a scene to behold in the municipality.

Meanwhile there have been several interventions by the governments to curb the rate of insanitary conditions in our communities, yet residents' attitudes towards waste disposal have not changed (BCMA, 2020). The behaviour and attitude of the inhabitants towards sanitation do not augment this effort. If appropriate efforts are not made to halt such habit, it is not only the government's coffers that is likely to suffer but the health and safety of individuals, finances of individuals and reputation of communities also stand the same fate. The above problems make it clear that communities in the municipality are unable to cope with the problems. On

the bases of the above problems, there is therefore the need for the researcher to investigate the attitudes of the residents towards environmental sanitation in the Birim Central Municipality.

1.3 Purpose of the Study

The purpose of this study was to investigate environmental sanitation behavior and attitudes of residents in the Birim Central Municipality.

1.4 Objectives of the Study

The objectives of the study were to:

1. Identify the determinants for poor environmental sanitation in Birim Central Municipality
2. Explore residents' attitudes towards environmental sanitation in the Birim Central Municipality.
3. Examine the effectiveness of environmental sanitation interventions in Birim Central Municipality.
4. Assess the effects of poor environmental sanitation on residents in Birim Central

1.5 Research Questions

1. What are the determinants of poor environmental sanitation in the Birim Central Municipality?
2. What attitudes do residents have towards environmental sanitation in the Birim Central Municipality?
3. How effective are the environmental sanitation interventions in the Birim Central Municipality?
4. What effects does poor environmental sanitation leave on/with residents in the Birim Central Municipality?

1.6 Significance of the Study

The findings of this study may enable the residents of Birim Central Municipality to better understand sanitation issues and cultivate a habit of maintaining a clean environment. More so, the findings are highly anticipated to assist city management to provide adequate facilities to enable labourers and other people who matter when it comes to cleaning and tidying up of the town environment.

Again, the study may enable state agencies dealing with sanitation issues to make additional policies to improve their mode of operation or adopt renewed strategies to tackle the problems of sanitation in the municipality. The findings of the study may also serve as a source of reference material to other researchers who will in future be interested in conducting research into other related areas of the problem.

Besides, even though the study concerns the residents, it is the researcher's expectations that the findings may also be of help to the Municipal Assembly and other institutions within the Birim central Municipality seeking remedies to seemingly uncontrollable environmental sanitation problems. Last but more importantly, the findings of the study will also contribute to attitudinal and behavioural change which are some of the tenants of social studies as a programme of study.

1.7 Delimitations of the Study

Geographically, the study was restricted to communities in the Birim Central Municipality in the Eastern region of Ghana. The concepts discussed in the study were environmental sanitation and attitudes and behaviours. The study was also underpinned by two major theories namely

theory of planned behavior (TPB) and WASH (Water, Sanitation and Hygiene). Views of residents and high-profile officials in the study setting were gathered and analysed.

1.8 Organisation of the Research

The goal of this study was to investigate the attitudes of residents of Birim Central on environmental sanitation. The research report is organised into five chapters. This first chapter covers the background to the study, statement of research problem, the purpose and objectives of the study. The justification for carrying out the study, significance, research questions, delimitation and definition of concepts and organisation of the entire research report are also presented in this chapter.

Chapter two presents' definitions and explanations of concepts such as sanitation, environmental sanitation, attitude, theoretical frame work underlying the study, environmental policy of Ghana, followed by determinants of environmental attitude behaviour. The second part of chapter two concerns itself with the review of related literature on attitude, environment, sanitation, environmental sanitation, sanitation system, environmental management, environmental sanitation management, environmental protection agency, national environmental sanitation policy, objectives of environmental sanitation, environmental awareness, environmental attitude, environmental behaviour, determinants of environmental attitude, behaviour, awareness, environmental sanitation and behaviour, determinants of poor environmental sanitation and effects of poor environmental sanitation among residents of Birim Central Municipality.

Chapter three presents the methodological framework adopted for this research. It consists of the study area, research design, the population, population sample and sampling techniques. It

also outlines the instruments for data collection, questionnaire, observation, interviews, data collection procedures, validity, reliability measures, data analysis techniques and conclusion of the chapter was also presented. This is followed by chapter four which is devoted to the presentation and analysis of the data collected through interviews and observations. This data was analysed qualitatively by using themes, tables with description and triangulation. The fifth chapter constitutes the concluding phase of the report. It summarises the main findings of the research, discusses them and offers recommendations for improvements of the situation.

1. 9 Operational Definition of Terms

Attitude: It has been defined as individual learnt ideas, feelings, concepts and perceptions that are generated towards an object, environment or people.

Behavior: It is defined as the way in which one acts or conducts oneself, especially towards the environment.

Environment: It is the surroundings or conditions in which a person, animal or plant lives or operates.

Environmental Behaviour: This is defined from the context of responsible sanitation attitudes. It is explained as the practical demonstration of people's actions and inactions toward sanitation practices. It points to residents' sanitation character and how they exhibit them.

Sanitation: It is defined in this study as the provision of facilities and services for the safe disposal of human waste example; urine, feces and waste materials.

Environmental Sanitation: It has been defined as the principles and practices affecting health and hygienic condition in the environment to promote public health and welfare.

Littering: Make a place untidy with rubbish or a large number of objects left lying about. It also includes pollution, discharging and dumping.

Sanitation Interventions: These refer to the remedies and timely solutions that are in place or have been proposed to address environmental sanitation issues.

Sanitation Effects: These are the outcome of sanitation practices. They are described on the basis of health particularly the financial implications of sanitation practices on health safety of residents.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Overview

This chapter reviews the literature related to the study. It focuses on the concepts: environmental sanitation, poor sanitation; types of sanitation, environmental management systems, the need for environmental sanitation management systems, environmental protection agency, ministry of sanitation and water resources, ministry of local government and rural development, ministry of science and technology, environmental awareness, environmental attitudes and behaviour, environmental behaviour, determinants of poor sanitation attitudes and behaviour A linear Model of Environmentally Responsible Behaviour, determinants of environmental behaviour, relationship between environmental attitudes and environmental behaviour, National Environmental Sanitation Policy, objectives of environmental sanitation, strategic objective (Strategy for environmental sanitation), environmental sanitation behaviour among residents, determination of poor environmental sanitation among residences, effects of poor environmental sanitation on residents, ways of addressing poor environmental sanitation, theoretical framework and conceptual framework.

2.1 The Concept of Environmental Sanitation

UNICEF/WHO (2019) defines the term “environmental sanitation” as activities aimed at improving or maintaining the standard of basic environmental conditions that affect the well-being of people. These conditions include clean and safe water supply, clean and safe ambient air, efficient and safe animal, human and industrial waste disposal, protection of food from biological and chemical contaminants and adequate clean and safe surroundings.

Environmental sanitation is explained as principles and practices affecting health and hygienic condition in the environment to enhance public health and welfare, improve quality of life and ensure a sustainable environment. The essential elements of environmental sanitation include excreta and sewage management, solid waste management, food sanitation and hygienic education and promotion (Adogu et al., 2015). It could be seen from the definition that environmental sanitation is very broad and comprises all that is involved in keeping every environment clean and in good condition for the flourishing of life and the planet.

Environmental sanitation is a key factor that enhances human security (Aswathy, 2015). According to the Ministry of Local Government and Rural Development (MLGRD, 1999), environmental sanitation refers to the effort or activities aimed at the development and maintenance of a clean, safe and suitable physical environment in all human settlements. It comprises a couple of complementary activities, which include the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (MLGRD, 1999).

Environmental sanitation therefore involves controlling the aspect of waste that may lead to the transmission of diseases. According to the International Water and Sanitation Center, World Bank and UNICEF (2016), the term “environmental sanitation” is used to cover the wide concept of controlling all the factors in the physical environment which may have an impact on human health and well-being. In developing countries, environmental sanitation has to do with drains, solid waste management and vector control in addition to the activities covered by sanitation (Scott et al., 2015).

2.2 The Concept of Sanitation

Sanitation in developing countries has taken a centre stage in modern development discussions due to the poor state of affairs with respect to its management in those countries. Developing countries, in this context, are those in the low income and lower middle-income brackets (Mensah, 2019). The United Nations [UN] (2019), has classified countries based on their level of development as measured by per capita Gross National Income. Due to this, countries with less than $995 GNI per capita as determined by the World Bank are classified by the UN as low-income countries, those with between $996 and $3895 as lower-middle-income countries, those with between $3896 and $12,055 as upper-middle-income countries, and countries with incomes of more than $12, 056 as high-income countries (UN, 2019).

Besides, the low-income feature developing countries exhibit several characteristics, including poor environmental sanitation. While sanitation basically refers to toilet or latrine management (Kumah et al., 2020), environmental sanitation services that ensure privacy, dignity, accessibility, affordability, safety, and are also socially and culturally acceptable (Smith-Asante, 2015). The importance of environmental sanitation is echoed not only in the United Nation's ratification of sanitation as a human right but also its presence in the Sustainable Development Goals in 2015 (UN, 2019). Goal 6 of the SDGs charges global leaders to ensure universal access to adequate clean water, equitable sanitation and hygiene by 2030.

Yet, it has been realised that the environmental sanitation Goal of the SDGs cannot be achieved, particularly in developing countries without recourse to a sound and practicable environmental sanitation management framework which can be translated into practice (Prüss-Ustün et al., 2019). This calls for a comprehensive framework which is sound and sufficient to support an all-inclusive appreciation of sanitation management practices, leading to a workable solution to

the problem (Abubakar, 2017). One of the main reasons for the slow growth of improved water and sanitation coverage in the developing countries is that, some policy-makers, practitioners in the sanitation practices, and the general public have not fully grasped the concept of environmental sanitation practices and the theories behind effective solutions to the threat.

2.3 Types of Sanitation

Sanitation has been described and explained in three main ways:

2.3.1 Community-led Total Sanitation

O'Neill (2015) opines that Community-Led Total Sanitation (CLTS) is an approach to attain behavior changes in mainly communities characterized by poor sanitation conditions by a process of sensitizing the community individuals, leading to natural and long-term rejection of open defecation practices. CLTS is a move toward community sanitation that works without hardware subsidies and that facilitates communities to recognize the problem of open defecation and takes collective action to clean up and become "open defecation free".

2.3. 2 Ecological Sanitation

According to Smith-Asante (2015), ecological sanitation deals with an approach, rather than a technology or a device which is characterized by a desire to "close the loop" (mainly for the nutrients and organic matter) between sanitation and agriculture in a safe manner. Ecological sanitation systems carefully recycle excreta materials (plant nutrients and organic matter) to crop production in such a way that the use of non-renewable resources is minimized (Mcgranahan, 2015).

Okurut et al (2015), similarly assert that when appropriately designed and operated, ecosan systems provide a hygienically safe, economical, and closed-loop system to convert human

excreta into nutrients to be returned to the soil, and water to be returned to the land. Ecosan is also called resource-oriented sanitation. Sanitation encompasses the control of environmental factors that are connected to disease transmission. Subsets of this category are solid waste management, water and waste water treatment, industrial waste treatment and noise and pollution control (Okurut et al., 2015).

2.3.3 On-site sanitation

Tilley et al. (2014) describe on-site sanitation as decentralized sanitation. To them, it is a system where the treatment of excreta or sewage takes place at the same location where it is generated. Examples are pit latrines, septic tank, and Imhoff tank. A septic tank and drained field combination is the oldest and most common type of on-site sewage facility although newer aerobic and bio-filter units exist which represent scaled down versions of municipal sewage treatment plants.

2.4 Environmental Management System

The United Nations Environmental Programme defines environmental management as the control of all human activities which have a significant impact on the environment (UN, 2019). Environmental management refers to decisions and actions concerning policy and practices regarding how resources and the environment are appraised, protected, allocated, developed, used, rehabilitated, remediated and restored, monitored and evaluated.

To be efficient in managing the environment, institutions have to have a good environmental management system to provide a framework for managing environmental responsibilities in a way that is integrated into overall operations. Environmental Management System (EMS) pertains to the management of an organisation's environmental programmes in a comprehensive, systematic, planned and documented manner. It involves the organisational

structure, planning and resources allocation for developing, implementing and maintaining policy for environmental protection.

2.5 National Policy/Institutional Framework Interventions for Environmental Sanitation Management

Over the period, governments have taken steps to initiate practical solutions to nation-wide sanitation controversies. Their commitment has been seen in the number of offices and organizations that have been formed in the past years to tackle certain perceived sanitation problems. The formation of ministries such as the Inner-City and Zongo Development and the Tourism and Modernisation of the Capital City was a sign of the government of Ghana's commitment to combatting this canker. Consequently, in Ghana, safe and sound environmental protocols are left in the care of these agencies and other environmental management bodies to regulate.

Sound environmental sanitation management ensures that appropriate intervention is introduced and implemented to promote behaviour change. Poor environmental sanitation or hygiene also has tremendous economic costs. The health impact of inadequate environmental sanitation leads to several financial and economic costs including direct medical costs associated with treating sanitation related illnesses and lost income through reduced or lost productivity and the government costs of providing health services (Mcgranahan, 2015).

Additionally, poor sanitation also leads to reduced income from tourism (due to high risk of contamination and disease) and cleanup costs. A World Bank country environmental analysis conducted in Ghana has shown that health cost resulting from poor water, sanitation and hygiene is equivalent to 2.1% of Annual Gross Domestic Product (GDP), (WHO, 2017). The

significant economic benefits of good environmental sanitation are not well known; the media often emphasise on health benefits, but the time savings and opportunity cost are equally important stories.

Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability. On the one hand, a healthy people produce more and miss fewer days and on the other hand, a healthy community is often a more lucrative market for goods, services and investment. Every dollar spent on improving sanitation generates economic benefits (about nine times) that far exceed the required sanitation investments (Kumah et al., 2020).

The cost of inaction is enormous. Achieving MDG for sanitation would amount to $66 billion gained through time, productivity, averted illness and death (UNDP, 2015). Record has it that a 10-year 18 rise in average life expectancy at birth translates into a rise of 0.3-0.4 per cent in economic growth per year (WHO, 2017). Poor environmental sanitation practices also affect the environment in diverse ways.

2.6 Environmental Protection Agency (EPA)

The Environmental Protection Agency is the leading public body responsible for protecting and improving the environment in Ghana. Its job is to make sure that air, land and water are looked after by everyone today, so that tomorrow's generations inherit a cleaner and healthier world. The Environmental Protection Agency (EPA) seeks to ensure environmentally sound and efficient use of both renewable and non-renewable resources, to prevent, reduce, and as far as possible, eliminate pollution and actions that lower the quality of life; and to apply the legal

processes in a fair, equitable manner to ensure responsible environmental behaviour in the country.

According to O'Neill (2015), the Environmental Protection Agency is very collaboration-oriented, which weakens its regulatory abilities. There is also, a need to update enforcement procedures for sanitation byelaws for example, some fines are "ridiculously low" and still listed in British currency.

2.7 Ministry of Sanitation and Water Resources

The Ministry of Sanitation and Water Resources is the leading statutory government body responsible for the development and promotion of good sanitation all over the country (MLGRD, 2004). The main goal of the ministry is to contribute to the development in the living standard of Ghanaians through increased access to and use of safe water, sanitation and hygienic practices and sustainable management of water resources.

2.8 Ministry of Local Government and Rural Development (MLGRD)

The Ministry of local Government and Rural Development is the lead agency in the sanitation sector. It is responsible for creating and coordinating sanitation policy, issuing guidelines on sanitation services and their management, and for supervising the National Environmental Sanitation Policy Coordinating Council (MLGRD, 2004). In model, institutional responsibilities for sanitation are clear, with the Ministry of Local Government and Rural Development (MLGRD) having overall responsibility for formulating environmental sanitation policies.

2.9 Ministry of Environment, Science and Technology (MEST)

The Ministry of Environment, Science and Technology exists to establish a strong national scientific and technological base for accelerated sustainable development of the country to enhance the quality of life for all. The overall objective of MEST is to ensure accelerated 24 socio-economic development of the nation through the formulation of sound policies and a regulatory framework to promote the use of appropriate environmentally friendly, scientific and technological practices and techniques and the intensification of the application of safe and sound environmental practices (MLGRD, 2004).

2.6 Environmental Attitudes

Defining an attitude is problematic and there is still no consensus on a definition for it. Also, attitudes are often associated with multiple and even contradictory values (Akintunde, 2017). The concept has therefore been defined in various ways by various researchers, usually depending on their specific theoretical review and the constructs they investigated. Santaboni et al. (2018) for example define attitude as a relatively stable, predominantly learnt disposition of an individual towards a specific object (for example, people, things or ideas). Setty (2019) has also referred to attitude as a way of feeling, learning, thinking, and behaviour to sustain thought that enforced cleanliness. However, the concept, environmental attitude, has been defined in various ways by several researchers based on their specific theoretical reviews and the construct each of them investigated.

From the perspective of Levinsson et al. (2017), environmental attitude is ultimately about how people view environmental issues, their perspective, beliefs and level of support, including their feelings towards specific people, issues and objects involved. They see environmental attitudes as thoughts and feelings that encourage us to act as if we dislike or like a person, an object and

issues. They further argue that the relationship between human beings and environment is thus a function of culture. Liu et al. (2020) consider environmental attitude as interest in relation with a wider related concept such as understanding human life including protecting our physical environment.

According to WHO/EURO (2016), environmental attitude is defined as a set of values and feeling of concern for the environment and motivation for actively participating in environmental improvement and protection. It is primarily the virtues that have to work in the confinement of the natural surroundings. Babaei et al. (2015) state that environmental attitude is the "enduring combination of motivational, emotional, perceptual and cognitive process with respect to some aspects of our environment" (p.34).

Santaboni (2018), however, added that environmental attitude is a characteristic acquired over a long period of time, and the individual will persist in environmental concern and eventually participate in environmental protection if they have that attitude. Tang et al (2022) envisaged that environmental attitude ought to be thought of as a relatively stable and predominantly learnt disposition of an individual towards specific object (people, things, ideas or the physical environment). Almazán-Casali et al (2019) on the other hand explains environmental attitude as tendencies that are expressed by evaluating a particular entity. For example, the environment with some degree of favour or disfavour.

It can be deduced from these explanations that environmental attitude is a mental state of readiness formed by an individual towards an object or the physical environment and this can be either positive or negative. But this attitude should be directed towards the protection of the environment or improving the quality of the environment.

The notion that environmental attitude is an enduring feeling is corroborated by Fishbein et al (1975) who noted that "environmental attitude is a learned predisposition response in a consistently favourable or unfavourable manner with respect to a given object, person or a situation". Environmental attitude is in a way perceived as how to be in proper relationships with regard to one's environment, that is how an individual shows concern and act friendly or favourably towards the environment (Musoke et al., 2018).

Other authors argue that environmental attitude is the concern one shows towards the physical environment (Dunlap et al. 2002). Muammar (2002) posits that environmental attitude is about the perception of values about a given environmental issue. Adams (2014) also views environmental attitude as a learned belief which develops from an individual's belief, knowledge and values about the environment and governs action to support or sustain the environment. This means environmental attitude does not deal with favourable or unfavourable feelings one has towards an object or issue alone but also the nature of human beings and how they can preserve their surroundings.

Drawing from the views expressed above, environmental attitudes refers to the collection of beliefs, affection and behavioural intention a person holds regarding environmentally related activities or issues. This implies environmental attitude has to do with the way a person relates to all the things and activities surrounding him or her.

2.7 Environmental Behaviour

Environmental behaviour is regarded as the total action exhibited by mankind towards the improvement of environmental quality. These behaviours are recognized as important due to the effects that the consequences of not acting in an environmentally-conscious way, not

recycling plastic items will have on society and on the quality of human life in future (Akintunde, 2017) Environmental behaviour is defined as all types of behaviours that change the availability of materials or energy from the environment or alters the structure and dynamics of ecosystem or the biosphere (Cronin et al., 2000).

Wireko (2015), refers to environmental behaviour as any active responsiveness to current environmental issues believed to be pro-environmental by the person performing the response. Adjzen (2002) posits that environmental behaviour is a person's active involvement at all levels in working toward resolution of environmental problems. Danso-Wiredu (2019) also explains that environmental behaviour means the observable and reported behaviour of the individuals, either done or willingness to do in future regarding the protection of the environment. Similarly, environmental behaviour is regarded as the range of human actions or activities, all shaped by intentions to protect both the physical and natural environment (Stern, 2002).

According to Kollmus et al. (2002) environmental behaviour means a "behaviour that consciously seeks to contribute to positive or negative impact of one's action on the natural and the built environment" (p.22). Amoah et al (2018) states that environmental behaviour serves as an active responsiveness to current environmental issues, believed to be pro-environmental by the person performing the action. From the above scholarly literature on the definitions of environmental behaviour, the term can be viewed as one's active responsiveness to current environmental issues, believed to be pro- environmental by the person performing the response. That is, environmental behaviour is regarded as a person's active involvement at all levels in working towards resolution of environmental problems.

Environmental behaviour therefore requires transfer of skills and increase in motivation for one to act in environmentally responsible manner. Adams (2014) considers the term environmental behaviour as environmental literacy which requires transfer of skills and increase in motivation for one to act in "environmentally responsible" manner. This makes the term the observable and reported behaviour of the individual, either done or willingness to be done in future regarding the protection of the environment.

2.8 Determinants of Environmental Sanitation Attitudes and Behaviour

Determinants of environmental attitude could be explained in line with the traditional thinking in the field of environmental education which posits that we can change behaviour by making human beings more knowledgeable about the environment and its associated issues. This thinking has largely been linked to the assumption that increased environmental knowledge would automatically lead to environmental awareness (perceptions) that would in turn lead to pro-environmental attitude that will be expressed as overt and responsible environmental behaviour. It implies that knowledge increases attitude or awareness which in combination would motivate environmentally responsible behaviours. That is behaviour in general is supported by knowledge and attitude but there is not a direct cause and effect progression from knowledge to attitude to behaviour (Wireko, 2015).

2.9 A Linear Model of Environmentally Responsible Behaviour

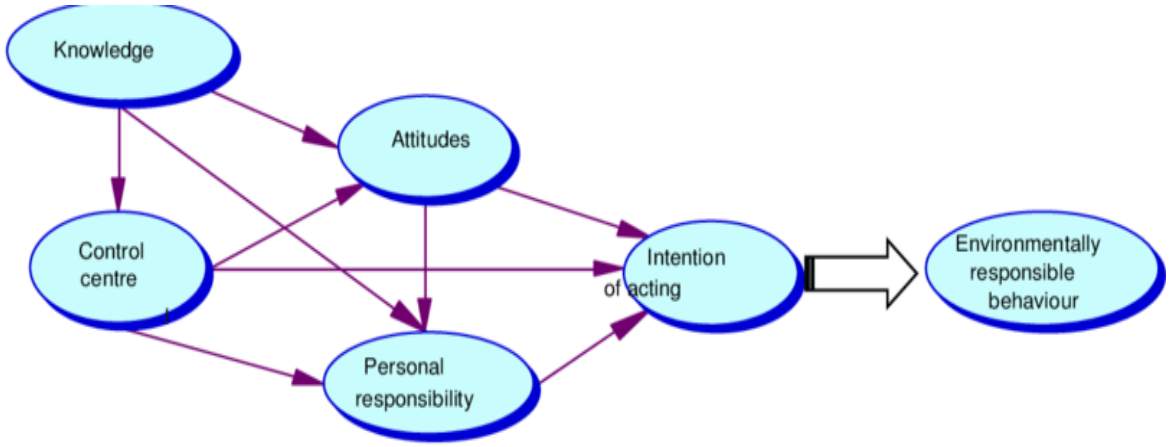


Figure 2.1: A Linear Model of Environmentally Responsible Behaviour

Source: Adopted from (Ajzen & Fishbein, 1980)

It is believed that a high level of environmental knowledge will create a positive attitude towards the environment which may result in environmentally responsible behaviour (Davis et al., 2019). According to Davis et al. (2019), knowledge regarding the environment and the skill of action or behaviour is very important for an individual in changing his attitude. In this regard, when knowledge related to the environment increases, the positive attitude towards environment is directly expanded which further translates into positive environmental behaviour.

However, from the various studies on environmentally responsible behaviour that have been undertaken over the past 20 years, most of these research findings suggest that attitudes do not necessarily influence or lead to overt behavioural changes. For example, a positive attitude towards the environment will not necessarily mean that an individual will buy environmentally friendly products or recycle these products (Hetherington et al., 2017). Mosler et al (2017) found a weak relationship between attitude and behaviour.

Although attitudes may not necessarily cause behavioural changes, they may have important casual effect on behaviour. Attitudes are theoretical construct and are not accessible through direct observation (Dumpert & Perez, 2015). They must be inferred from measurable responses such as direct observation of behaviour. Since this is often difficult to achieve, responses such as statements of intentions are frequently used as they are considered to be more reliable predictors of behaviour. An individual's behavioural intentions are also influenced by factors such as his or her attitude, social norms and perceptions of personal control over a given situation.

Marital status might influence one's environmental attitude to a large extent; it can be argued that married people are more compliant or more concerned about environmental problems than the others. Especially, when it is compared to singles because, married people are more constrained by their social network and often strongly involved in the community (Wireko, 2015).

People might be more concerned with local environmental problems than singles as the "parent effect" makes them seek their children's future welfare (Malik et al., 2016). With regard to educational issues, it is believed that people with formal education have a significant influence on the environment and are therefore willing to contribute meaningfully to its protection and improvement. There is a tendency that higher levels of education might lead to a higher preference for environmental protection (Thomas, 2016).

On the other hand, informal education matters greatly. The informal education as expressed here, concerns the training and education one acquires at home, from friends and other acquaintances (Mensah, 2019). In addition, well-informed residents who know about

environmental problems might have stronger environmental attitudes, because they are likely to be aware of the possible damage that results from the situation (Santaboni, 2018). The socio-economic status of an individual also forms a significant part in influencing his or her attitude towards the environment.

The prevention of environmental damage is not only on the consumption of public goods, but also on normal goods. Thus, demand may increase with income (Wireko, 2015). Wealthier residents may have a higher demand for a clean environment and less environmental damage. This is not always so in all cases. The opposite situation does exist in most communities in Ghana where in some residential areas both the rich and the poor are seen disposing off refuse indiscriminately despite the availability of litter bins.

Aside this, an additional factor that compliments the economic situation of individuals is their occupational status. Adams (2014) found that some labour groups such as persons engaged in the household or maternity leave had higher environmental preferences. Mosler et al (2017) in their study explained that unemployed people, occasionally, lower their preferences for environmental protection policies. However, the latter relationship sometimes is neither clear nor significant at all (Amoah, 2014).

A couple of studies have shown that age is negatively correlated with the willingness to contribute to additional environmental protection since older people will not live to enjoy the long-term benefits of preserving resources (Akintundem, 2017). In effect, it could be speculated that relatively young people would develop positive environmental attitude as compared to relatively old people. The above is substantiated by Whitley et al. (2019) in their findings which indicated that, younger people are more concerned about environmental problems than older

ones. However, there are two age effects, a life cycle or ageing effect due to being at a certain stage of age and cohort effects cover the difference of attitude between different age-cohorts due to generational differences in socialization, life experience and economic conditions (Mensah, 2019). In the view of Lienert (2019), there is a strong relationship between age and environmental concern.

Gender is another crucial factor in people's attitude towards the environment. Experimental and empirical studies have shown that gender differences in other areas such as charitable giving, tax morale, bargaining or household decision making play a role in once attitude to the environment (Babaei et al., 2015) Thus, it is likely gender may have a link with people's attitude with the environment.

It is often argued that gender, tradition, socialisation, cultural norms, women's roles as caregivers, nurturers and giving encouragements to others to be cooperative and the feel of compassion lead to a higher concern for the maintenance of life and the environment (Babaei et al., 2015). The "traditional" domain of women working at home induces a greater likelihood to engage privately in behaviour aiming at the preservation of the environment. Simply put there is the likelihood that women would be more positive towards the environment than men.

Similarly, one's place of residence can also be predictor of environmental attitudes, for example Lienert (2019), found that urban and rural residents in the United States view natural environment differently. Other findings from attitudes in the US suggest that urban residents are more likely to be environmentally concerned than rural ones (Mosler et al, 2017). Thomas (2016) agrees that the place of residence and academic achievements are related to environmental concerns. They also believe that urban people are more positive in their attitudes

toward the environment than rural people are. They argue further that individuals with high academic achievement tend to be more environmentally concerned than those with low academic achievement.

The stated assertion by Dumpert and Perez (2015) is not wholly true in all communities in most African countries especially Ghana. Some rural communities in Ghana which are ruled by traditions, customs, religious beliefs, cultural practices, and sanitation ethics among others, the rural folks always show a lot of concern and behave pro-environmentally. As a result of this, some rural dwellers tend to be more environmentally concerned than some people living in the urban communities.

Liu et al, (2020) believe that people's attitudes towards the environment and the type of concern they develop towards it are associated with the degree to which they view themselves as interconnected with nature. What Liu et al. (2020) are trying to put up here is that people's perception and view of the environment go a long way to affect how they relate to the environment. Stern (2002) agrees and adds that a person's attitude towards the environment is based on the relative importance that he or she places on him or herself, other people and the natural environment. In other words, a person's attitude towards the environment is based on his or her general set of values.

People with different value orientation will ultimately have different attitudes towards the environment. These differences are based on demographic variables such as level of education, age, gender, ethnicity, socio-economic status and place of residence among others which are the likely possible determinants of environmental attitudes.

2.10 Determinants of Environmental Behaviour

According to Ajzen and Fishbein (2005), attitudes make the greatest impact on human behaviour only when there are favourable conditions. For one to be influenced by certain attitude implies the person has failed to perform what is expected of him or her. Attitudes give stimulus for behaviour to emerge, these are influenced by personal, social or informational factors, and they help evaluate behaviour in a positive or negative way, surrender to or resist social pressure and behave in one way or another. Moreover, as indicated by Ajzen and Fisbein (2005), the same factors also make an impact on a person's perceptions whether he or she is able to exhibit such behaviours or keep it suppressed. These personal, social or informational factors have a direct influence on behavioural intentions that help to predict behaviour.

Determinants of environmental behaviour can also be seen in the Theory of Reason Action which is also known as subjective norm and this reflects a person's perception of social pressure regarding the performance of behaviour. In line with environmental behaviour protection, subjective norms can be viewed as beliefs. These beliefs explain whether planned conservation behaviours have to be implemented or not. To illustrate, green lifestyles which are becoming even more fashionable and socially desirable these days form belief about sustainable consumption (Boateng & Nkrumah, 2006). Green lifestyles can influence not only behavioural intentions (Almazán-Casali et al., 2019) but also behaviour itself (Mensah, 2019).

Apart from attitudes towards behaviour and subjective norm expressed in the Theory of Planned Behaviour, it goes further by adding another determinant that is, the Theory of Reasoned Action which is the base of Theory of Planned Behaviour and this distinguishes two determinants that predict behavioural intentions: personal attitudes towards behaviour and subjective norm.

The first determinant refers to positive or negative evaluation of a particular behaviour which is formed by individual's behavioural beliefs. For example, if a person believes that by buying certified organic goods, he or she contributes to the reduction of environmental pollution but helps in the conservation of natural resources, then it can be stated that personal attitudes towards the performed behaviour are positive. Respectively, if a person is convinced that eco-label is nothing more but marketing tricks, his or her attitudes towards buying these goods will be negative.

Another determinant is the Perceived Behavioural Control (PBC) which refers to a person's perception (Ajzen, 1991). PBC affects both behavioural intentions and behaviour itself. In terms of environmental behaviour, PBC explains how a person perceives his ability to perform such behaviour, which depends not only on his attitudes and societal constraints, but also a personal belief about contributing to solving environmental problems. For instance, it is more likely that people will behave more environmentally friendly if they understand their personal impact on the environment (Birgelen et al., 2009). Respectively, if someone perceives behaviour as too complicated (i.e., recycling), it is less likely that such behaviour will be performed. Education, population pressure and happiness are also significantly correlated with environmental behaviour (Almazán-Casali et al., 2019). By this assertion, a person's level of education together with population pressure is significant determinants that affect behaviour towards the environment.

2.11 Relationship between Environmental Attitudes and Environmental Behaviour

To reiterate, the underlying assumption has been that people who are knowledgeable about the environment have positive attitudes toward the environment and manifest these positive attitudes in environmentally responsible behaviour (Gifford & Sussman, 2012). Research has

already shown that this assumption is untrue. For example, research by Gesis (2020) indicates that despite the growing concern among US residents of the need to protect the environment, few have adopted a more environmentally responsible lifestyle. Dunlap goes further and offers a few reasons to explain this discrepancy.

He suggests that public concern for the environment may decrease because of the increase in governmental attention to environmental issues, as people tend to believe that the government will now take care of and deal with the problems. Secondly, people tend to see institutions and big companies as the culprits, not individuals; hence they fail to change their ways. Thirdly, people may be willing to change some aspects of their lives (e.g., recycle household waste), but not others (e.g., using public transport instead of driving).

Gesis (2020) argued that people may not have sufficient information about how to act in ways that are more environmentally responsible. He believes that those who are more environmentally aware are more likely to engage in environmentally responsible behaviour if there is strong leadership in regard to environmental protection, emphasizing the urgency for people to change their lifestyles (Gifford & Sussman, 2012).

Huddart et al (2015) offer the following explanation for the discrepancy. According to them, all the media coverage of environmental problems and issues resulted in people learning the language of environmentalism, without developing a simultaneous behavioural commitment. They add that people may simply be unaware of how their personal behaviour impacts on the environment. In other words, people may simply lack the necessary information on what specific actions they can engage in to become more environmentally responsible.

It is now also believed that environmental knowledge does not necessarily lead to positive environmental attitudes that are manifested in overt and responsible behaviour toward the environment. Hadler et al. (2011) found that attitudes and behaviour of individuals who are knowledgeable about environmental issues do not differ from those individuals who do not possess that environmental knowledge. They concluded that environmental knowledge does not necessarily lead to pro-environmental attitudes or a willingness to engage in environmentally responsible behaviour, especially not when this requires making sacrifices on their part or inconveniencing them.

However, a willingness to make sacrifices (a behavioural intention) is more likely to lead to environmentally responsible behaviour than an environmental attitude on its own. One can therefore say that a more positive environmental attitude and greater willingness to make sacrifices are more likely to lead to more environmentally responsible behaviour. Hadler et al. (2011) however, found that the behavioural intention 'willingness to make a sacrifice' combined with a positive environmental attitude did not necessarily lead to more environmentally responsible behaviour on the part of people. This raised the question of why these people did not put their behavioural intentions into practice more often. They offer a possible explanation for this. According to them, residents may not have sufficient knowledge of the consequences of their behaviour on the environment. They suggest that environmental education be used to provide people with knowledge of and skills in using environmental strategies.

It is particularly important that the link between environmental problems and residents' personal lifestyles be stressed. It is also important to raise the awareness of residents to the environmental choices they face as for example residents, consumers, garbage producers and

travelers (Bratt et al., 2015). The different studies showed that people were unaware of the impact of their own individual lifestyles on the environment. People also felt that they did not possess the necessary knowledge (information) or skills to make a tangible difference in their environments.

Newton and Meyer (2015) believe that place attachment facilitates the development of environmentally responsible behaviour. They operationalise place attachment as place dependence which refers to a functional attachment to a specific place and place identity which refers to an emotional attachment to that specific place. According to them a person will engage in environmentally responsible behaviour towards a place (natural setting) if they have emotionally meaningful ties to that place.

Environmental education programmes should therefore be designed in such a way that they help individuals form an emotional attachment to their immediate environment and the broader or global environment. Much of the preceding research is based on data that is over 15 years old. It is imperative to update this data to ascertain whether these findings are still applicable as such information is crucial when designing new environmental education programmes (Newton & Meyer, 2015).

2.12 National Environmental Sanitation Policy in Ghana

Ghana's National Environmental Sanitation Policy (ESP) was developed in 1999 in consultation with a variety of stakeholders and covers the broad spectrum of environmental sanitation including solid and liquid waste, industrial and hazardous waste, storm water drainage, environmental and hygiene education, vectors of disease, and disposal of the dead (MLGRD, 1999). The policy was developed by the Ministry of Local Government and Rural

Development (MLGRD). The 1999 document has gone through some revisions with the current edition published in 2009. It is a concise document that sets out basic principles and objectives, identifies roles and responsibilities and covers environmental management and protection, legislation and funding among others.

The Environmental Sanitation Policy is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises several complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (MLGRD, 2009).

The policy identifies many of the major problems and constraints in environmental sanitation, including the lack of assigned roles for governmental bodies, the lack of capacity and skilled professionals at all levels, and the problems associated with the transfer of responsibilities for environmental sanitation without the corresponding budget, personnel and equipment transfers. The policy then lays out its strategy to deal with these problems. Key items in the strategy include:

i. Defining the roles and responsibilities related to environmental sanitation of institutions from the national ministries down to unit committees, community organisations, and the individual.
ii. The privatisation of environmental sanitation services.
iii. The creation of a National Environmental Sanitation Policy Coordinating Council (NESPoCC) and a District Environmental Sanitation Fund (DESF).

iv. The phasing out of pan latrines (by 2010). Targets were set for 2020 (except for the phase-out of pan latrines, which was targeted for 2010).

This has allowed the government a lot of flexibility. Each of the above components is discussed below.

a) Roles and responsibilities. The policy clearly states the role of actors at a variety of levels of government. Evaluation of Ghanaian sanitation policy and governance conducted by Manga and Evans (2019) identified loopholes in the activities and coordination between some ministries and institutions and thus recommended an update to include the roles of Community Water and Sanitation Agency (CWSA), and to clarify the roles of some other institutions and ministries (e.g., Ministry of Heath).

b) The Policy also outlines the roles and responsibilities of the Community and Individuals. Ensuring good environmental sanitation is the responsibility of all residents, communities, private sector, enterprises, NGOs and government institutions. All these actors have an essential part to play in maintaining a high standard of environmental sanitation. The policy indicates that, every individual, establishment or institution shall be responsible for:

i. Cleansing within and in the immediate environs of the property they occupy, including access ways and the drains and roads abutting the property.

ii. Temporary storage of wastes within the property and disposal thereof outside the property, as may be directed by the competent authority.

iii. Taking measures to prevent the breeding of disease vectors within and in the immediate environs of the property they occupy.

iv. Ensuring that the wider environment is not polluted or otherwise adversely affected by their activities.

v. Hygienically disposing of all wastes, they generate in public areas by use of an authorised public toilet or solid waste container as appropriate.

vi. Participating in all communal environmental sanitation exercises organised by the community or its representatives (MLGRD, 1999, p. 6).

vii. The policy also entrusts in the Assemblies the power to promulgate byelaws and regulations to help in their environmental sanitation management process.

To complement these efforts, the Judiciary is expected to establish and empower Community Tribunals to prosecute offenders against environmental sanitation byelaws and regulations (MLGRD, 1999, p. 19). This is a clear opportunity for Birim Central Municipal Assembly (BCMA) to enact strict environmental sanitation byelaws to make the residents responsible for environmental sanitation in Birim Central to ensure good environmental sanitation practices.

2.13 Strategic Objectives (A Strategy for Environmental Sanitation)

The basic elements of a strategy to respond to the objectives and problems outlined above and to promote the accelerated development of the sector include:

a) the formal establishment of environmental sanitation as a sub-sector within the framework of the national development programme;

b) the rationalization of institutional objectives and functions at all levels, including delineation of responsibilities and the definition of inter-agency linkages;

c) establishment of a National Environmental Sanitation Policy Coordination Council within the Ministry of Local Government and Rural Development;

d) the establishment of a National Environmental Sanitation Day to be observed on yearly basis by all residents;

e) the development and strengthening of the role of the community in environmental sanitation;

f) the development of human resources and the improving of institutional structures for managing environmental sanitation;

g) the provision of a significant proportion of environmental sanitation services to the public;

h) Development of a strong legislative and regulatory framework, and capacity for supervising environmental sanitation activities and enforcing standards;

i) Promotion of research to review sanitation technologies;

j) Identification and dissemination of cost-effective, appropriate, affordable and environmentally friendly technologies to address environmental sanitation needs;

k) Adoption of the cost recovery principle in the planning and management of environmental sanitation services.

2.14 Outputs and Targets

By adopting the strategies in the National sanitation policy of Ghana, it is intended that the following should have been attained by 2020:

a) the National Environmental Sanitation Day shall be established by law and observed on a regular basis;

b) the National Environmental Sanitation Policy Co-ordination Council shall be established within the Ministry of Local Government and Rural Development;

c) Environmental sanitation technologies;

d) all solid waste that is produced in urban areas is collected on a regular basis and disposed off in appropriately controlled waste dumps or other environmentally acceptable means;
e) all excreta are discarded either in on-site hygienic disposal systems or in hygienic collection, treatment or disposal systems;
f) All pan latrines are phased out (by 2010);
g) At least 90% of the population has access to an acceptable domestic toilet and the remaining 10% has access to hygienic public toilets;
h) Hygienic public toilets are provided for the transient population in all areas of intense public activity;
i) Active sanitary inspection and vector control programmes are in place and the incidence of malaria, bilharzia and other vector-borne diseases is falling;
j) Environmental standards and sanitary regulations are strictly observed and enforced;
k) The majority of environmental sanitation services are provided by the private sector.

Environmental sanitation refers to as a kind of "mindset" representing a learnt predisposition for a certain opinion (Pisano & Lubell, 2017). This definition signifies that individuals have different opinions to situations so long as environmental problems are concerned. Most people have non-charlatan attitude towards waste disposal. These kinds of persons could be perceived as one who litters the environment like no man's business with no regards or respect to the environment.

Individuals with non-charlatan attitudes play passive role in sanitation activities and refuse to co-operate with others in cleaning up residential surroundings because of their negative attitudes. Some educated and enlightened residents also participate in this misconduct. According to Seebauer et al (2017), the main reason for the incessant growth of volumes of

waste in most communities is as a result of the ignorance of some residents towards the effect of indiscriminate dumping of refuse and the care-free attitude of some residents, who know what, should be done but, they are careless about it.

Human attitudes that lead to filthy environment are influenced by waste generation and disposal in some towns and villages in Ghana. This position is supported by Tabi (2013) who states that everybody wants their refuse to be taken away nobody wants to take part in disposal and management or showing pro-environmental attitude. Seebauer et al. (2017) add that people lack the interest in management of waste they generate. He further explains that although waste is generated by people, they show no concern towards its final disposal.

From the argument above, one can conclude that the reason of indiscriminate disposal of refuse in most communities may be due to the lack of interest, knowledge and environmental awareness. Most residents are insensitive to their environment. This assertion is collaborated by the views of Pisano and Lubell (2017). They asserted that promotion of environmental quality depends on how individuals and community see themselves in relation to their environment. They stated categorically that, "it is the way people perceive their environment that they will treat it" meaning when their environment is resourceful, a serious attention could be attached to it due to its usefulness to the benefit of society.

A resident who is ignorant of his/her action on his or her environment will likely have wrong perception about the effect of those actions on his health. A community that understands the link between a clean environment and a good health can save time, money and avoid agonies which might be the consequences of poor sanitation (Knight & Messer, 2012). They further

argued that environmental deterioration had risen to a large extent because people are not aware of the implication of their attitudes towards the environment.

A person's level of ignorance of the environment can be said to be positively related to the degree of his or her attitude towards the environment Pisano & Lubell (2017). That is, human ignorance is a function of an attitude that will enable one to display a kind of attitude towards the environment. This implies an individual's uncertainty about the environment and issues regarding the environment will determine his or her attitude towards environmental sanitation.

Management of household waste is tied to the perceptions and socio-cultural practices of the people. Moreover, accumulation of waste in undesignated areas could be reduced through creating environmental awareness among residents on how to manage household refuse and subsequently educating them about the hazard that indiscriminate disposal of waste could cause to the physical environment and themselves (Adubofour et al., 2013).

Since cultural derivatives, beliefs, perception and attitudes are learned responses set; they can be changed by educating individuals to be conscious of their environment. This means people's negative attitude towards the environment could be changed for better through environmental education and awareness owing to the fact that people's negative behaviour is regarded as a major barrier to the successful implementation of pro-environmental sanitation (Adubofour et al., 2013). A study conducted in Ghana at Kodiabe which involved direct observations at disposal sites from five divisions focused on the way in which refuse materials were disposed (Safo-Adu, 2019).

A similar study conducted in Nigeria showed that the perception of domestic waste disposal practices indicates people's attitude and perception of sanitation issues (Safo-Adu, 2019). Also,

a study done in Khulna, Bangladesh found that city residents in some communities think because they pay taxes to the central government it is the duty and responsibility of the city authorities to employ cleaners, conservatory labourers, sweepers to provide them with a clean environment so they litter the environment indiscriminately with the expectation of government employing labourers to tidy the environment.

Safo-Adu (2019) is of the view that the role of human perception is of the most significant item to be considered if we want to find solution to sanitation problems. If we understand how humans perceive information on environment and apply it, we could make a future forecast and increase efficiency in the learning of environmental issues and management to improve sanitation issues in our societies. A community may have several refuse receptacles and waste containers in place however, their perceptions or lack of understanding about the dangers of indiscriminate waste disposal may prevent them from using this waste bins. This implies that studying the way people perceived various environmental problems is important in the formulation of decision about environmental sanitation and attitude (Mensah, 2019). This seems to suggest that if an effective waste management system is to be put in place, people's perceptions are critical and must be considered in order to modify their attitude by inculcating in them environmental awareness to achieve sanitary environmental condition in a community.

That is why the crusade for environmental quality should focus more on the human front of changing perception, knowledge, consciousness, values and attitude rather than physical front which normally deals with existing environmental problems and their interim solutions. This suggests that clean-up campaigns, seminars and workshops should not merely attack the symptom of environmental problems but they also have to put the problems into a clear perspective. Such significant interventions may likely create in the individual both young and

old a new image of attitudinal change and it is the new image of attitudinal change that may result in environmental knowledge, consciousness, awareness hence bringing about pro-environmental behaviour and attitude among residents in a community.

2.15 Environmental Sanitation Behaviour among Residents

The sanitation problem in most communities these days is a social dilemma which is primarily anthropogenic in nature, that is, it is caused by human behaviour and therefore a behavioural change would be a significant contribution in solving it or as it is capable of addressing its root causes (Adubofour et al., 2013). The argument is that if each of us produces little or no garbage or behaves reasonably towards the environment by being conscious in handling our refuse well, there will be no waste to manage and hence no waste problems which may pollute the physical environment. Therefore, there is an opportunity for every resident to act single handedly in finding a solution to an emerging sanitation problem.

Individuals' contributions are perceived to be ineffective to address a sanitation problem in a society however if we become environmentally unconcerned and unaware for the environment to be polluted, we will suffer due to our failure to become environmentally conscious and moreover to co-operate to address the environmental issues. From the above reasoning, sanitation problems can be viewed as a social dilemma (United Nations Environmental Programme, 2012). This means that each resident in a community needs to be pro-active in solving environmental sanitation problem in a society before it gets out of hand. Otherwise, when there is pollution resulting in an outbreak of diseases the whole society will suffer. This is supported by the views of (Sadiq et al., 2018) who refer to environmental behaviour as any active responsiveness to current environmental issues believed to be pro-environmental by the person performing the response. Mensah (2019) aptly put it that, "the root cause of many

communities' environmental problems can be traced to the way and manner in which the imbibed behavioural patterns and acquired values are superimposed on the environment." According to Sadiq et al (2018) imbibed behavioural patterns are cultural in origin. The above view is corroborated by Adubofour et al (2013). They stated that the cultural and social norms have substantial influence in the shaping of human behaviour. Cultural values can motivate individuals to exhibit environmental responsible behaviour for the sustainability of a hygienic society. The cultural background of residents would tell a lot about their environmental behaviour. This presupposes that in a community with residents from different backgrounds, there is the likelihood that they will all behave differently towards the environment.

However, other factors such as age, knowledge, religion, education, gender, among others can correct poor environmental behaviour for the better. Therefore, the relationship between human behaviour and environment is thus a function of cultures or socialisation, the level of society's technological development, the perceived magnitude of existing environmental problems and the levels of education (Danso-Wiredu., 2019). Promotion of environmental quality depends on how individuals and communities see themselves in relation to their environment. It is the way people perceive the environment that they will treat it. The environments will also support life depending on the way it is treated (Safo-Adu, 2019).

This implies when residents pollute the environment there is the tendency for them to experience an outbreak of diseases such as cholera, typhoid, malaria and among others. On the other hand, when residents keep their surroundings clean by becoming environmental conscious and behave pro-environmentally; it will promote good health and productivity. This agrees with the assertion of (Danso-Wiredu., 2019). They opine that, wherever there are human beings and human activities waste generation is unavoidable.

The generation of waste automatically comes with the task of environmental problems and waste collection. Waste generation is not a problem when it is properly handled to promote sanitary environment to support life. However, the problem occurred when waste generated is not properly managed which could result in environmental pollution that it is capable of destroying human life and other living species in a geographical area and may be felt in another geographical territory (Knight & Messer, 2012). This is the essence of world leaders concern for pro-environmental environmental attitude and behaviour among people.

Danso-Wiredu (2019), is of the opinion that illiteracy, ignorance, poverty and greediness are some of the major contributors of environmental problems in the society because each influence resident's behaviour towards the environment. A person who is ignorant of his/her behaviour or actions on the physical environment will likely have different perception about the effect of that behaviour on his/her health (Pisano & Lubell, 2017). A community that understands the link between a clean environment and good health can save time, money, energy in protecting the environment by behaving pro-environmentally and also lay down systems and structures that can protect future occurrence of poor environmental sanitation (Knight & Messer, 2012). Disposing of refuse indiscriminately may be an incorrect method of getting rid of waste from our various homes but it has become the norm which is commonly practiced in most communities in Ghana (Safo-Adu, 2019).

From the earliest civilization, waste generation and its management has been part of human existence. Sadiq et al. (2018) observes that the older generation had the option of burning their waste or dump them in a hole. These methods were possible since human population was by then small and moreover most people were using organic products and wrappers which were biodegradable in most African countries. For example, a lot of people were using leaves, papers

as wrappers in Africa and paper bags, boxes, raffia bags made from canes, raffia palm and baskets for shopping and keeping their goods. These items were biodegradable and environmentally friendly.

The findings of environmental sanitation behaviour among residents in Australia by (Williams, 2010), showed that Australian residents were observed both to dispose refuse indiscriminately and use bins appropriately. Men and women were equally likely to litter. Children below the age of 15 are less likely to dispose waste indiscriminately and adults above the age dispose waste indiscriminately than this group. Unemployed and uneducated respondents have higher rates of littering than the educated and employed people. Inadequate of refuse receptacles were not major factors causing indiscriminate littering because a lot of littering occurred within few meters of localities where one could find dustbins. One could deduce from this study that, the unemployed might litter due to the frustration of not getting jobs moreover, because they are not gainfully employed, they feel life and society is unfair to them so to register their frustration and anger, they litter indiscriminately to draw the state attention to their plight.

The uneducated may also behave negatively towards the environment due to the fact that they lack the knowledge about environmental sanitation and the essence of keeping their surroundings clean in other words, they are unaware of the consequences of their behaviour to the detriment of the environment. With the idea of lack of bins there should have been an alternative method of keeping the refuse in individuals' containers and keeping them at an appropriate place till dustbins are provided or residents should have moved to a locality where one can be found. This behaviour could have improved the sanitation in their locality. From the above study it could be deduced that poor sanitation can be caused by anger and illiteracy among residents in a locality (Mensah, 2019).

According to Pisano and Lubell (2017) the waste disposal pattern is a part of a complex phenomenon in waste disposal management. This means that dealing with refuse is a dicey issue since each society has different people and each person has an alternative way of managing garbage. Waste disposal has been considered as a social behavioural problem, the National Litter Education and Prevention Organisation in the United States found that people litter for three reasons: Lack of a sense of ownership that is in an environment or a space belongs to the state; believe that someone else has to pick up their litter and an area is already littered so it does make it a problem when others litter the same environment. By implication, it means that individuals' behaviour towards the environment may depend on the way some residents in the society also behave towards the physical environment, the knowledge, and impression they have about the environment.

Adane et al. (2017) argued that once individuals regard things as having no economic value, they discard them. This means the discarded item is a useless material in the environment. The reality is that products lose economic life or value but retain some physical form that is eventually discarded as a refuse. According to Pisano and Lubell (2017), some authors differentiate between passive and active behaviour towards environmental sanitation. The former means that garbage is not deliberately discarded in the environment while the latter means that garbage is placed or left unbinned in the environment.

From the preceding arguments which every angle one looks at the discarding of the refuse it constitutes a negative behaviour towards the environment which poses a health risk. The ideal situation is that residents must gain environmental knowledge through environmental education which must translate to environmental awareness, consciousness and attitude resulting in pro-

environmental behaviour among residents. Respondents to the above study conducted by Adane et al (2017) had various reasons for indiscriminate disposal of refuse.

Mensah (2019) observe that if people notice others disposing refuse into the environment indiscriminately their tolerance to littering increases to the point where it becomes easily accepted behaviour. Each person has an image of the environment. The preference, evaluation, decision and subsequent behaviour is therefore based on the pictures of the world in his or her head rather than in the world of objective reality (Safo-Adu, 2019).

He added that no two individuals or groups behave in the same way towards the environment. This is because individuals acknowledge only what has value for his biological survival and satisfaction. Thus, there exist several subjective factors that modify environmental perception and behaviour. This includes quality of information available, experience, culture and socio-economic characteristics which work together to influence the way people behave towards the environment.

2.16 Determinants of Poor Environmental Sanitation at Residences

An essential factor which is responsible for poor environmental sanitation is the fact that some temporarily residents that is people residing in a geographical area within a short while tend to ignore sanitation programs because at any time, they can leave their place of abode a typical example is the slum dwellers in Agbogbloshie around Accra central in Ghana. The place looks filthy with poor drainage system and absence of appropriate toilets and refuse dump. In Uganda, studies have shown that residents who lived in areas temporarily as a result of socio-economic, political, security, health and commercial purposes may not know the time they are

to spend in a place so they tend to behave anyhow towards the environment by keeping unsanitary environment (Ghana News Agency, 2013).

In addition, in an attempt to search for better means of living in cities as a result of unreliable rains in the past, loss of soil fertility and increase in cost of living in the rural areas due to population increase, poverty among others, some rural folks migrate to the cities and stay in temporary structures without basic facilities such as toilets, water, incinerator, refuse receptacles etc. Refuse generated by such migrants are disposed in their immediate surroundings turning the community into slums (Hakkim, 2019).

In Ghana, Safo-Adu (2019) pointed out some of the problems affecting environmental sanitation. These include weak institutional capacity and lack of resources, both human and capital. They also indicated that, home collection of waste is limited to high and, some middle-income areas while the poor are left to contend with the problem on their own. This leads to indiscriminate disposal of waste in surface drains, canals and streams, creating unsanitary and unsightly environments in many parts of the city.

Furthermore, MLGRD (2004) summarizes the challenges of poor environmental sanitation in Ghana as follows: poor planning for waste management programmes; inadequate equipment and operational funds to support waste management activities; inadequate sites and facilities for waste management operations; inadequate skills and capacity of waste management staff; and negative attitudes of the general public towards the environment in general. It can therefore be said that the main challenges facing environmental sanitation in developing countries and for that matter Ghana include: inadequate funds to support waste management, inadequate equipment to support waste storage, collection and disposal, low collection coverage and

irregular collection services, crude open dumping and burning without air and water pollution control and appropriate structures and systems put in place to work efficiently to solve environmental sanitation problems in various communities in Ghana.

The waste disposal situation in cities in most poor countries has also been attributed to the general dearth of qualified personnel in the waste sector (Waletlign & Jiano, 2017). According to Jalic (2017) most municipal authorities are unable to attract suitably qualified personnel for the various aspects of waste management such as planning, operations and monitoring. McFarlane (2019) collaborated with this statement when he also stated that developing countries characteristically lack the technical expertise required for waste management planning and operation and this is usually the case at both national and local levels. He emphasised that many personnel in charge of waste management have little or no technical background training in engineering or management. Without sufficiently trained personnel, however, waste management projects cannot be effective and sustainable.

McFarlane (2019) has noticed that in many cases, waste management programmes initiated by external consultants have collapsed in the hands of local management due to the lack of expertise and loss of funding. McGranahan & Mitlin (2016) has also observed that local governments in developing countries generally lack the required capacity and technical expertise to accomplish effective and sustainable waste management programmes.

O'Reilly et al. (2017) argues that the recent upsurge in waste disposal problems stems from the fact that, "attitude and perception towards waste and the rating of waste disposal issues in people's mind and in the scheme of official development plans for some communities have not been adequately considered. Orgill-Meyer and Pattanayak (2020) explained that the

environmental sanitation problem emanates from poverty and lack of funding as a result of low level of economic growth in several developing countries. Augsburg and Rodríguez-Lesmes (2018) traces the root cause of poor environmental sanitation to imbibe behavioural patterns and acquired values which are given expression in the people's culture. Safo-Adu (2019) have pointed to non-performance and weakness in the waste management institution as the bane of the waste problems in most residential areas in Ghana. From the various studies mentioned above it could be seen that existing culture of a group of people, lack of funding, non-performance and weak institutions, structures and systems are responsible for poor environmental sanitation among residents.

Mmereki et al (2012) argue that lack of waste disposal services had resulted in waste accumulation and unsanitary environmental conditions in Donga. Local authorities were not able to organise adequate collection and safe disposal of the waste generated by the residents in the area. In furtherance, local authorities had difficulties in enforcing standards regulation, bye-laws and penalties on waste disposal to promote positive environmental attitude among the citizenry due to poor waste management system in the area.

Similarly, a study done in Khulna, Bangladesh found that city dwellers think because they pay taxes, it is the responsibility of the city authority to provide them with a nuisance-free habitable city (Alzúa et al., 2020). Local governments are responsible for the collection and disposal of the waste generated within their jurisdiction, as well as for the operation and maintenance of their equipment. However, local government usually lacks the authority and resources to provide satisfactory and economically viable services. Lack of these services promotes indiscriminate littering among residents.

Effective and efficient waste management depend upon an equitable distribution of responsibilities, among all the local governments (Mensah, 2018) General waste management in Ghana is perceived to be the responsibility of the Ministry of Local Government and Rural Development, which supervises the decentralised Metropolitan, Municipal, and District Assemblies (MMDAS). However, regulatory authority is vested in the Environmental Protection Agency (EPA) under the auspices of the Ministry of Environment and Science.

The (MMDAS) are responsible for the collection of final disposals of waste through their Waste Management Department and their Environmental Health and Sanitation Departments. There is a growing perception that inadequate education about the importance of proper sanitation by a body such as Health and Sanitation Departments and its allies account for the poor environmental sanitation practices among most residents in Ghana. Other factors which account for this situation is poor attitude and lack of concern about environmental issues, high levels of poverty and misguided waste disposal practices (Oteng-Ababio et al., 2017).

Improper disposal of refuse is caused by social, economic, behaviour, attitude and political circumstances and expectation. Household's economic status influences their method of disposal of wastes. People with higher incomes are more likely to use improved methods of waste disposal practice. This assertion is not wholly true, since one's attitude towards the environment does not depend only on one's income but also one's value-orientation by placing much importance on the environment and have an in-depth knowledge that promotes positive environmental sanitation (Alzúa et al, 2020). Weak enforcement of sanitation laws and pressure on existing sanitation facility can lead to improper disposal of wastes (McFarlane, 2019). He added that the major factors responsible for poor sanitary conditions in Nigerian cities are

improper management of refuse and weak enforcement of laws governing environmental sanitation practices in most residential areas.

The direct charging for use of public waste collection dumps and waste collection centers in urban areas of Ghana was introduced with the emergence of Structural Adjusted Programmes (SAP) in Ghana in the 1980s (Oteng-Ababio et al., 2015). In line with this policy other private registered waste collection companies whose systems of operation is similar to the operations of the Zoom Lion Company Ghana Limited and many others also offer waste collection services for individuals in some residential areas in Ghana for a fee. Per their arrangement, households which could afford to pay for their services are registered and given litter bins and periodically the refuse receptacles are emptied by their workers. Individuals who could not afford these private services resort to the public dump site or use an alternative means of disposing their garbage (McFarlane, 2019).

According to Oteng-Ababio et al. (2017), argue that direct charges has fueled the improper disposal of refuse into open environments by low-income people who are not able to pay the fees. The improper disposal of wastes has led to choked gutters leading to perennial flooding occurrences during the rainy season in Accra and epidemics such as cholera which are also experienced in most parts of the country. The “twin disaster” which occurred in June 3, 2015 was partly due to blockage of the Odawna drain in Kwame Nkrumah Circle by solid wastes which were disposed into the drain by hawkers, pedestrians, market women and inhabitants who reside around the Odaw river causing flood around Circle and its environs.

Improper disposal of refuse is a common practice in many African countries. For example, Ibanga (2015) in their study on sanitation in Nigerian cities pointed out that indiscriminate

disposal of refuse had become a common practice in many cities in the country. Most of the garbage was located close to Markets and public places. Uncollected garbage produces foul odour and constitute a source of environmental nuisance. (Akintunde, 2017), assert that some religious groups could be linked to poor environmental attitude and go on to suggest that some religions actually encourage environmental pollution through indiscriminate disposal of refuse among its members around their places of worship like the shrines for instance where one can identify dead animals, rotten materials, garbage, filth and bloodstains.

Aside from this, some Christians and Muslims keep their environment unkempt during days of worship and festivities such as weddings, Easter convention, Christmas and among others. Whereas authors such as Hutton et al. (2020) believes that religions, particularly Judeo-Christians, have very little direct influence on human's negative environmental attitude and others included. Cameron et al. (2019) believe that it is the interpretation of religions that cause environmental attitude to be positive or negative. These authors believe that the sacred texts and teachings of the prophets and founders of those religions are somehow innocent of people's negative attitudes or behaviours towards the environment.

Kotsila and Saravanan (2017) also explain that moral values from religion that are inculcated by families, governments, non-governmental organisations, churches, mosques, schools among others are important in shaping attitude. However, he thinks that the roles played by these institutions are insufficient to improve environmental sanitation attitude among residents (Alzúa et al., 2020). This means the various religious groups find it difficult to use their doctrines to create environmental consciousness and awareness among the people to behave pro-environmentally. Hence, the insanitary environmental condition in most of our

communities in Ghana may be due to the in ability of the teachings of the various religions to transform individual's attitude to behave pro-environmentally.

2.17 Effects of Poor Environmental Sanitation on Residents

Poor sanitation causes economic losses associated with the direct cost of treating sanitation-related illness and loss of income through reduced or lost productivity. In addition, poor sanitation also leads to time and effort losses due to distant or inadequate sanitation facilities, lower product quality resulting from poor water quality, reduced income from tourism (due to high risk of contamination and diseases) and cleanup cost (WHO/EURO, 2016). Several studies have also been conducted to estimate the economic costs associated with poor sanitation.

In Ghana and Pakistan, for example, the indirect effect on child mortality of environmental risk factors mediated by malnutrition has added more than forty percent (40%) to the cost indirectly caused by child mortality. If one takes into consideration the effect of such malnutrition on improved school performance and delayed entry into the labour market, the cost will double to ninety percent (90%) of the Gross Domestic Product (GDP) (WHO/EURO, 2016).

Uncontrolled refuse dumps have a negative environmental impact on the lives of people in a community. The United States Environmental Protection Agency (1998) acknowledges that some dumps have grown from small to large unmanageable waste problems over the years. As waste decomposes it produces lachate (a mixture of toxic and non-toxic liquids and rainwater) that could contaminate the drinking water. Also, areas used for illegal dumping are accessible to the general public, especially children and domestic animals, who are vulnerable to the physical and chemical hazard posed by waste (United States Environmental Protection Agency, 1998). Several authors seem to agree that a clean and attractive environment is a pre-requisite

for long term economic growth, according to the United States Environmental Protection Agency (1998).

Poor environmental sanitation constitutes a major source of environmental health hazards. Environmental hazards account for an estimated twenty-five percent (25%), of the total burden of diseases worldwide. Nearly thirty-five percent (35%) of ill health problems in Sub-Saharan Africa are caused by environmental hazards (Kotsila & Saravanan, 2017). According to McFarlane (2019) improper sewage and waste disposal as well as being aesthetic nuisance is also a dangerous contributor to the pervasive nature of some diseases such as typhoid, cholera, dysentery, malaria etc. The health implications of poor environmental sanitation cannot be ignored. There are reports that unsanitary environmental conditions can cause, waste, air and land pollution which can affect human life and other living species (Jalic, 2017).

Oteng-Ababio et al. (2017) argue that the burning of domestic waste has been associated with respiratory illness. Households that are serviced inconsistently by waste collection companies sometimes burn their waste. In these households, respiratory diseases are more common in mothers and children. One suspected cause of this association is that these households are prone to burn their waste and burning is an activity primarily performed by women and children. Women and children may be exposing themselves to harmful fumes and consequently presenting with a higher incidence of respiratory disease.

Disposal of refuse was not a major problem in the past because human population was relatively small, lands were available in abundance both in the country side and in the cities for absorption of waste, and nearly all waste were biodegradable (Orgill-Meyer & Pattanayak, 2020). However, in the modern era of rapid urbanisation, solid waste disposal and collection are common problems partly due to the non-degradable nature of many wastes. Uncollected waste

produces foul odour and constitute a source of environmental nuisance which has a potential of spreading air borne diseases (Ibanga, 2015). McFarlane (2019) observes poor sanitation as having a serious effect on the environment.

He further states that fecal matter does pollute water sources and degrades the surrounding environment. Inadequate sanitation, through its impact on health and environment, has implications for economic development (WHO/EURO, 2016). People absent themselves from work due to excreta-related diseases. Poor health keeps families in a cycle of poverty. The national cost of productivity, reduced education potential and curative health care is substantial. One estimate puts the cost of health expenditure at $3.5- billion per year (WHO/EURO, 2016).

The increasing pollution of rivers and shorelines negatively impact on businesses such as tourism and agriculture, which are vital to nations' economic growth. Lack of excreta management also poses a fundamental threat to global water resources. The White Paper on Basic Household Sanitation Who/Euro. (2016) highlights the benefits of improving sanitation: reduced morbidity and increased life expectancy, savings in health care costs, and saves one from taking sick leave. Inadequate sanitation facilities, inadequate disposal of waste and poor sanitation practices, result in loss of privacy and dignity, exposure and increased risks to personal safety (WHO/EURO, 2016). People are forced to use the bush as their toilet facility. They are exposed to dangerous situations where they can be assaulted or attacked by wild animals.

Kotsila and Saravanan (2017) reported that the lack of substantive toilet infrastructure means that residents at times resort to defecating outside. Pre-studies have found more than two-fold increase in childhood diarrhoea prevalence due to neighborhood outdoor defecation. Insufficient communal facilities can lead to open defecation along beaches, drains, and open

spaces. In this environment there is a tendency for fecal material to become intermixed with household refuse. Street runoffs also become a potential source for human infection when drains become contaminated with fecal matter. Studies have found endemic fecal pathogens including parasitic worms, protozoan, bacteria, and viruses at concentrations sufficiently enough to create the potential for human infection.

Wireko (2015) wrote that water pollution is another important potential outcome of inappropriately managed refuse. The unregulated leachants from refuse near waterways increase the technical difficulty of providing clean water and subject city residents to urban flooding risk. Urban floods occur when drainage systems and other storm control devices overflow because of waterway blockages. Indiscriminate dumping and refuse overflow can all be sources of drainage blockage. While it is true that seasonal rains can cause flooding in all parts of Accra, the poorer residences with their weaker drainage infrastructure are more likely to experience flood damage.

Wereko further noted that the poorer population of Accra bears a disproportionate amount of the environmental health risk burden. The most vulnerable populations are sanitation workers and the migrant workers from the North. Migrant workers frequently resort to scavenging to provide income. Scavengers can be seen in broad daylight searching through refuse at open dumps for materials, plastic and metals that can be sold back to processing factories. These scavengers are exposing themselves to harmful leachants and chemicals without any protection.

Sanitation workers are hired by private companies. However, they receive little or no protective clothing from the waste management companies which employ them. These workers earn low wages and thus are not able to purchase appropriate clothing for their protection. Thus, they experience more exposure, and therefore have a higher turnover rate, higher incidences of sick

days and work-related accidents and higher mortality than the rest of the city population (Mensah, 2019).

The significant economic benefits of good environmental sanitation are not well known; the media often emphasize on health benefits, but the time savings and opportunity cost are equally significant issues. Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability and improvement in the lives of the masses. Quite apart from that, a healthy people produce more and miss fewer days in their production of goods and services. Subsequently, a healthy community is often a more lucrative market for goods, services and investment (WHO/EURO, 2016).

It is evident that a dollar spent on maintaining sanitation yields economic benefits (about nine times) that far exceeds the required sanitation investments. There is an enormous cost incurred for being inaction. Achieving the MDG for sanitation would amount to $66 billion gained by means of time, productivity, averted illness and death. It is estimated that a 10-year increase in average life expectancy at birth translates into a rise of 0.3-0.4 per cent in economic growth per year (WHO, 2017). Improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

On the consequences of improper disposal of refuse, Revilla et al. (2021) reveal that residents who live closer to filthy areas have an increased risk of health-related problems. This according to them is especially the case of young children who play in areas where garbage is thrown, and scavengers who earn their living by sorting through rubbish. Revilla et al. (2021) observed that

diseases such as malaria, filariasis, and mosquito-borne diseases are of the effects of poor environmental sanitation in societies. Kotsila and Saravanan (2017) collaborated with the assertion of Revilla et al (2021) stated that different types of waste pose different problems but in general, failure to manage and dispose waste properly expose residents to increase risk of infectious diseases.

2.18 Ways of addressing poor Environmental Sanitation

Mensah (2019), environmental sanitation management approaches refer to plans and measures for maintaining and sustaining proper environmental sanitation practices. Lawrence et al. (2016) also sees the concept as meaning a way of addressing sanitation behaviours in line with acceptable standards. Nevertheless, there is understanding of views between Kanhai et al. (2021) that although there are quite a lot of approaches or tools for ensuring the maintenance of proper environmental sanitation practices, these measures can be largely captured under hardware and software management strategies.

Sanitation hardware refers to technical decisions for optimisation of sanitation delivery (Reed et al., 2018). According to Reed et al, hardware solutions involve the use of physical things that can be seen and touched such as refuse dumps, vehicles, dust bins, toilets, refuse containers, and other logistics. On the other hand, Reed et al. (2018) refer to sanitation software as intangible tools or means to change the behaviour of individuals, attitudes and practices of different people to raise the environmental sanitation system. The software measures involve management of environmental sanitation education and regulation to influence sanitation practices (Weber et al., 2019). More places of convenience and waste collection infrastructure are expected to be provided at vantage points in the communities by the authorities especially in heavily used areas such as markets and lorry stations, for people in transit.

Moreover, global best practices suggest that in communities where door-to-door collection of waste is not appropriate and functioning, the local authority should designate communal storage sites where solid waste can be discharged into movable containers for collection for final disposal. In such cases, the evacuation of such containers must be done at frequencies sufficient to prevent undue accumulation and decomposition of waste (Tidwell et al., 2018).

2.19 Theoretical Review

This section reviews the intellectual arguments by discussing the theories that guided my thinking and theorization of the work.

2.19.1 Theories of sanitation

Two theories underpinned the study, namely the Theory of Planned Behavior and the Integrated Behavioral Model for Water, Sanitation and Hygiene (WASH). It was prudent to choose befitting sanitation theories for the study because they highlight the causes of diseases (Ajzen & Fishbein, 1980), importance of cleanliness and germ absence and the provision of facilities to accomplish such absence (Wasike, 2010).

2.19.2 The Theory of Planned Behaviour (TPB)

Human factors such as knowledge and attitude have monumental effects on the achievement of safe environment. Knowledge of the environment is an independent variable in this study, expected to positively correlate with the dependent variable, attitude towards, environmental sanitation. Human factors such as knowledge and attitude have monumental effects on the achievement of safe environment. Knowledge of the environment is an independent variable in this study, expected to positively correlate with the dependent variable, attitude towards environmental sanitation. This expression is predicted on an implicit assumption of the much-

referenced Ajzen's Theory of Planned Behaviour, a resurgence of Ajzen and Fishbein's Theory of Reasoned Action (TRA). Ajzen and Fishbein (1980) posited that behaviour is a function of behavioural intentions, which must have been endeared by attitudes and subjective norms. Knowledge is not an explicit element of this model.

However, Ajzen and Fishbein (1980) stated that "attitudes are functions of beliefs." Beliefs refer to knowledge in this context. Attitude serves a knowledge function by helping people attain a meaningful, stable and organized view of the world. Hence, it is an expectation that knowledge positively correlates with attitude. Attitude towards a concept can be defined as an individual or group of individuals, general feeling of favorableness or unfavourableness for that concept (Ajzen & Fishbein, 1980).

Many studies of knowledge and attitudes have found a positive and often significant relationship between the two variables. In a study of the effectiveness of a visitor education strategy in raising levels of knowledge and attitudes toward nature conservation, Olson et al., (1984) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured. The programme was successful in raising both the levels of knowledge and improving attitudes toward environmental management. Similarly, Armstrong & Impara (1991) found that positive attitudes followed exposure to a K-7 environmental education publication on knowledge and attitudes about the environment.

Many other studies have used the Theory of Reasoned Action (TRA) and its extension, the Theory Planned Behaviour (TPB), as a framework not only good for understanding, explaining and predicting behaviours, but also to provide a useful guide for designing intervention strategies to change or maintain behaviours. The theory is based on an assumption that individual behavioural intentions are directly related to their attitudes. The TRA views a

person's intention to perform (or not perform) as the immediate determinant of the action. This behavioural intention, in turn, has two determinants. One is the attitude towards the behaviour a person who believes that performing a given behaviour will lead to mostly positive outcomes will hold a favourable attitude toward performing the behaviour. The other is the subjective norm which states that person believes that most referents with which he or she is motivated to comply, think he or she should perform the behaviour will perceive the social pressure to do so.

The beliefs that underlie a person's attitude toward the behaviour are termed behavioural beliefs, and those that underlie the subjective norm are termed normative beliefs (Ajzen & Fishbein, 1980). The Theory of Planned Behaviour (TPB) states that what an individual does is determined by personal motivation which is determined by attitude, social support and perceived behavioural control. These factors are grounded by the persons' perception of social, personal, and situational consequences of the specified action (Ajzen, 1985). TPB allows for a better evaluation of human behavior when participation decisions are voluntary and under an individual control.

The Theory of Planned Behaviour has been widely used in environmental behaviour research to predict a person 's intent to participate in a specified behaviour (Gamba & Oskamp, 1994). TPB has been used successfully, empirically and conceptually by many researchers in environmental behaviour to explore attitudes that trace the correlation of beliefs to behaviour. Enhancement of the environmental knowledge of students leads to the development of positive attitudes towards the environment (Uzun & Sağlam, 2006). While some researchers consider that school pupils' participation in environmental courses will increase awareness of environmental problems and promote environmentally responsible behavior amongst residents,

other researchers indicate that life experiences are a more efficient means of forming environmental attitudes than participation in specific courses (Bradley et al., 1999).

An individual who has a positive attitude towards an object tends to act positively, approach, show concern for, support, and assist this object. An individual whose attitude is negative towards an object tends to be indifferent to it or alienate, criticize, or even damage it. Thus individuals, who have negative attitudes towards the environment, will be insensitive to environmental problems and may even adopt behaviours that damage the environment (Uzun & Sağlam, 2006). Traditionally the assumption was that increased environmental knowledge would automatically lead to environmental awareness (perceptions) that would in turn lead to pro environmental attitudes that will be expressed as overt and responsible environmental behaviour.

According to (Ajzen & Fishbein, 1969), the theory of planned behavior (TPB) emerged as the Theory of Reasoned Action three decades ago to envisage one's desire to get involved in a behavior at a particular point in time and place. The theory was meant to describe all behaviors that were presumed to be under the control of individuals. In the words of Ajzen & Fishbein (1991) the theory was intended to explain all behaviors over which people have the ability to exert self-control.

Three key concepts have been identified with planned behavior theory; behavioural change, participation and systems theories. To Fishbein & Ajzen (1975), the principal component of this is behavioral intent. Behavioral intentions are influenced by the attitude about the likelihood that the behavior will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome (Ajzen & Fishbein, 1970). These concepts are believed to be the shoulders on which environmental sanitation rallies. The behavioural change theory

is based on the fact that individuals usually consider the consequences of their behaviour before engaging in such act (Ajzen & Fishbein, 1977), and those attitudes influence behaviour.

Ajzen & Fishbein (1980) maintain that an attitude is a disposition connected in a meaningful way to a specific situation and, therefore, serves as a foundation for a reaction in that situation, which becomes a behaviour. Bringing this logic to bear on environmental sanitation, it can be argued that since attitude is connected to behaviour, individual feelings about environmental sanitation, one's attitude to its influences, and one's sanitation behaviour which invariably becomes demonstrated in one's sanitation practices (Mensah, 2020).

According to Kanhai et al (2021), thinking and beliefs shape attitudes, behaviours and actions towards environmental sanitation. An exposition on the theory of change in knowledge-attitude-behavior had Oteng-Ababio (2012) arguing that an increase in knowledge could lead to changes in attitude and subsequently influence behavior. It can be inferred from Nimoh (2016) argument that an increase in people's understanding of environmental sanitation could increase their awareness and deepen their understanding of sanitation issues, which could have a positive impact on their attitude and behavior towards maintaining acceptable sanitation practices. This is further backed by Fishbein and Ajzen (1975) advocacy for behavioural change theories, which establish a relationship between environmental knowledge, awareness, attitude, and how these can translate into action to improve environmental sanitation.

Likewise, the theory of participation (Sukhor et al., 2011) emphasizes the concept of empowering stakeholders in a development effort to be actors rather than passive subjects in decision-making and undertaking activities that improve people's lives. The core concept of the theory is that while change agents act as catalysts, the ultimate beneficiaries of a development

intervention must engage in the intervention to make it sustainable by owning it (Singhirunnusorn, et al., 2018).

This logic is extended by the ecological perspective of participation theory by advocating participation by stakeholders in environmental management efforts to improve health and the environment (Hotta et al., 2014). This perspective argues that to tackle unpleasant community challenges related with environmental sanitation, individual and collective efforts and capacity should be harnessed.

The systems theory was also promoted as one that can be leveraged for efficient environmental sanitation. The theory of systems provides an investigative framework for comprehensive exploration of a given phenomenon (Ajzen & Fishbein, 1977). The central thesis of the theory borders on taking a holistic view of a system to ensure that all its components work to make the entire system function as efficiently as expected (Ajzen & Fishbein., 1980).

Theoretical Framework

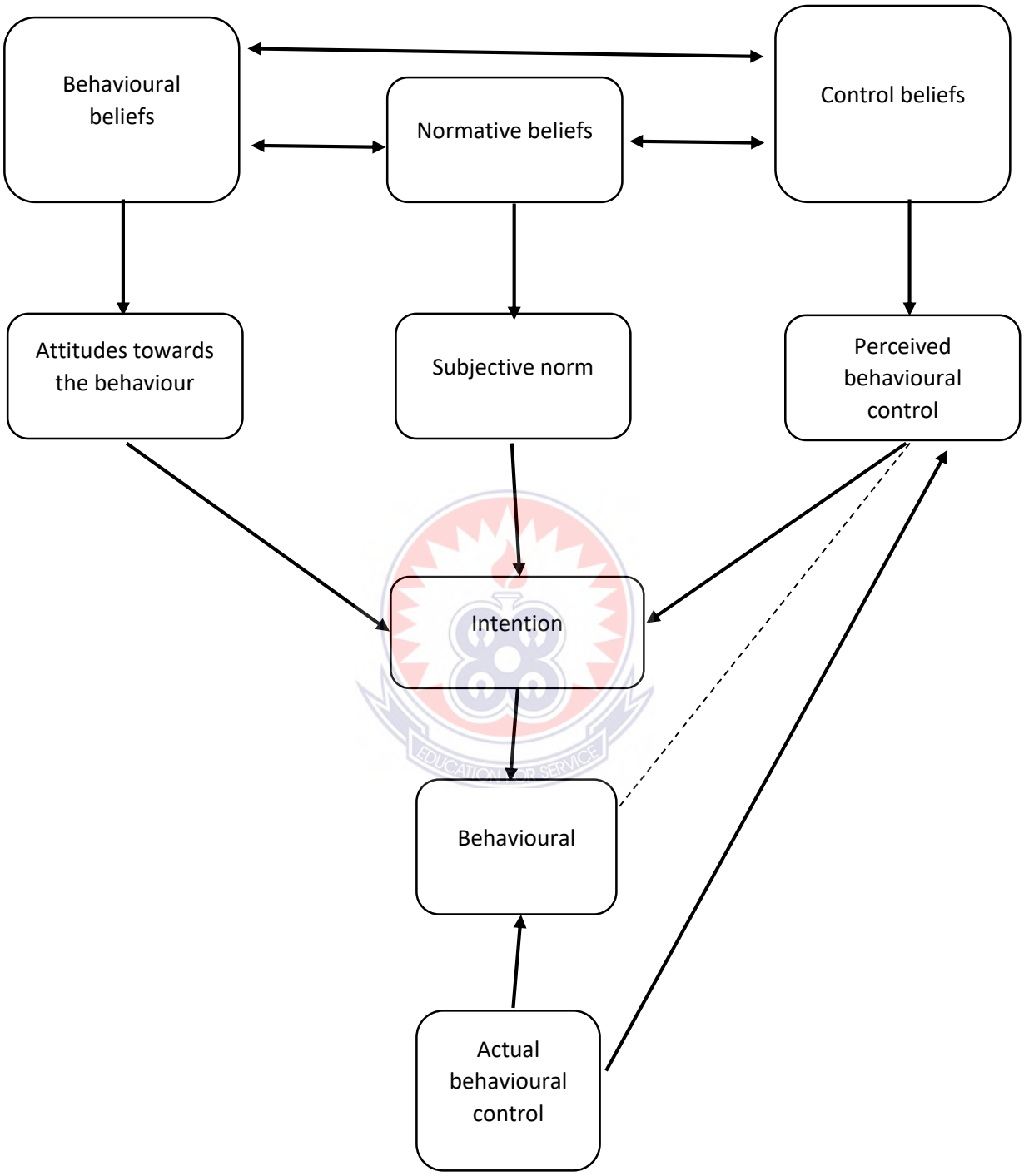


Figure 2.2: Theory of Planned Behaviour

Source: Adapted from Ajzen and Fishbein (1980)

This theoretical Framework for the study, have pointers like human factors such as knowledge and attitude having monumental influence on the achievement of safe environmental sanitation. To Ajzen and Fishbein (1980), behaviour is a function of behavioural intentions, which must have been endeared by attitudes and subjective norms. Knowledge does not refer to an explicit element of this model. Ajzen and Fishbein (1980), however stated that "attitudes are functions of beliefs". Beliefs refer to knowledge in this context. Attitude serves a knowledge function by helping people attain a meaningful, stable and organized view of the world. Therefore, it is alluded that knowledge have positive correlation with attitude.

Attitude to a concept can be defined as an individual or a group of individuals, a general feeling of favourability or unfavourability to that concept (Ajzen & Fishbein, 1980). A number of knowledge and attitudes studies have found a positive and often significant relationship between the two variables. During their research on the effectiveness of a visitor education strategy in raising knowledge and attitudes towards nature conservation, Olson, et al. (1984) discovered a significant relationship among knowledge test scores and attitude test scores for all concepts measured. The program has been successful in increasing knowledge levels and improving attitudes towards environmental sanitation.

Likewise, Armstrong and Impara, (1991) found that positive attitudes followed exposure to knowledge and attitudes about the environment in a K-7 environmental education publication. Other studies used the Theory of Reasoned Action (TRA) and its extension, the Theory of Planned Behaviour (TPB), as a framework not only good for understanding, explaining and predicting behaviours, but also to provide a useful guide for designing intervention strategies to change or maintain behaviours. The theory assumes that individual behavioural intentions are causally related to their attitudes. The theory of Reasoned Action (TRA) considers a person

‘s intention to perform (or not perform) as close determinant of the action. This behavioural intention comes with two determinants, one is the attitude towards the behaviour, a person who believes that performing a given behaviour will result to mostly positive outcomes will hold a favourable attitude toward executing the behaviour.

On the other hand, a subjective norm that states that a person believes that most referents with whom he or she is motivated to comply believe that he or she should perform the behavior will perceive the social pressure to do so. The beliefs that underlie the attitude of a person towards behavior are called behavioral beliefs, and normative beliefs are called those that underlie the subjective norm (Ajzen & Fishbein, 1980). The Theory of Planned Behaviour (TPB) states that what an individual does is determined by personal motivation which is determined by attitude, social support and perceived behavioural control. These factors are grounded by the persons’ perception of social, personal, and situational consequences of the specified action (Ajzen & Fishbein, 1980). TPB allows for a better evaluation of human behavior when participation decisions are voluntary and under an individual control.

The Theory of Planned Behaviour has been widely used in environmental sanitation behaviour research to predict a person ‘s intent to participate in a specified behaviour (Milgrom, 2015). TPB has been used successfully, empirically and conceptually by many researchers in environmental behaviour to explore attitudes that trace the correlation of beliefs to behaviour. Enhancement of the environmental knowledge of residence leads to the development of positive attitudes towards the environment (Uzun & Sağlam, 2006).

While a section of researchers consider that residents’ participation in environmental education increases awareness of environmental problems and promoting environmentally responsible behavior amongst students, others reveal that experiences in life are a more efficient means of

forming environmental attitudes than partaking in educational programmes (Bradley et al., 1999).

An individual tends to act positively, approach, support, show concern for, and assist this object when they exhibit positive attitude towards such object. In cases where an individual's attitude is negative towards an object, they tend to be indifferent to it or alienate, criticize, or even damage it. Thus individuals, who have negative attitudes towards the environment, will be insensitive to environmental problems and may even adopt behaviours that damage the environment (Uzun & Sağlam, 2006). Traditionally the assumption was that increased environmental knowledge would automatically lead to environmental awareness (perceptions) that would in turn lead to pro-environmental attitudes that will be expressed as overt and responsible environmental behaviour.

The theory of planned behaviour is useful to this study because perceptions like behaviour are influenced by our knowledge, beliefs, values, and norms but can be formed without experience and knowledge of the person. The more knowledgeable we are about environmental sanitation, the clearer our opinion tends to be, and the stronger our (feelings) perception. (Ajzen & Fishbein, 1980) support this by contending that being informed about an issue is even more likely to influence behaviour when knowledge is gained from first-hand experience.

2.19.3 Integrated Behavioural Model for Water, Sanitation, and Hygiene.

The Integrated Behavioural Model for Water, Sanitation and Hygiene (IBM-WASH) focuses on ability to promote and sustain behaviour change at the individual, household, community, and structural/institution levels. The model relies on the contextual, psychosocial, and technology dimensions of WASH practices.

The contextual dimension gives the characteristic of the setting, personal, or environment that are in most cases outside the range of influence of program activities, but they can affect acceptance of certain products and/or behaviours. The ability to obtain sanitation products, access to enabling resources (such as hand washing water), socioeconomic, demographic and household features, and the physical environment are examples. The instances where behaviour takes place is dynamic and changes throughout the day children start schooling, adults go to work, household members go to the market.

The final state of the contextual dimension addresses explicitly these by determining other opportunities or the lack of other opportunities to repeat and continue exhibiting an improved behaviour. To understand hand washing behaviours among school children at home it must be understood within the context of hand washing water, soap, and facilities accessible at various schools, workplaces and homes. The WASH framework introduces a simple, adaptable mechanism for understanding WASH behaviours and habit formation that is informed by existing theoretical insights at multiple levels and dimensions (Dreibelbis et al., 2013).

2.19.4 Psychosocial Dimension of WASH

The psychosocial dimension in this model consists of issues that can influence direct acceptance of introduced sanitation actions. These are taken as behavioural determinants. Disgust is an example which has been used as one of the psychosocial determinants in WASH to foster hand washing with soap and to halt open defecation. In Community Led Total Sanitation (CLTS), elicitation of disgust at the community level is a key step in mobilizing support for sanitation improvements. Social norms and/or social desirability, and aspirations are extensively acknowledged to affect WASH practices as well as playing pivotal role in Diffusion of Innovation Theory Knowledge and perceived threat of illness particularly diarrhoeal/cholera

diseases are often relevant aspects of behaviour change promotion strategies. (Dreibelbis et al., 2013).

2.19.5 Technology dimension of WASH

In this context, issue of consideration is how the introduced technology can have influence on behavioural outcomes. Technology includes its placement because sometimes location of the technology that was expected to facilitate good behaviour toward sanitation practices may inhibit instead of enhancing positive sanitation practice. Placing soap or water at convenient location for hand washing was more relative to improved hand washing practices following faecal contact (Dreibelbis et al., 2013).

2.19.6 Rational decision-making model of WASH

This model, as it is known in organizational behaviour, is designed for making logically sound decisions. It is a multi-step model that logically begins with studies into the existing situation to identifying the challenge through to determining the solution. This is one of the models that can be used in determining sanitation problems in particular localities and trying to find out the desired solutions for such environmental problems.

2.19.7 Consumer Led Aspirational Sanitation Services (CLASS) model

This model considers people's aspirations as the major focus and proposes that these aspirations become beginning point rather than conventional pit latrine alternatives designed by experts being the starting point for sanitation services development. The model acknowledges many challenges associated with it. People's aspirations could be diverse and hence, the difficulty in tailoring them for a comprehensive sanitation development plan, on one hand, and also sometimes the contrasting views between the expertise thinking and the local people's thinking in regard to sanitation planning processes. Of the models that can be used in determining

sanitation problems in particular localities and trying to find out the desired solutions for such problems, given the circumstances of the community in question.

2.19.8 WASH Map model

This model uses social media and tools for mapping to gather data on water and sanitation. Important data on sanitation coverage and occurrences of open defecation are collected and mapped. The collected information can then be used to instigate communities and /or decision makers to engage in action, taking community led total sanitation approaches as an inspiration. This is a model that can easily be used in urban areas, but exceedingly difficult to operationalise in rural areas.

2.19.9 Progress Linked Finance (PLF) model

The PLF model is designed to provide incentives and to give support to water, sanitation and hygiene (WASH) service providers to meet the needs of low-income consumers in a financially sustainable manner. In this model, multilateral financing institutions make commitment to provide concessional finance in a stated time set during agreement with urban WASH service providers. The urban WASH service provider would receive the agreed finance support after being able to demonstrate commercially viable service delivery to poor communities and has built its capacity to a level of readiness for scale-up of services to low-income consumers (WSUP, 2014).

The PLF model proposes, among other models, the use of The Integrated Behavioural Model for Water, Sanitation, and Hygiene (WASH), which is built in a form of a matrix, which has three dimensions (the contextual dimension, psychosocial dimension, and the technological dimension) which appears in the column. As the three dimensions work together, they reflect the notion of shared determinism in “Social Cognitive Theory”, which defines reciprocated

interfaces amid the individual, the behaviour, and the environment in which the behaviour is practiced (Dreibelbis et al., 2013). Also, five aggregate levels (rows) that are like levels in "multi-level models" are identified. These include:

1. The Societal/Structural Level that are general organisational, institutional, or cultural factors these influence behaviours in each of our three dimensions; the contextual, psychosocial, and technology dimensions.
2. The Community Level which includes the physical, social environment and the formal and informal institutions that form personal know-hows.
3. The Interpersonal/Household Level shows relations among persons and other people they strongly associate with, such as household members, friends and neighbours.
4. The Individual Level which describes socio-demographic factors such as age, sex, income and level of education
5. The final level in this model is the Habitual Level. This level is nested within the individual.

A cursory scrutiny of the theories employed to drive the study revealed a number of distinct components that stand a greater chance to unearthing factors responsible for poor environmental sanitation. Nonetheless, depending entirely on the components inherent in these theories and adopting them holistically may influence the generalizability of the study since the chosen theories fail to acknowledge or capture certain sensitive characteristics of individuals.

The theory of planned behavior (TPB), though foresaw the determinants of poor environmental sanitation from the scope of behavior change, attitude, participation and systems, it fell short of identifying the financial implications of individuals vis-à-vis sanitation practices and environmentally appropriate behaviours. More so, the role technology plays in environmental

sanitation were not adequately captured in the theory of planned behavior. The theory again did not spell out the appropriate tool to check environmentally appropriate behaviours and attitudes of individuals.

The WASH model on the other hand, which was also adopted to complement the TPB, proved effective in many regards through its several sub models such as psychosocial dimension, technology dimension, progress linked financial models, among others. However, the model failed to take into account the cultural orientations of the individual as far as sanitation practices are concerned. Furthermore, the literature reviewed on these models likewise its components turned a blind eye on natural factors which in some jurisdictions can be a potential determinant of poor environmental sanitation.

In light of this, a comprehensive conceptual framework was designed to address these theoretical gaps on environmental sanitation.

2.20 Conceptual Framework

After the review of literature, a couple of factors were acknowledged to be emerging issues that affect poor environmental sanitation in Ghana and elsewhere. These factors subsequently, are said to have had a negative impact on the lives of people living in both rural and urban areas. Both theoretical and empirical indications have all pointed out causal-effect factors of poor environmental sanitation, and they are more of attitudinally, behaviorally and policy bound.

The associated costs of the phenomenon are many but principal among these outcomes is those that affect health, economy, the ecosystem/biodiversity and education as presented in the conceptual framework for the study. Seemingly, there are three basic actors involved in creating poor environmental sanitation. These include generators which comprise

attitude/behaviour, policy and management system. These combine to generate waste and litter the environment indiscriminately. When these service providers fail to effectively carryout their responsibilities, it results in poor environmental sanitation conditions. When the generators do not appropriately dispose of waste, they promote poor environmental sanitation conditions. Lastly, when the generators fail to enforce laws and regulations governing sanitation, it results in poor sanitation. All these negative activities when left unchecked, lead to deteriorating health conditions of the people, increased health cost, environmental pollution and increased cost of providing sanitation services. These therefore call for a new intervention approach to improve sanitation.

The two intervention strategies that could be adopted to improve environmental sanitation are behavioural intervention and regulatory intervention. These intervention strategies involve activities that would ensure that people understand the consequences of poor environmental sanitation practices and the benefits that would accrue to everyone if people adopt good behaviour towards the sanitation. This could be done through education.

The other complimentary intervention strategy is regulatory intervention. This involves activities that would ensure that people comply with good sanitation standards which can be done through enforcement of sanitation regulations. The tools for achieving these strategies are through education and enforcement. When people are well educated about environmental sanitation, they become proactive and can organise themselves to secure facilities that would ensure good sanitation condition in their locality, even when these are not provided by the local government. When these two intervention strategies are well implemented, they would lead to good environmental sanitation condition. The entire framework is driven by two major theories

of sanitation: theory of planned behaviour (TPB) and integrated behaviour model for water, sanitation and hygiene (IBM-WASH).

Conceptual Framework on Poor Environment Sanitation

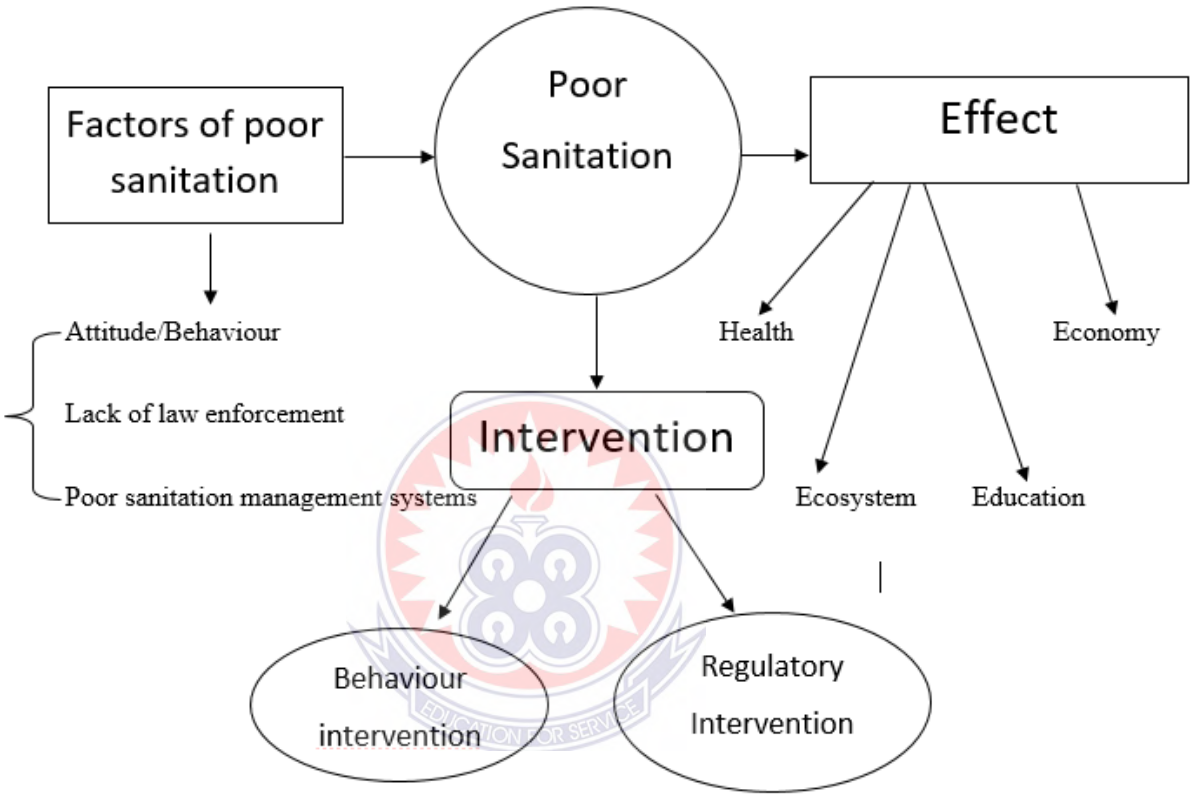


Figure 2.3: Conceptual Framework on poor environment

Source: Researcher's construct

The concepts developed were carved from both the TPB theory and the IBM-WASH model. According to the framework, factors contributing to poor environmental sanitation are generally attitudinal and behavioural. They also include the presence of poor structures such as poor enforcement of laws and poor sanitation management systems. These concepts are invariably the indicators that the TPB theory and the IBM-WASH model adopt to explain responsible

environmental sanitation behaviours and attitudes of individuals. The study therefore employed these markers to explore how residents' attitudes and behavior add to environmental sanitation problems in the Birim Central Municipality.

From the conceptual framework, poor environmental sanitation does not only have contributors but it also has some adverse effects. Its impact tends to be severe on education, health, ecosystem and economy. A careful consideration of the theory and the model indicates that people's attitudes and behavior eventually become a subjective norm. This suggests that individual's actions and inactions have consequences. This assumption as elaborated in both model and the theory underpinned this framework.

Lastly, intervention was another concept generated in the study. Two key intervention dimensions feature in the framework. They are behavior intervention and regulatory intervention. These concepts equally fit well into the TPB theory and the IBM-WASH model in that they outline behavior, attitude and institutions as checkers of responsible environmental sanitation. The study utilises these indicators to find out whether a change in residents' attitudes and regulatory bodies can address environmental sanitation issues in the Birim Central Municipality.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter reports the methods and procedures used in conducting the study. Themes discussed in this section include research design, population, sample and sampling techniques, instruments used for data collection, description of instruments as well as validity and trustworthiness of instruments used. The section also covers procedures involved in data collection and analysis.

3.1 Study Area

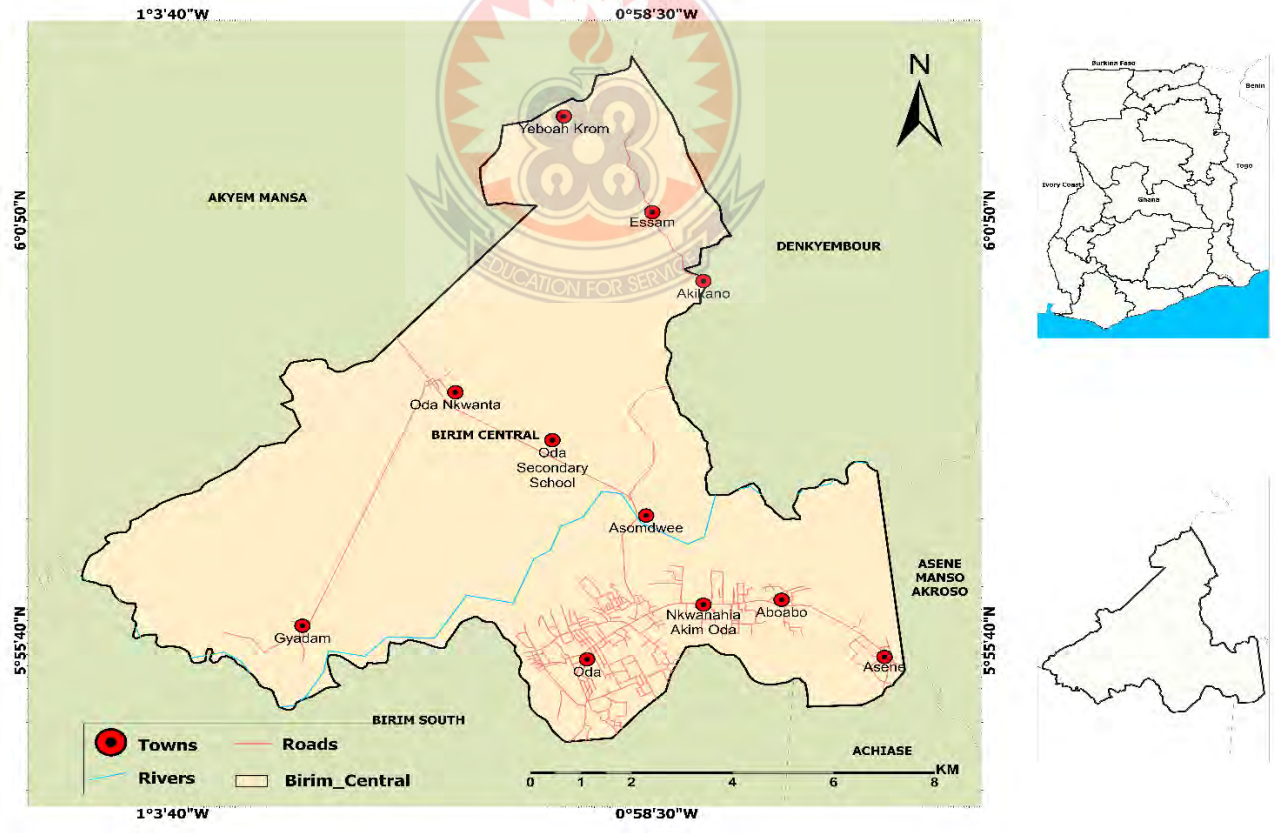


Figure: 3.1

Source: Geography Dept Resource Centre, University of Education, Winneba (2023).

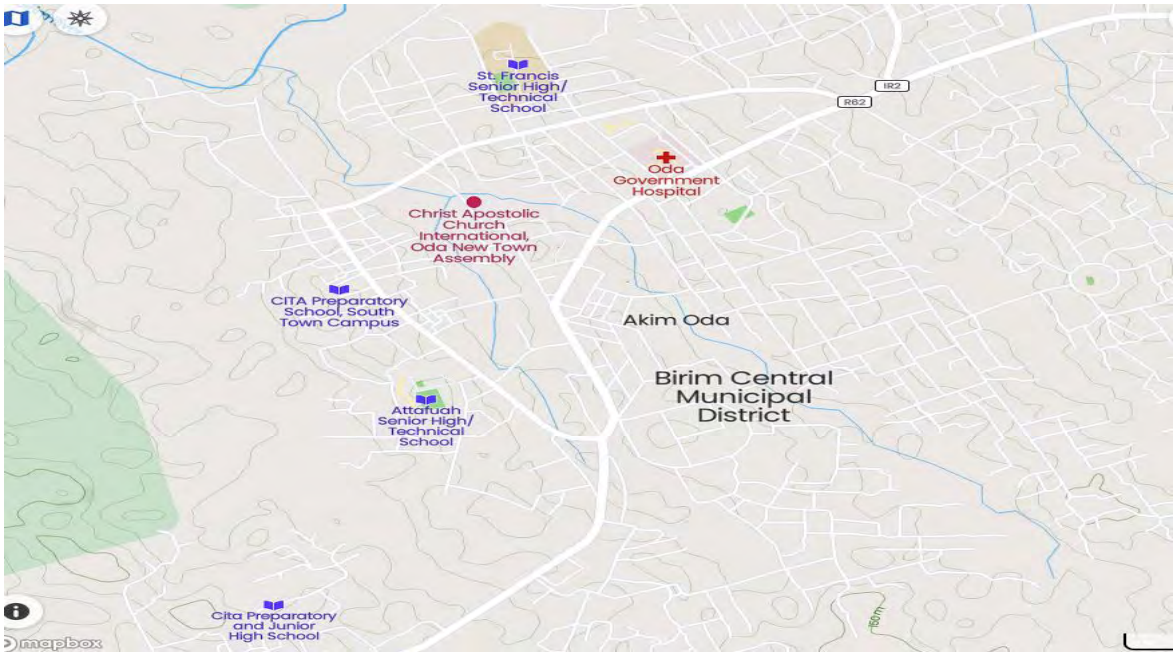


Figure: 3.2

Source: Mapbox.com

Birim Central Municipal is one of the 261 Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana and forms part of the thirty-three 33 Municipalities and Districts in the Eastern Region of Ghana. It was carved out of the former Birim South District Assembly in 2007 under Legislative Instrument (L.I) 1863. It is located in the southwestern corner of the Eastern Region and has a total land area of 122 km (BCMA, 2020). The Administrative Capital of the Municipality is Akim Oda**.** The Municipality shares boundaries with Akyemansa District and Kwaebibirem Municipal to the north, Birim South District to the west, Asikuma Odoben Brakwa and Agona East Districts to the south and West Akim Municipal to the east.

The study area is a heterogeneous society that is, it has people from different backgrounds and ethnicity. The place is dominated by the Akyems, there are significant numbers of Ewes there, Anums, Gas, Fantes and few people from northern regions of Ghana. There are also foreigners

from neighbouring countries around Ghana like Togolese, Burkinabes, Nigerians etc. in the municipality. The main occupations of the people of Birim central municipality are farming, small scale mining, petty trading, carpentry, dress making, and among others and it covers a total area of 1,090km (420 sq. ml) and has 7 urban/area/town councils. These facts indicate that Akim Oda is a central business area for the municipality,

Akim Oda has enticed a lot of people for one major reason – trade. People have also found the area conducive for certain businesses especially considering the stability of power supply in the municipality. Furthermore, the presence of reliable social amenities such as potable water, good roads and schools have lured many to settle in the area. The population hike as a result of this has dragged with it intensified sanitation problems in the municipality. Birim central has a very poorly planned city layout, consequently making it look like a shanty town with water, drainage and sanitation problems. It is as a result of this that the researcher decided to investigate the environmental sanitation attitude among the residents and to find out the nature of the problem and its effects on the livelihood of the people

3.2 Philosophical view

According to Creswell et al. (2018), the term worldview is described as "the general orientation about the world and the nature of research that a researcher holds". Lincoln and Guba (1985) also opine that the worldviews are paradigms or a basic set of beliefs that guide an action. Traditionally, interpretivism and positivism have been conducted as the main worldviews in Social Science researches (Grix, 2004). However, these two paradigms have arenas of inquiries where each deems fit. In view of this, judging from the active participation of the researcher during the research process, the interpretivism worldview was believed to suit the study.

Interpretivist holds the view point that reality is a complex and social construction of meaning, values and lived experiences (Grix 2004). Therefore, reality can be better understood through people's interactions and interpretations based on the assumptions on their capacity to make such meanings but not as in the view of the positivist, through our sensory observation and experiences of the world (Bryman, 2016).

Creswell and Poth (2018), write that researchers who aim at using discretions to give meaning to evidences should consider sticking to this worldview. In other words, interpretivist is naturally bound to qualitative studies. The interpretivist worldwide operates on the assumption that individuals seek understanding of the world in which they live and work. (Creswell, 2009). This therefore indicates that social interpretivism worldwide focuses on constructing and producing an understanding of a social world. Interpretivist worldwide holds the view point that knowledge or meaning is made by humans as they interact with their environment.

I employed the interpretivist worldwide for the study owing to the fact that I became an active participant in the study. Again, meaningfulness of every single data gathered were subjected to my discretion. In other words, the experiences, insight, perspective and the knowledge of the researcher informed the sense-making of the data obtained. The interpretivist ideology reflected massively at the data analysis phase in that I relied on my understanding to construct meaning from participants' experiences with environmental sanitation issues.

Furthermore, looking at the data collection instruments and processes (interviews and observation) used, participants had the privilege to express their views, and the researcher likewise had the opportunity to observe reserved behaviours and attitude. This made the data gathered very deep and rich as it helped in getting detailed reasons behind the attitudes of residents towards poor environmental sanitation in the Birim central municipality.

3.3 Research Approach

The research approach was qualitative. Qualitative research approaches make use of non-numerical data obtained from first-hand observation, interviews and focus groups recordings made in natural settings, documents and artifacts (Bryman, 2012). The approach was chosen because the researcher described phenomenon observed from his perspective. This action of the researcher fits well in the maxim of the approach as Bhattacherjee (2012) rightly asserts that qualitative research approaches are heavily dependent on the researcher's analytic and integrative skills and personal knowledge of the social context where the data is collected.

Furthermore, the approach was preferred because it supported the researcher's focus on drawing meaningful conclusions regarding the nature of environmental sanitation in the area. This move is supported by Esch et al. (2013) who maintain that in qualitative approach, rather than explaining or predicting, sense-making must be the emphasis in order to understand the experience. They further contend that for researchers using qualitative research approach, it is imperative to have a creative, ethical, investigative and participant-in-context attitude.

Another rationale behind the adoption of the approach laid within its tendency to study an occurrence within the environment in which it naturally occurs and supported by social meaning from the individuals who were subjected to the occurrence (Esch, et al., 2013). Denzin and Lincoln (1994) see qualitative research to be a multi-method type of research that uses an interpretive and realistic approach towards its subject matter as well as an emphasis on the qualities of entities (i.e., processes and meanings occurring naturally) (Denzin and Lincoln,1994). The approach was necessary to be adopted for the study because of the researcher's quest to use multiple and diverse inquiry avenues to understand environmental sanitation controversies across sections of respondents in the Birim Central Municipality.

It is used to understand how people experience the world. Esch et al. (2013) supports this by arguing that emphasising situational details that have occurred over time allows qualitative research to describe processes because such work is highly descriptive through recounting what was said: to whom, how, when and why.

While there are many approaches to qualitative research, they tend to be flexible and focus on retaining rich meaning when interpreting data (Bhandari, 2020). The researcher resorted only to qualitative data collection tools particularly in-depth interviews (IDIs) guide and close participant observation (CPOG) guide to find out the current state of environment sanitation pertaining to residents in the Birim Central Municipality. These tools were used to collect both secondary and primary data and were subjected to non-numeric analyses.

3.4 Research Design

Research design can be described as the overall plan, strategy or the blueprint that specifies the way in which a study will or should be conducted (Bryman, 2016). It basically shows how, when and where data are to be collected and analysed. A research design spells out the approach for answering research questions or testing research hypotheses taking into account as well factors that may interfere with the validity of the findings. Since the focus of the study was to describe the phenomena as accurately and systematically as possible as they naturally exist, adopting descriptive research design typology for the study became crucial. Descriptive research has the tendency to provide answers to what, where, when and how questions (Creswell et al., 2018).

Furthermore, the researcher's attempt to investigate environmental sanitation challenges into detail for the purpose of comprehensively understanding the underlying factors responsible and

to ascertain the way forward demanded that a case study design from the pool of descriptive research designs be considered for the study. A descriptive case study is a comprehensive analysis of a single or multiple event, settings, programs, groups, or one or more individuals (Sekaran, 2003). It is conducted to find out 'how' and 'why' the complexities of real-life affect decision making. The purpose of case study is to delve deeply and to examine fully complicated events that constitute life of the unit with the aim of drawing conclusions on the larger population in which the unit forms part of (The Commonwealth Diploma in Youth Development, 2007). The unit may be a person, a family, a social group, a social institution, even a community or a nation (Sekaran, 2003). Moreover, since case study design is ideal for preliminary studies, it was hoped that adopting it for this study would throw more light on issues such as those bothering environmental sanitation among residents in the Birim Central Municipality which have for so long a time been ignored.

Even though descriptive case study may be applicable in many situations, Baxter and Jack (2008) however suggest that researchers must work within the six main types of case study designs: explanatory, descriptive, multiple-case studies, intrinsic, instrumental and collective, if only they wish to use the design for their study. Since the interest of the researcher was not only about a definite phenomenon or a single case but rather several related issues, it was necessary that the descriptive case study design which would deal with an in-depth investigation of more than one case be chosen. The sole intention was to comprehensively study the concept of "the how and why" of a phenomenon. This implies that the focus was not only about trying to describe the complex attitudinal pattern of the social unit but also to explain the reasons beneath those complex attitudinal patterns of the social unit.

In effect, the design allowed the researcher to investigate and understand the present environmental sanitation attitudes among residents of Birim Central Municipality. Ideally, this approach was chosen due to its ability to provide a systematic way of examining events, collecting data or gathering in-depth information, analysing information, reporting results and drawing a logical conclusion. Another premise identified for selecting this design lies in its ability to narrow down a very broad field of research into one easily researchable topic.

3.5 Population

A research population is generally a large collection of individuals or objects that are the main focus of a scientific query. Population is used as a concept to identify the sum total of phenomena which are of interest to the researcher. The population of the Municipality according to 2021 population and housing census stands at 76,302 with 36,474 (47.8%) males and 39,828 (52.2%) females (GSS, 2021). This implies that the study setting is largely dominated by females. With regard to household statistics, the municipality has a household population of 71,379.

The target population for the study consisted of all residents living in the Birim North District, Birim South District and Birim Central Municipality. The accessible population however comprised all residents of Birim Central Municipality. The researcher chose the population from the Birim Central Municipality because the phenomenon is a problem prevalent in the municipality. Therefore, restricting the study to any relatively urban setting in the country such as the study setting chosen was laudable hence the selection of the Birim Central Municipality.

3.6 Sample and Sampling Technique

To Polit and Beck (2017), a sample is a proportion of a population. The sample was chosen from the Birim Central Municipality in the Eastern region of Ghana. Non-probability sampling procedures were employed in arriving at the sample size. They are sampling techniques where study subjects' chances of being part of a study is relatively unknown. The study made use of two sampling techniques namely convenience and the purposive sampling techniques. Considering the prevalence of environmental sanitation related issues in the Birim enclave (North, South and Central), it was appropriate to conveniently sample one of these areas. Hence, the use of convenient technique in selecting Birim Central Municipality.

This sampling technique was employed on the basic geographical proximity and resident availability. Again, the technique proved to be time efficient considering the closeness of respondents to the study setting. Therefore, the risk of moving all out to search for study subjects (residents) was minimized. According to Dornyei (2007) convenience sampling technique is a type of non-probability where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity and availability at a given time are included for the purpose of the study.

Purposive sampling technique was used in choosing the sample for the study. Afterwards, the sample was stratified based on some shared characteristics such as location and profession. At this very sampling phase, it was found out that no additional information could be ascertained if the established groups or strata were to make room for additional members hence a saturation point was reached. Consequently, the saturation point offered the researcher with twenty-two (22) eligible participants from a total of forty (40) who were interviewed and observed. These

participants were selected because they demonstrated immense experience and knowledge with respect to sanitation issues in the study setting by virtue of their long stay in the area.

The following were composition of the various strata: occupational status (teachers, health workers, officials, traders, and students); geographical location (planned areas, unplanned areas and slums) and educational status (educated and uneducated). The sample size for each stratum was not proportional. Whiles four participants each were drawn from the health and traders' categories, the remaining groups had two participants each representing in the total sample size (22 participants) drawn from all the strata. The focus was necessarily not about representativeness but to identify whether different perspectives would emerge.

Purposive sampling is a type of sampling technique where the researcher ensures that certain cases varying on pre-selected parameters are included (Sandelowski, 2000). The technique was therefore employed because it offers an opportunity to draw responses from groups that may differ in many regards in terms of characteristics. Although this kind of sampling is from a probability sampling standpoint, statistically non-representative (Trost, 1986), it is from a purposeful sampling standpoint, informationally representative.

Again, the focus of the study made this technique ideal in the selection of respondents since the representativeness of evidential value was paramount to the representativeness of respondents chosen. Again, the technique was used because there was an urgent need to amass as many comprehensive evidence and information as possible from members of the strata. That is, residents and officials in the Birim Central Municipality in relation to environmental and sanitation bound issues.

According to Sandelowski (2000), in purposive stratification, researchers want to fill each sampling cell with 1-2 cases that exemplify the kinds and degree of variation they surmise are

relevant to understanding a target phenomenon, such as sanitation. This kind of sampling typically involves empirical, as opposed to theoretical, cases that represent combinations of demographic (e.g., age, sex, income, and education) and other low-inference variables. Considering the researcher's focus to explore respondents' responses on environmental sanitation issues in Birim Central Municipality based on their unique characteristics such as geographical location, educational level and occupational status, it became prudent to favour this sampling technique in determining the sample for the study. The table on the next page shows the population sampled for the study

Table 1: Sample size distribution

Category	Sex	Office	Educ. Status	Age	Location	Interview time
Sanitation officer 1	Male	BCMA	Degree	59	Quarter's Top	45 minutes
Sanitation officer 2	Male	BCMA	Degree	59	Aboabo	50 minutes
EPA officer 1	Male	EPA	Degree	46	Bungalow	35 minutes
EPA officer 2	Male	EPA	Masters	54	St. Francis	40 minutes
Health worker 1	Female	Health Directorate	Degree	35	Car Price	30 minutes
Health worker 2	Male	Health Directorate	Diploma	37	Joduro	28 minutes
Health worker 3	Male	Gov't Hospital	Certificate	26	South Town	36 minutes
Health worker 4	Female	Gov't Hospital	Diploma	24	New Town	44 minutes
Trader 1	Female	Central Market	Middle School	51	Jamaica	63 minutes
Trader 2	Male	Central Market	JHS/BECE	38	Gyaemaenka	21 minutes
Trader 3	Male	Lorry Station	SHS/WASSCE	29	Community 6	42 minutes
Trader 4	Female	Central Market	JHS/BECE	23	Old Town	19 minutes
Teacher 1	Male	College of Educ.	Masters	42	Quarter's Top	33 minutes
Teacher 2	Female	SHS	Degree	48	Community 6	49 minutes
Student 1	Male	College of Educ.	SHS/WASSCE	21	Roman Down	20 minutes
Student 2	Female	SHS	JHS/BECE	17	Amantra	27 minutes
Driver 1	Male	Lorry Station	SHS	31	Telecom	43 minutes
Driver 2	Male	New Station	SHS	40	Medi-Lab	55 minutes
Assemblyman 1	Male	Municipality	Masters	43	Aboabo	37 minutes
Assemblyman 2	Male	Municipality	Middle School	45	Old Town	33 minutes
Zoomlion 1	Male	Municipality	Middle School	32	Oda Camp	36 Minutes
Zoomlion 2	Female	Municipality	O level	40	Oda Zongo	45 Minutes
N = 22 participants						

Source: Field data (2022)

3.7 Data Sources

Secondary data involved the collection of data from existing literature such as books, journals, newspapers, scholarly articles and websites on environmental issues. Primary data dealt with first-hand information obtained directly from the purposively and conveniently selected participants. This included interviews and field observations. The study used diverse methods to obtain relevant information to provide answers to questions asked and assisted in drawing suitable conclusion after the data had been analysed.

3.8 Data Collection Procedure

The researcher secured an introductory letter from the University of Education, Winneba through the Department of Social Studies to seek permission from the Birim Central Municipal Assembly to conduct the study in the area. Having copied the Assembly a letter, they in response, issued a letter granting permission for the research to be carried out. As a sign of dedication on the part of assembly towards the study, the researcher was taken round the offices that would be involved in the study and was introduced to the various environmental officers.

A sketch map of the study area and a compiled contact list of the officers especially the Municipal Environmental Officer, Environmental Protection Agency officer, Zoom Lion Officer and Environmental and Health Inspectorate Unit Officer and assembly representatives of some electoral areas were further obtained from the Municipal Assembly. These documents were released not only as a result of the introductory letter alone but also through the friendly rapport that was established between the researcher and the members of the Assembly. Again, the residency status of the researcher turned out to be an added advantage in accessing the contacts of some environmental officers in the municipal assembly.

A time of convenience was scheduled for the study to kick start. On the appointed date, the researcher placed phone calls and text messages to all the officers of the assembly whom he had informed about the study. This was to find out their availability so that an appropriate time could be booked for interview sessions with them. Also, with the help of an assembly representative (assemblyman), contacts of residents who have lived in the municipality and are privy to the nature of environmental sanitation for a relatively long period of time were obtained. These residents were contacted on phone and were informed about the study likewise its purpose to find out their willingness to partake in it. Those who agreed to participate were given unique identifications.

An appointment for interview was eventually booked with all the respondents after calls were placed to them to ascertain their availability and willingness as far as the study was concerned. Regarding residents however, the mode of engagement was left to their discretion in which some opted to have on-phone interview whereas others preferred to have a face-to-face interaction. The assembly member led the researcher and his team to the residences of those who agreed to have personal interaction with the researcher whiles those who preferred on-phone interaction were pre-informed by the assembly member about the impeding discussion.

Although the researcher preferred that all officials went through an in-person interactive session with him and his team, a section was of them were nevertheless of the view that on-phone interview precisely a virtual engagement would be more appropriate for them for the sake of records keeping. The officials were thus subjected to two distinct interview modes; a face-to-face interview and a digital (virtual) interview session.

Participants who opted for online encounter were contacted via Whatsapp and Zoom. That is, zoom meetings were arranged with them as well as series of Whatsapp video conference calls. Irrespective of the interview approach, all the respondents were subjected to respective scheduled

and in-depth interview sessions with the assistance of the interview guide for that matter. The focus of the interview was to solicit their views on the nature of environmental sanitation in the Birim Central Municipality. The questions and discussions in the interview sought to identify the determinants of poor environmental sanitation as well as the impact of good and poor environmental sanitation practices. Again, information about how respondents viewed their role in poor environmental sanitation was gathered.

Visits were made to some demarcated areas in the study setting during the observation exercise. These included various refuse sites, households and neighbourhoods in the Birim Central Municipality. The aim was to observe as carefully as possible the present status of environmental sanitation in the area. An observation checklist was used to guide the exercise where the researcher ticked against the observed phenomena (See Appendix C). The researcher and his team split themselves into four groups to carry this activity. The activity varied in many regards depending on the context. At some point, it became necessary that direct observation be made whereas it was needful that hidden, indirect and active ones be performed in certain situations. With smartphones, audio-visual images were taken in the course of the exercise.

Pictures of sites were taken, videos of environmental and sanitation behaviours and attitudes were also recorded. The Kobo Collect and Google Map apps were used to pick coordinates of the sites observed in the study setting for subsequent follow-ups. The observation checklist and the interview guide moved along and were all driven by the objectives of the study. The two sets of' instruments were personally administered to all categories of respondents; residents and officers. Ideally, the checklist was used to obtain evidence from the demarcated sites regarding determinants of poor environmental sanitation, residents' attitudes vis-à-vis environmental sanitation and impact of poor environmental sanitation in Birim Central Municipality.

3.9 Ethical Issues

Ethical considerations are very crucial when one is undertaking a study involving human beings (Goddard & Melville, 2001). It is vital for the researcher to come out with a study which also demonstrates principles of integrity, respect for study participants as well as information given. The researcher believes that research contributes greatly to existing scientific knowledge and that human and technological developments are embedded in this sort of knowledge. It is acknowledged that social research particularly in the area of social sciences ought to be promisingly impactful on behaviour and attitudes of people vis-à-vis environment and sanitation.

Firstly, the issue of researcher's biasness during the interview sessions was as much as possible eliminated. The researcher remained neutral in the process and never showed strong emotional reaction to their responses during the interview sessions. Again, the researcher never portrayed actions that showed being passionate and sentimental during the interview process.

Secondly, the right to privacy, voluntary participation, no harm to participants, right to pull out, data protection, feedback, power dynamics (mitigation), researcher responsibility to protect the identity (anonymity) and confidentiality were held in high esteem.

Additionally, permission was sought from participants to audiotape them. The recordings were played back for them to listen. This was done before the end of every interview session. Participants were therefore assured that the information they provided would be kept confidential.

In dealing with ethical problems in research (Cohen et al., 2007) cited in Sandelowski (2000), write that researchers must establish clearly the purpose of the research to the respondents. The researcher must as well inform respondents of dangers if any, ensuring that they are in the position of making their own decisions, if not, have someone consent to their participation. Respondents must also be given the mandate to decide whether or not they wish to be part of the study (Cohen

et al., 2007). In tackling the above concerns and suggestions raised, the researcher embarked on the following in order to deal with any ethical concerns that may have risen:

3.10 Permission

An introductory letter was obtained from the Department of Social Studies of the University of Education, Winneba. This was sent to the Birim Central Municipal Education Office to aid the researcher seek permission and approval from the Assembly to carry out the study. The permission letter was intended to implore the Assembly to provide access to the researcher to conduct interviews with residents and observation across some major areas in the Municipal capital.

A letter of approval was issued by the Assembly which was then attached to the introductory letter to ease the process of seeking further permission from respondents. In each place where potential respondents were identified, the two letters were shown, explanations were given regarding the purpose of the study and the need for the identified subjects to take part in it. Those who agreed to partake in the study after the debriefing were given consent forms to fill.

3.11 Instrument

Three primary data collection instruments were employed for the study; semi-structured interview guide (SSIG) and Observation guide (OG).

3.11.1 Semi-Structured Interview Guide (SSIG)

An interview can basically be described as a process or situation which is characterized by a face-to-face interaction between individuals where one makes a conscious effort to solicit information from the other through verbal questioning. The researcher used SSIG to gather data from respondents because of its flexibility. A semi-structured interview session is one in which the interviewer does not follow any formalized list of questions (Goddard & Melville, 2001) Instead, more open-ended questions are asked, allowing for a discussion with the interviewee rather than a

straightforward question and answer format. Since residents did not have the same educational background, the instrument was ideal in this circumstance because it tended to give the participants (residents) the opportunity to express their views freely on the phenomenon being studied irrespective of their literacy level.

The SSIG was adopted as a solitary instrument to obtain data on all the research questions. It was designed to have four sections; the first section (Section A) had items capturing determinants of poor environment, the second (Section B) focused on people's attitudes and behaviours towards environmental sanitation, the third (Section C) aimed at exploring environmental sanitation intervention gaps and the final section (Section D) posed questions on the impact of poor sanitation.

The focus was to identify the determinants of poor environmental sanitation, evaluate residents' attitudes vis-à-vis environmental sanitation and investigate the impact of poor environmental sanitation on residents and explore the gaps in environmental sanitation interventions in the Birim Central Municipality. The interview guide development was influenced by Shared Sanitation Interview Guide. The interview conducted was in-depth and unstructured in nature in that respondents were neither confined to any set of responses nor were they restricted on what to say, (See Appendix C for SSIG).

Insofar as the instrument served the purpose of this study did not mean its altruistic nature could not be questioned as Adhabi & Anozie (2017) argued. Practically, the SSIG suffered large population reachability. It also proved to be time consuming during its administration. The requisite skill needed to execute such an event could also not be ignored. This means that several attributes were expected of the researcher (interviewer) in the course of the interview sessions with

the respondents. However, in effect, the shortcomings of the instrument had minimal impact on the study because it was only purported to help the researcher conduct an in-depth exploration of the phenomenon being studied regardless of the time involved in its administration. Again, since respondents were purposively selected, that is, those who demonstrated exceptional experiences about environmental sanitation issues in the study setting, it was not necessarily needful to consider bringing aboard more recruits for the study. The researcher also exhibited high level of interviewing skills such as good listening skills, sensitivity, gentility, openness, clarity among others in the process of the interview. Therefore, credibility of the study cannot be impeached based on this instrument.

3.11.2 Observation Guide (OG)

Observation primarily deals with employing vision or sight to gather relevant information to explain the nature, occurrence or trend of a phenomenon. Generally, observation activities may take different forms depending on the degree of involvement of the investigator Crossman (2019). The researcher's attempt to understand the present status of environmental sanitation in the municipality called for the adoption and utilization of observation guide as a tool in the data collection process.

Observation is when a researcher actually becomes part of the group, they are studying in order to collect data and understand a social problem (Crossman, 2019). Observation guide integrates multiple observational techniques to obtain data from respondents and their natural settings as well. Thus, the modes of observation employed during the data gathering process were largely natural, hidden, active and direct.

An observation checklist was developed to guide the execution of the observation exercise. Without checklists, field observational activities become highly impractical. Observation provided primary data that fit carefully into the checklist that the researcher had designed. The rationale behind the consideration of this instrument as far as the study was concerned laid in its strengths. This includes the depth of knowledge that it allows the researcher to obtain and the perspective of knowledge of social problems and phenomena generated from the level of the everyday lives of those experiencing them. In view of Crossman (2019), many consider this as an egalitarian research method because it centers the experiences, perspectives and knowledge of those studied. Although the instrument proved significantly effective as far as the purpose of the study was concerned, the challenges inherent in it could not be overlooked. During its administration, it appeared quite time-consuming, and issues regarding objectivity and ethics were often raised.

However, these limitations did not influence the findings or generalizability of the study because the researcher's subjective and objective roles were critically demarcated. That is, his role as a resident of the municipality was detached from this role as an observer. The observation guide as an instrument was used exclusively to triangulate responses gathered from the interview. In other words, it was employed to corroborate information solicited on some of the stated research questions particularly on research questions one and two. Thus, observation guide as a data collection tool was used to ascertain evidence pertaining to determinants of poor environmental sanitation and residents' attitudes vis-à-vis environmental sanitation in the Birim Central Municipality.

3. 12 Trustworthiness of instrument

This aspect of the research work is very paramount as it seeks to ensure high quality, dependable and acceptable results by other researchers. In ensuring trustworthiness of the instruments, experts,

supervisors, environmental health and sanitation officers, colleagues and residents were consulted for suggestions, before they were carried out as proposed by Anderson (2008).

The interview and observation guide used for the pilot study offered the researcher a considerable chance to alter and reshape some of the items where possible. The researcher realized that residents' responses to some of the interview questions were reflecting in many of their attitudes and behaviours as a result of their diverse orientations and standpoints in environmental sanitation issues. The piloted interview and observation guide helped the researcher to check for the validity, reliability and trustworthiness of the items in the research instruments.

Multiple data collection procedures were employed to ensure that data gathered were appropriate. Both observation checklist and semi-structured interview guide were used to elicit responses from the participants. This ensured that responses were not one-sided. Moreover, the study adopted data and theoretical triangulation to ascertain the credibility and confirmability of the data obtained. Again, the patterns that were identified from the emerging themes after coding also showed that the study was not in any way influenced by the researcher's own biases or attitudes. Last but more importantly, participants' views on environmental sanitation only were gathered and analysed. Therefore, the tendency that similar responses or findings may suffice in a similar study is possible.

3.13 Data Analysis

The research sought to investigate environmental sanitation in Akim Oda in the Birim Central Municipality in the Eastern region of Ghana. Generally, data were analysed using three distinct qualitative data analysis tools namely table with description, triangulation and themes. The analysis initially commenced with the gathering of all responses and observed behaviours. That

is, responses obtained were scrutinized whilst particular set of behaviours were closely observed and recorded. Recordings from interviews were played back and carefully listened to severally, and afterwards transcribed. Images and videos taken went through forensic screenings to ensure their compatibility with the themes created. There were also verbatim representations of respondents' views which the researcher carefully and patiently took notes of.

At the data entry phase, the researcher personally did all data entries in Quirkos, a qualitative analysis software. In order to avoid any form of data contamination, the researcher cleaned every data before starting any analysis. This enabled the researcher to avoid any form of error that could have shown as a result of coding, recording, missing information, influential cases or outliers. Codes were generated for respondents together with their responses as well as the behaviours observed. These data were initially subjected to open coding after which they were transformed or transported into categories then to axial coding.

The final phase of the coding process landed on selective coding where there was a search for a cohesive theme that could be used to answer the research questions. Open coding involves techniques to describe and conceptualise the data at a very basic level. It is basically like breaking down the data into smallest components so that they can later be brought back together in a greater conceptual level in axial coding (Turner, 2020). Axial coding on the other hand is where connections between the open codes are examined and used to create larger codes or eventually themes (in the selective coding step).

3.14 Data triangulation

Triangulation simply implies employing multiple techniques to obtain information on the same topic. This is basically a way of ensuring the validity of research via the execution of different approaches to gather data on the same topic, which involve different types of samples as well as methods of data collection (Gibbs, 2007). He argues that, primarily, triangulation is not meant to endorse and cross-validate data gathered but rather to describe other aspects of the same phenomenon.

In order to find out whether respondents shared similar experiences in relation to causes of poor environmental sanitation and people's attitude towards environmental sanitation in different situations, the researcher used data triangulation. Responses given in the interviews pertaining to the causes of poor environmental sanitation were authenticated with the observations made on the same phenomenon. This was performed to find out whether participants' views were in line with the observations made.

3.15 Limitations of the Study

The views of residents and officials might have some elements of bias since the findings of the study are based on respondents' opinions. Reliability of the results of analysis may not be completely correct as a result of this. The interview session also presented its own kind of challenge as most people were not interested in sharing their view freely with the researcher.

Considering the dire and inevitable role technology played in the data collection phase, technical hitches were eminent. There were instances where interviews recorded and other obtained voice notes were not responding at the time of data retrieval. Therefore, the belief that some data might have gone missing stand a greater chance of affecting the authenticity of the findings.

A Summary of Data Collection Methods and Strategies

Objective answered	No. of participants	Informant/Data source	Data generated	Instruments / Procedures
Determinants of poor environmental sanitation	**22**	EPA officers, EHS officers (BCMA), Assemblymen, traders, drivers, students, teachers, health workers and Zoom Lion Co. workers	General views on the causes/contributors of poor environmental sanitation in the municipality. I observed how attitudes of residents played crucial role in environmental sanitation matters.	Semi-structured interview guide (In-person/face-to-face and on phone interview sessions) Observation checklist (direct and natural observation)
Attitudes of residents towards environmental sanitation	**16**	Traders, drivers, teachers, EHS officers, EPA officers, and Assemblymen	Opinions in relation to people's natural response to the environment and sanitation issues. I observed environmental sanitation practices of people at certain designated areas such as the market, lorry stations, and across some selected high streets.	Semi-structured interview guide (In-person/face-to-face and on phone interview sessions)
Effectiveness of environmental sanitation interventions	**10**	EHS officers, EPA officers, Assemblymen and health workers	Information on measures put in place by residents and the Assembly to addressing environmental sanitation problems. (interventions). I observed the way the Assembly addressed sanitation controversies with its logistics and other means such as public education.	Semi-structured interview guide (In-person/face-to-face and on phone interview sessions) Observation checklist (direct and natural observation)
Effects of poor environmental sanitation on residents.	**22**	EPA officers, EHS officers (BCMA), Assemblymen, traders, drivers, students, teachers, health workers and Zoom Lion Co. workers	The adverse impact of poor environmental sanitation was explored. Views on how poor sanitation practices affect the livelihood of individuals in the municipality.	Semi-structured interview guide (In-person/face-to-face and on phone interview sessions)

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Overview

This chapter presents the data gathered for the study as well as discussions of findings. Data obtained were thematically analysed.

Research Questions

1. What are the determinants of poor environmental sanitation in the Birim Central Municipality?
2. What attitudes do residents have towards environmental sanitation in the Birim Central Municipality?
3. How effective are poor environmental sanitation interventions in the Birim Central Municipality?
4. What effects does poor environmental sanitation leave on/with residents in the Birim Central Municipality?

4.1 Determinants of Poor Environmental Sanitation

In addressing this question, I explored participants' views on the question. The views sought include those of Environmental sanitation officers, Environmental Protection Agency officials, health workers (Health Directorate officers and nurses), traders (food vendors, market men/women and shop owners), students, teachers and Assemblymen.

From the analysis of participants' views, six different factors emerged as determinants of poor environmental sanitation in the Birim Central Municipality. The factors are discussed under the following sub-themes:

4.1.2 Education, training and sensitization

Participants revealed that education, training and sensitization play an important role in addressing environmental sanitation controversies. They believe when residents in the Birim Central Municipality receive orientation on environmental matters and manners, it will invariably inform their mindsets towards the phenomenon. This will not only affect their sense of reasoning but it will also help shape their actions and inactions towards sanitation practices in the local communities bearing in mind the factors that add to the environmental woes in many communities in the municipality. Since an informed behaviour is a reflection of a trained or an informed mind, the participants believe individuals who go through environmental sanitation orientations are less likely to engage in behaviours and practices that are not environmentally worthwhile.

It was realised from all participants' views that lack of education, training and sensitization of residents contribute to poor environmental sanitation challenges in the municipality. The responses suggest that when the assembly and other managers of the environment such as sanitation officers, the EPA, among others do not orient residents in environmental sanitation matters, irresponsible environmental sanitation attitudes will continue to lurk around. A nurse from the Health Directorate had this to say:

> R6: "*Inadequate education and sensitization given to people concerning sanitation and the environment contribute to the poor sanitation practices we come across each day. For example, eehmm…assuming, I do not know the outcome of something, I may not take it seriously but will engage in that thing afterwards. But, you see, when I am given the right education on what I have to do, and do not have to do, it is easy for me to know what is on my right and left and act accordingly. That is what is happening around! Some people do not know that whatever they do to the places they live will definitely affect them or others. So, I cannot rule out the fact that poor education accounts for the many filths we see around us today."* (Health worker [a nurse] 2).

A sanitation officer from the assembly is a resident of Akim Oda Quarter Top also added that:

> R1: *"I think one of the challenges is the population increase and two is the education and sensitization. It is important that we educate and sensitize residents on environmentally appropriate behaviours and practices. Without these, the environment will always be filthy and sanitation will not be the best or kind we all aspire to see or have.* "(Sanitation Officer 1, Assembly).

Two students were of similar view that the type of training individuals go through in their respective homes also contribute to poor environmental sanitation and other sanitation related practices in the municipality. This is what they had to say:

> R14: *"Let me say this, everybody has the way he or she has been brought up at home. May be, some are not well tuitioned on sanitation issues. So, when they come here, they assume that they are still home and do whatever they like to our surroundings."* (Student 2).
>
> R13: *"Some litter around the school compound intentionally whiles others unknowingly do same expecting their 'maids or servants' to take care of the filth they create as they do at home. So basically, I can say that 'home training' plays on important role in sanitation issues."* (Student 1).

From the responses gathered, it appears that education, training and sensitization play a major role in the determination of poor environmental sanitation in the Birim Central municipality. It can therefore be deduced that lack of education, training and sensitization of residents contribute to poor environmental sanitation in the Birim Central Municipality. These findings align with Adukia (2017) who maintain informal education matters greatly, and that there is a tendency that higher levels of education might lead to a higher preference for environmental protection.

4.1.3 Attitude and behaviour

Attitude can be perceived as a feeling, beliefs or opinion of approval or disapproval towards something. Behaviour on the other hand is an action or inaction that occurs in response to an event or internal stimuli (taught). Behaviours usually but not always reflect established beliefs and

attitudes. Ideally, positive attitudes manifest well-adjusted behaviours. However, in some cases, healthy attitudes may result in harmful behaviours.

In relation to this study, attitudes and behaviour should not be ruled out from the causes of poor environmental sanitation according to participants. Participants were of the opinion that individuals' attitude and behaviour influence their actions in their respective surroundings, and that if nothing is done to control the negatives ones, they will remain problematic as far as environmental sanitation is concerned. On this, an officer from the Environmental Protection Agency who resides at St Francis said that a change in mindset is likely to alter one's attitude and behaviour consequently affecting what they do to their surroundings. This participant said this with emphasis that:

> R4: *"I have already mentioned that the problems with sanitation is our attitudes. So, until we correct it on proper sanitation, there is nothing we can do."* (Officer 2, EPA).

A senior high school teacher who resides at Community 6 also pointed that when residents' views and thoughts about sanitation constantly conflict with the natural and social order of safe sanitation practices, nothing good can come out of our attempts to keep the environment clean and safe. According to her, the negatively conceived perceptions about sanitation among residents undoubtedly appear dangerous to the environment and sanitation practices not only in the communities in which they live but it extends as well to other neighbouring communities. Her view was captured in this regard:

> R15: *"Our attitude is one of the causes. Our attitude has not been the best at all! Students usually know what is right but pretend or are seen doing the opposite. That is what happens when it comes to sanitation in this school. We, I am saying 'we' because I am included! We knowingly litter thrash around the corners of the campus. So, I am confident that our attitudes and mindsets have a lot to do with the way we handle our environment and sanitation issues around here"* (Teacher 1).

A College of Education tutor who happens to live around Quarters' Top in the same way disclosed that many people intentionally engage in certain sanitation practices and environmental behaviours that leave the environment poor. This participant expressed his worry stating that:

> R16: *"Honestly, I will say it is their attitudes that is giving us a lot of problems. Usually, we try to keep the entire area clean but you know people…hmmm!! They will just come and spoil everything with their questionable attitudes. The behaviours and attitudes shown have not been good particularly when it comes to cleaning and tidying of the whole place"* (Teacher 2).

A commercial driver at the Oda Main Station who said he has lived at Telecom for the past 18 years could not wait to identify people's attitudes and behaviour as a crucial determinant of poor environmental sanitation. He had this experience to share:

> R21: *"Yes, behaviour is included because we have come across instances where people drink sachet water and leave the rubber behind even when there are dustbins to put those rubbers inside. For the past 18 years, I have known no other neighbourhood but Community 6. So, I know what I am talking about. People just throw rubbers and other stuffs anywhere. So, I will say that our behaviour is part of the reasons why our sanitation condition is poor"* (Driver 1).

One of the Assembly members revealed how community members' deliberate actions and inactions create sanitation problems. He revealed that if there is anything to hold accountable for as far as poor environmental sanitation is concerned, it certainly should be the mindsets and the reasoning patterns of individuals in the communities. He had this to say:

> R17: *"The individual mindset should be blamed. Some people are just clueless and irrational. No-one can tell if there is something wrong with their sense of reasoning. People just don't care about what they do. It is about time we changed our attitude, and things will be fine if only we do that"* (Assembly member 1).

The responses obtained suggest that attitudes and behaviours are crucial components of poor environmental sanitation in the Birim Central municipality. Consequently, I infer based on the findings that attitudes, behaviours and mindsets of resident's influence sanitation practices and can

as well be held accountable for poor environmental sanitation in the Birim Central Municipality. These findings align with Mohd and Malik (2017) who opine that illiteracy, ignorance, poverty and greediness are some of the major contributors of environmental problems in the society because each influences residents' behaviour and attitudes towards the way we relate to the environment. This position is reaffirmed from a more cultural perspective by Chengula, et al. (2015) and Dreibelbis et al. (2013) who maintain that cultural values can motivate individuals to exhibit environmental responsible behaviour for a sustainable hygienic society.

Similarly, the findings appear to align with Kanhai et al (2021) who report that thinking and beliefs shape attitudes, behaviours and actions towards environmental sanitation. Moreover, an exposition on the theory of change in knowledge-attitude-behaviour had (Oteng-Ababio et al. 2017) arguing that an increase in knowledge could lead to changes in attitude and subsequently influence behavior. Lastly, these findings conform to Fishbein's and Ajzen's (1975) advocacy for behavioural change theories, which establish a relationship between environmental knowledge, awareness, attitude, and how these can translate into action to improve environmental sanitation.

4.1.4 Poor enforcement of sanitation laws

Sanitation laws are the legal conventions that regulate sanitation practices and environmental behaviours of people living in a particular area. Sanitation laws adopted by the Birim Municipal Assembly include the Local Government Act 462 and By-law 2016 (ACT 936; Section 18). These laws generally highlight on ownership and disposal of solid and liquid waste, public toilet operations, unauthorized structures, bills and poster and cleaning.

Apparently, the presence, absence and intensity of such laws go a long way to influence people's actions and inaction towards sanitation. In relation to this, an officer from the health directorate, a second-hand clothes dealer and a senior high school teacher did not hesitate to downplay the role

law enforcement plays in poor environmental sanitation. These participants spoke from similar viewpoints claiming that ineffectiveness on the part of sanitation inspection officers raises myriads of questions in the minds of residents. In an interview, the health officer seemed inconsiderate drawing a link between the poor environmental sanitation and the practices of municipal sanitation inspection officers in the communities. The health officer had this to say:

> R8: "*The second one is, I cannot tell for sure if there are sanitary inspectors in this municipality or not! People are just leaving rubbish anyhow because they feel that they are not being monitored by anyone. Sellers are also not helping us at all. You know what you sell creates rubbish. So, in this case, what are you expected to do? At least find an appropriate way to get rid of the garbage you generate as a result of your selling. They turn and do whatever they want. They either leave the rubbish unattended to or only God knows what they do to these wastes. I do not know if the assembly has bye-laws or not. The assembly members are really not performing*." (Health directorate worker, 2).

A second-hand clothing dealer echoed with similar proclamations:

> R11: "*The sanitation laws are not effective! That is what I see from where I am. Maybe they do not see what I am seeing. If sanitation laws are incapable of punishing offenders, what do you expect? Rubbish everywhere! Littering everywhere! Dumping everywhere!"* (Trader 3).

A senior high school teacher also added his voice in this manner:

> R16: "*That is the issue! It is not effective. Both at home and here! It is not effective. Since we have the EPA, by all means we have the sanitation laws. We also have the sanitation officers so there is no excuse for non-existence of sanitation laws. Unfortunately, they are not implementing the laws. What signal does this give? It means people will continue to mess with our health, hygiene, safety, gutters, among others"* (Teacher 2).

The responses from the participants show that law enforcement and prompt response from sanitation inspectors influence the nature of sanitation likewise its practices among people living in the Birim Central Municipality. The findings tend to point weak law enforcement as a

contributor to poor environmental sanitation in the municipality. Based on the findings, it can be deduced that poor environmental sanitation is closely knit to ineffective and poor sanitation laws. This aligns with Mensah (2020) who posits that the major factors responsible for poor sanitary conditions in West African countries are improper management of refuse and weak enforcement of laws governing environmental sanitation practices in most residential areas.

4.1.5 Population hike

A participant from the officers' category cited that poor environmental sanitation is closely tied to population increase in a particular area. One officer from EPA pulled the 2021 Population and Housing Census report and pointed to the differences recorded for the municipality alone. He claimed justifying with the document that over a period of eleven years the municipal capital alone has recorded an additional 4,370 residents. This participant maintained that it is possible that sanitation issues will have so much to do with these numbers. He said this:

> R4*: "I believe you have seen the Population and Housing Census report for 2021. If you compare the population of Birim Central Muncipality specifically Oda alone in 2010 and today, you will realise that there has been an increase of about 1,010. So, for over just a period of eleven years we are having this number? Who knows what is next in the next 30 years? My brother, you should understand that these additional people will also add something to the environment. They certainly have some sort of sanitation practices in one way or the other. I think population increase is a factor when it comes to poor environmental sanitation in this area."* (EPA Officer 2).

A food vendor established a linkage between sanitation practices and the rate at which individuals cluster in a locality. She cited an instance where suburbs of Oda such as Old Town-Jamaica, Joduro and Bungalow have for a short period recorded a tremendous increase in resident population. She disclosed that sanitation problems in those areas used to be more manageable than they are today. The woman said this with emphasis:

> R10: *"We are now having a lot of people trooping in almost every time. New faces are coming in, and families are growing in their numbers at areas such as Joduro, Jamaica, Bungalow among others. Things were not like this before because there were not many people in this neigbourhood. But what do we or you see now? This place is not the best, and I can confidently tell you that it is as result of the many people who have come to stay here."* (Trader 2).

The responses obtained indicate that population walks hand in hand with environmental sanitation status in that a hike in population is likely to cause environmental sanitation challenges. This implies that the greater the population, the chances of sanitation problems emerging in the municipality. Based on the findings, it can be inferred that population increase contributes to poor environmental sanitation in the Birim Central Municipality. These findings confirm that rapid pace of urbanization is accompanied by increasing density and the emergence of slums or in broad terms communities largely underserved with basic infrastructure and services (Owusu, 2010).

4.1.6 Payment for waste collection

Poor environmental sanitation was again strongly identified to have a link with individuals' inability to pay for treatment of waste generated. There was a consensus between an officer from the Municipal Assembly and a market woman on waste management cost. The officer and the market woman claimed that cost involved in disposing waste is relatively expensive and should also be blamed for the massive littering in the communities in the municipality. These participants revealed that individuals who are unable to cope with the fee for waste pickups usually manoeuvre to get their wastes disposed which many a time tends not to be appropriate. The officer had this experience to share:

> R2: *"I think one of them is population increase, and two is the education. We need to educate them. Third, some of them cannot afford to pay. People lament that charges levied on waste pickups and collection are way too exorbitant. Consequently, they cunningly litter heaped thrash in bits across the corners of the streets."* (Sanitation Officer 2, Assembly).

The market woman also disclosed this emphatically:

> R9: *"Errmm…I won't lie to you, sir. Sometimes, you look at the charges for a small waste, and you realize it is too much! What do I have to do? I just find somewhere cheap or free and dump them. Honestly, I usually find my way to dispose my garbage not because there are no waste bins but it is because of what is being charged for that tiny thrash*." (Trader 1).

The ascertained responses tend to portray cost as a determinant of poor environmental sanitation among residents in the municipality. From the findings, it can be deduced that residents' inability to pay for waste collection, waste management and waste treatment results in poor environmental sanitation in the Birim Central Municipality. There is a corroboration between the obtained findings and the assertions of Mensah (2020) and Songsore (2004) who argue that the nature of environmental problems and therefore sanitation challenges in cities changes with levels of economic development. To them, these challenges include inadequate water supply, sanitation facilities, poor and overcrowded housing, smoky kitchens, insect infestations, contaminated food, piles of uncollected garbage and poor drainage.

4.1.7 Inadequate logistics for waste management

Logistics are the resources needed to handle sanitation-related issues. Their presence or absence is extremely crucial as far as environmental sanitation is concerned. Regarding this, a taxi driver, who was registered with the Oda Mobil taxi rank drivers, cited that absence of waste treatment and management facilities should be blamed for the accumulated filth in the municipality. He disclosed that areas that even have waste treatment facilities do not have them in good proportion. The facilities tend to be inadequate. This is what he said:

> R21: "*The Assembly said they do not have a dumpsite so the solid materials, toiletries or whatever waste you generate they won't come for them even if you constantly call them. The second one is I don't know whether we do have sanitary inspectors or not. People just leave rubbish anyhow. I am also sure that if we do*

> *have these inspectors, I think they are not enough, and that accounts for why there is so much mess in many households."* (Driver 1).

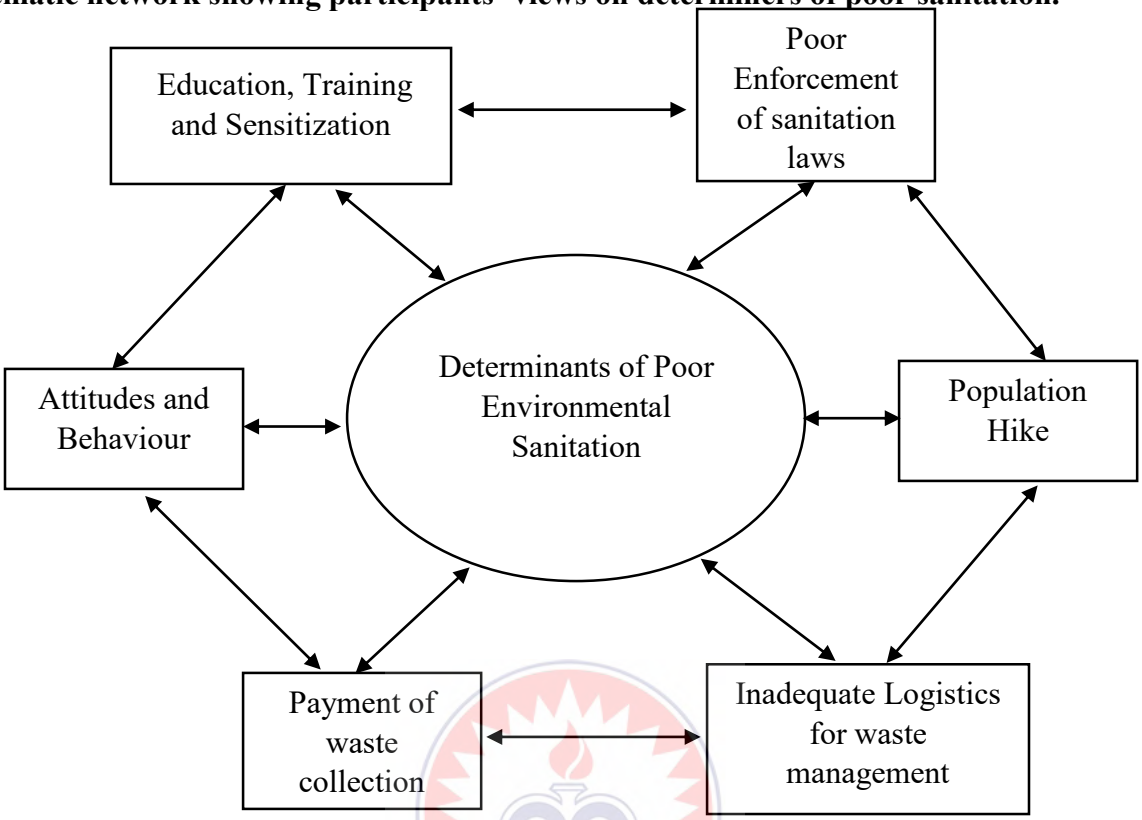
A nurse was also of the view that waste treatment and management facilities are not only inadequate but even the few appear obsolete. To her, addressing sanitation challenges in the municipality with such old-fashioned sanitation tools raised a lot of questions. She said this with emphasis:

> R6: *Big bro, I will be frank with you. Not all households in this community have dustbins. They gather their garbage in plastics and dispose them. Only God knows where they get rid of them. Besides, in as much as we want dustbins provided does not mean that we are in dire need of 'any' dustbins. I have noticed that some of the dustbins supplied by the assembly are too old likewise the big containers at the market places. Many of them are worn out. The nature of these waste collection bins does not encourage people to put up environmentally appropriate behaviours.* (Health worker [nurse] 2).

The responses obtained suggest that waste storage facilities play key a role in determining the state of sanitation in the municipality. The findings indicate that availability of waste treatment and management facilities such as dumpsites, waste collection bins and other related sanitation logistics contribute to waste generation and the manner in which all kinds of waste are handled among residents. Inference can therefore be drawn based on the findings that the absence and inadequacies of sanitation facilities contribute to poor environmental sanitation practices in the Birim Central Municipality. These findings support the position of Owusu et al., (2015) who report that lack of improved sanitation facilities account for poor sanitation in Ghanaian communities.

The views of participants can also be presented in a diagrammatic form as shown in the thematic network that follows.

Thematic network showing participants' views on determiners of poor sanitation.



Source: Author's Qualitative Conception.

Figure 4.1: Thematic network on participants' views on determinants of poor environmental sanitation in Birim Central Municipality.

4.2 Attitudes of Residents towards Environmental Sanitation in the Birim Central Municipality

The researcher interviewed participants on what their views were on the attitudes that residents have towards environmental sanitation in the municipality. From the responses gathered, three major themes emerged from the global theme for discussion. Attitudes being the global theme whereas indifferent attitudes, littering, environmental sanitation laws formed the major themes. A cross section of participants responded by raising questions or issues about some undesirable attitudes of residents towards environmental sanitation in the Birim Central Municipality.

Some participants had problems or concerns with the way and manner many of the residents did not exhibit environmentally appropriate attitudes. Attitudes mentioned included urinating at unauthorized places, littering everywhere even though most individuals are well aware of the consequences of their actions on the health of the people and the society. A fraction of participants also intimated that this has a lot to do with the kind of training individuals received from home. In analyzing the data, the researcher designed a graphically simplified thematic network to clarify the issues under discussion in the study area.

4.2.1 Littering

Littering was cited as one of the inappropriate environmental attitudes of residents in the municipality. Issues relating to littering were discussed from these perspectives: dumping, pollution, and discharging. Although participants from the various categories had much to say on littering entirely, their views were largely grouped under 'dumping', 'pollution', and 'discharging'. A nurse and a mobile phone dealer responded to questions on attitudes of residents towards environmental sanitation. They brought to the fore the issue of littering as one of the undesirable attitudes that residents in the study area engaged in. The nurse who was at work during this interaction echoed her sentiment in this regard:

> R6: *"People's behaviour these days are not anything good to write home about. Particularly, when it comes to refuse dumping, it is as if we don't know what we doing! Everybody is waiting on the slightest chance to strike. People throw rubbish everywhere, and in most cases, they do this when there are no on-lookers. Littering has become extremely rampant in this area. This is not good! It is not good at all!"* (Health worker [Nurse]).

The mobile phone dealer at his shop similarly reechoed this:

> R12: "*Sir, this area is always applauded for being the neatest and the most discipline neighbourhood when it comes to littering. People here hardly throw rubbish anywhere anyhow. Do you really think this is the case? Hell no, I strongly*

> *believe that we are second to none when it comes to littering. We are careless about things we leave behind whether or not people are around. Today, it is either trash from this shop, tomorrow, another heaped garbage left behind by sellers."* (Trader 4).

The officer from EPA was not happy about the fact that plastic rubber bags are found almost everywhere in the municipality. He expressed his displeasure over the rate at which sachet water bags were doted all over in the study area. He said this:

> R3: "*We do litter but you just will not understand some people…hmmm [sigh] after drinking the water they look left and look right if no one is around or watching then they just leave the rubber on the ground and walk away. Hmmm…it is a problem oh! And interestingly they are the same people who will come and make noise about poor sanitation. For me, I think it is because some people don't have conscience. I tell you! they know what they are doing is not right but still continue to do it. Some people say they litter because there are no dustbins in town to throw the rubbish into. Yes, they are right but there are people who will still litter if we provide dustbins. It is the attitude that is certainly bad.*" (Officer 1, EPA).

Likewise, the environmental sanitation officers from the Assembly were not enthused about how the municipality is engulfed with filth. They believe it is as a result of people's bad attitude towards sanitation because residents' litter haphazardly without taking cognizance of the repercussions on the larger society. The officers pointed out that majority of the people in the municipality have very bad attitudes when it comes to sanitation to the extent that some even throw rubbish from moving vehicles. One of the officers expressed his view in this manner:

> R2: "*When it comes to littering, look, I will blame the government. It is because the people know that nobody will do anything to them that is why this is going on. Look at where we are sitting, everywhere is dirty nobody cares, even me I don't care and no-one can do anything to me if I even throw this paper I'm holding away. But I agree it is our bad behaviors and attitudes that is causing all these problems, I am even tired oh, my brother! Eiii [surprised] Ghana! This is in fact polluting the landscope and air.*" (Officer 2, Assembly).

A driver expressed his disbelief regarding how some people littered with much impunity as if there are no laws on littering. He shared his experience as this:

> R22: "*As for me, when it comes to littering in the municipality, I think the problem is attitudinal. Some people don't even care if there are people around or not. And if you try to correct them my brother some of them will even insult you. Just yesterday I was driving from from Asamankese to Oda. There was a lady chewing boiled groundnut and throwing the husk through the window. I told her to leave the husk in the car. To my surprise, she asked me if I will sweep when we arrive. She even called a 'too knowing' driver. I don't know what we can do about it because everybody is doing it."* (Driver 2).

Participants' response to the question on littering clearly indicate that many people are involved in littering the environment. It also suggests that there are variations of attitudes shown across individuals towards environmental sanitation in the municipality. These findings confirm the report that littering the environment with polythene bags has become a habit Kuberan et at (2015).

4.2.2 Resident's pollution

One other issue that featured in the responses of participants to the question of attitudes of residents towards environmental sanitation was pollution. A food vendor, a commercial driver and an environmental sanitation officer mentioned that deliberate burning of rubbish, fumes from poorly maintained cars and uncontrolled smoke from timber factories contribute to the bad environmental sanitation practices that pollute the environment. They believe that poor environmental sanitation is an attitude-related phenomenon. They continued to stress that the factories and individuals in question are perfectly aware that their activities are inimical to a healthy environment. The food vendor who also stays at Gyaemaenka had this to say:

> R10: "*Master, I am sure you can see smoke coming from this side. At first, it was not that serious but these days we see smoke everywhere. Look! Those days you will only see smoke in the evenings, and this was necessarily not people burning rubbish but these days, Boss…what do you see or hear? Smoke everywhere regardless the time of the day. Others even say that it is too expensive to pay for waste disposal so they resort to refuse burning every morning. I tend to agree with them. The charges of Zoomlion are too high and many people cannot pay. Where I stay, any time it's my turn to sweep, I burn the rubbish after sweeping. I know it is*

> *wrong but there is nothing I can do. Seriously the kind of air we breathe these days is killing us errr… my boss. The whole atmosphere is polluted."* (Trader 2).

Also, a driver commentated that:

> R21: *The cars we see around us are killing us. They are doing us more harm than good. I am not referring to these cars killing us by knocking us down or running over us. What I mean is, they are killing us softly with the kind of smoke they emit into the air for us to breathe. Honestly, some cars should not be allowed to roam in the streets of Oda but my brother, who am I to prevent someone's vehicle from moving. Car owners and drivers hardly maintain their car, and we the innocent souls suffer the consequences! It is sad! How and why should your car emit thick dark smoke? Clearly, it is not only the cars that are sick but the drivers and the owners of the cars are equally sick. We really have a problem!* (Driver 1).

The officer reechoed similar view in this regard:

> R1: "*Please have you visited the saw mills in the municipality to see how they are polluting this area? They don't have any dumping site for their wastes. Sometimes they sell some to chop bar operators but most times they burn the left overs, and it is not easy the kind of smoke this burning generates."* (officer 2, [EPA]).

From the responses gathered, it seems pollution is an effective arm of inappropriate environmental attitude. Participants established that pollution cannot be ignored when issues of environmental sanitation is to be carefully scrutinized. It appeared that they (participants) were not comfortable with the levels of pollution in the municipality due to the actions and inactions of individuals and factories in the municipality. Many of the participants were taken aback by the fact that authorities in the Assembly had turned a blind eye on the rate of pollution in the area, and the series of agitations and petitions by residents with regard to status of pollution are still falling on deaf ears of the people in power in the municipality. Hadler and Haller (2011) confirm this by stating that, many of them, paint the picture that the Municipal Assembly are helpless and do not know what to do to salvage the situation hence the prevalence of smoke from factories, homes, and places of work.

4.2.3 Dumping of waste

The issue of how community members dump waste was cited as one of the attitudes residents have towards proper environmental sanitation. There was an expression of dissatisfaction of how the municipality lacked dumping site. The market woman and the food vendor interviewed revealed that the municipal assembly used to have demarcated sites where the assembly containers were placed for community members to dump their refuse. This position of the aforementioned participants was confirmed by the municipal sanitation officer and affirmed by the Environmental Protection Agency officer who disclosed that the municipal assembly currently has no dumping site of their own. They continued that the present dumpsite being used in the municipality is found within the catchment area of another carved out district which is outside the jurisdiction of the Municipality. According to these officers, the municipality sits on a time bomb because notices have been served to them to secure their own dumping site. They hinted that the municipality does not have any reserved site to treat or dump wastes collected from households. It was found out that residents are drawing strengths from this challenge and dumping wastes carelessly in many areas in the municipality. On the issue of dumping, this is what the market woman said:

> R9: "*The Assembly used to provide us with dustbins, and they also had a place where we always dumped our rubbish. Unfortunately, we do not see it anymore. We asked the Assembly and only to be told that our area no longer has any dumpsite for the time being."* (Trader 1).

Similarly, a food vendor explained that:

> R10: "*We used to have a garbage site. It seems we cannot find it anymore. The last time the sellers here asked the sanitation officers, they told us that our previous dumpsite is no longer owned by the Assembly. So, what I know for sure is that we do not have any place to dump our waste."* (Trader 2).

A municipal sanitation officer confirmed this by stating that:

> R2: "*Hmmm! The issue of dumping site is currently the most pressing problem the municipal assembly is trying to solve. Let me say that currently and technically, we do not have a dumping site. We are using that of Akim Asene-Manso-Akroso*

> *District. It is one of the 38 newly created districts in 2018. It was initially part of the Birim Central Municipality but after they became autonomous, they have written to us to look for a new place to dump our rubbish. Is it not interesting? The assembly at our last meeting tasked some people to look for a new place, so my brother until we discover a new place which is not going to be easy, residents also dump their rubbish anyhow. I tell you we don't have a dumping site in Birim Central Municipality. Please pray for us!"* (Sanitation officer 2, Assembly).

The Environmental Protection Agency official also expressed similar views.

> *R4: "This question is difficult to answer but I will try. I think you are seeing so much rubbish in the municipality these days because the assembly is facing some challenges with where to dump their rubbish. Let's say we are having problems with our dumping site so it is affecting our collection of refuse in the municipality. Recently, the AMA (Asene-Manso-Akroso) wrote to us to find a dumpsite to treat our wastes. This is our headache now. Interestingly, people have taken advantage of this and have been dumping refuse in drains and at places where they ought not to. This is a big attitudinal problem."* (Officer 2, [EPA]).

The positions of participants suggest that reckless dumping is another environmentally inappropriate attitude in the municipality. It came out clearly in the researcher's interactions with participants that dumping sites for both residents and the municipal assembly was a problem. The municipal assembly did not have demarcated sites for dumping of refuse in the communities. This situation has not only caused an adversity in sanitation statues but it has also bred inappropriate sanitation practices and awkward environmental behaviours and attitudes among residents in the municipality (Huddart et al, 2015).

4.2.4 Discharging of liquid waste

Waste discharging in the municipality also featured prominently in the interactions between the researcher and participants. Participants particularly officials from the Assembly, Environmental Protection Agency and the health directorate did not hide the fact that discharging of both solid and liquid waste was not satisfactorily handled in the municipality. They expressed reservations on how wastes are transported to dumping sites. A Health Directorate official claimed that

Zoomlion which is responsible for discharging waste in the municipality most of the times end up rather littering and discharging liquid wastes in the streets because they fail to cover the refuse properly.

She had this to say:

> R 7: "*...usually, you will see these smelling leakages from their containers in the streets. They won't even stop the car and come down to check what is going on. They will just leave paying no attention to what's being left behind. I don't think we are the only people going through ordeal. I'm sure others are experiencing similar thing elsewhere."* (Health directorate worker, 1).

The sanitation officers also revealed instances where sceptic tankers spill fecal matters during withdrawal, discharging and transporting. They also pointed fingers at tricycle riders who also happen to engage in waste management venture. It was mentioned that littering and spilling of waste was a behaviour they have been noted for in that they discharge liquid wastes in the streets as they make them ready for transporting. Food dealers were also cited to have been involved in this indiscriminate discharging of liquid wastes. One of the sanitation officers said this with emphasis:

> R1: "*Those 'Aboboyaa' riders have this silly attitude you simply just cannot imagine where that comes from. Apart from spilling their refuse in the streets, claiming it is accident, they sometimes unintentionally discharge some waste water in the open spaces. This is what they have been doing here."* (Sanitation officer 1, [Assembly]).

An officer from the Environmental Protection Agency was unhappy with how waste containers placed at vantage points are left to over flow causing health concerns. It was also reported that public toilets get full and spill over in some communities. This phenomenon clearly was not helpful in maintaining a healthy environmental sanitation in the municipality. The officer had this to say on the issue:

> R3: "*I have stayed in this neighbourhood for quite some time now so believe me if I should tell you what's been going on here. You see these sceptic tankers? Do you know what they can do? They will not only leave you with a smell but they can also leave some fecal matter behind for you. Anytime they come around to withdraw, be assured that you are going to have spillages in the course of the withdraw. Others have even complained that they spill some on their way to the treatment site. This is so irresponsible. You know?"* (Officer 1, [EPA]).

From the responses gathered on attitudes and behaviours of residents towards sanitation, it seems people and institutions do not only intentionally litter or pollute but they also discharge both solid and liquid wastes such as fecal matter and waste water deliberately in the streets.

The responses gathered on the three themes (dumping, pollution and discharging) suggest that individuals, groups and agencies tend to portray diverse littering behaviours and other related environmentally inappropriate attitudes through their daily activities. This indicates that littering tends to be a habit among residents in the municipality. Based on the findings, it can be inferred that littering among residents in the Birim Central Municipality has become a habit which ranges from dumping, deliberate pollution to discharging. There is corroboration between these findings and the argument put forward by Kolodko, et al, (2016) that littering is associated with high civic mindedness.

4.2.5 Indifferent attitudes

Indifferent attitudes of community members were mentioned by officials from the Zoomlion Company and the Health Directorate as one of the environmentally inappropriate attitudes which is usually exhibited anytime sanitation controversies are brought aboard for redress. The officials and a secondary school teacher expressed worry at the rate at which people do not pay attention environmental sanitation issues. The teacher revealed that the level of carelessness shown among students towards environmental issues and sanitation conditions is seriously appalling.

A nurse and a sanitation official could not hide their displeasure about how people's attitudes were influencing environmental sanitation in the municipality. Regarding this theme, views expressed were fundamentally located within these two sub-themes; residents' attitude on waste management and waste managers' attitude on waste management.

4.2.6 Residents' attitudes on waste management

On waste generation and control in the municipality, it was found out that residents' attitude and behaviour have not been the best. Officers from the Zoomlion mentioned that people living in Birim Central Municipality communities do not often get bothered about what transpires within their immediate surroundings. The officials shared experiences where they touched on series of events where people tended to show more care for their own abodes than the very neighbourhoods that harbor them. These are sample expressions of the Zoomlion officers:

> R19: "*My brother, it is sad oh! People only think cleanliness is all about sweeping your room and scrubbing the floors of your corridors. If you are a neat and decent person, you do not assume that it is a matter of taking care of your own house. Let outsiders also know that you are clean. How can you keep your house clean but leave your 'area' to swim in filth? It clearly shows that your neatness is a selective one!"* (Officer 1, [Zoomlion]).

Another officer also gave this revelation:

> R20: "*You know something? People believe that community cleaning is the sole duty of the assembly. So, they simply just won't get involved. Cleanliness and good sanitation maintenance is a collective agenda but interestingly, what do you see? People just don't care! They stay in the comforts of their homes, and expect the assembly to sweep the streets leading to their very homes for them. This is serious! Do you know that some house will sweep, heap the refuse and wait for Zoomlion or whoever they have employed to come for them?"* (Officer 2, [Zoomlion]).

A secondary school teacher in the same way claimed that some residents carelessly treat wastes generated at home outside whiles members of the community watch unconcerned. He said this with a stress:

> R15: "*Nobody seems to care. People do not really matter to people these days much less rubbish. You see people coming out of their homes with garbage and dumping them in the open space. No-one talks about it. Mr., this should tell you what actually is happening when it comes safe handling of trash."* (Teacher 1).

Pertaining to residents' attitudes towards waste management and treatment, a nurse also hastily allotted the blame to the very people living in the area. She claimed that the people hardly intervene when they see people easing themselves or dropping plastics in the communities. She had this experience to share:

> R6: "*Just take a look around this area. What do you see? Rubbish, right? We all do not say anything when people make sudden stops to urinate behind people houses and in the open gutters. There are instances where we cannot even gather the courage to tell people to pick up their own litter. I tried this sometime ago but it did not work. I received the worst cheek of my life for trying to get someone do the right thing."* (Health worker 2, [nurse]).

The responses gathered indicate that residents have unwelcome attitudes towards sanitation in the municipality. Being it waste generation, treatment or control, the findings seem to point that members of communities in the municipality do not pay attention to what others do in the various vicinities. It also appears that residents prioritize responsible sanitation practices at home to those they engage in outside their respective communities. Based on these findings, it can be concluded that residents' attitudes towards environmental sanitation in the Birim Central municipality are indifferent. Mensah, (2018) support this by stating that environmental awareness is about "the degree to which people are aware of the problems regarding the environment and support efforts to solve them or indicate the willingness to contribute personally to their solutions" (p.482).

4.2.7 Indifferent Attitudes of Waste managers

Indifferent attitudes of waste managers refer to the intentional silence waste collectors and managers make when efforts to control wastes generated get out of hand. It is basically the inactions of waste managers at the time waste collection protocols fall out of line. Participants from the education institutions said that wastes generated in most of the communities are not necessarily from the activities of community members per se but in many cases by those tasked to help manage and treat wastes. A basic school teacher who resides at Community 6 showed her displeasure concerning how waste managers leave trash behind during and after waste collection. She had this to say:

> R16: "*Sir, with all due respect, we do not litter here. Most of the refuse are not generated by us. We clean our homes, surroundings, tilt the gutters among others. At least, we are able to do what is expected of us as far as communal cleaning is concerned. But the problem has to do with those tricycle riders who come for the waste. They will pick the rubbish up alright but the moment they leave, half of the garbage given to them will be on the floor. Interestingly, they will not even look back. By the time, you will say 'Jack', they are long gone. This has been happening over and over again, and I have no idea when this behaviour is going to stop."* (Teacher 2).

The sanitation officer mentioned in the interview that no or little attempts are made by waste managers to take care of the waste they leave behind in the streets and at other places. The officer indicated that:

> R2: "*I wonder why people still blame us for making this place dirty. You think the Zoomlion people and those 'Aboboyaa' riders do not do same? I can say they are worse off. You know what? There is something that I am sure only few people have noticed. They will come and pick your rubbish, you pay them but at the end of the day, the refuse will still be there. It is either a proportion of it will be left behind for you or for someone else somewhere. They won't even come back to check whether there are leftovers after pickups."* (Sanitation Officer 2, [Assembly]).

The food vendor likewise expressed her worry and even admonished waste managers to eschew the habit of leaving waste unattended to especially when they are either accidentally dropped on the streets. The food vendor emphatically reiterated that:

> R10: "*Oh? It's common to see rubbish falling over from vehicles. You will even see some flying in the open spaces. The sad thing is, those who transport this rubbish are the same people who leave such filth behind for us. At worse, just stop the cars or the motors and check what's happening to the garbage you are transporting but for them to do so, no! They will not. They will just drive on to wherever they want to go. It's very bad, and I pray they become aware of this and put a stop to this attitude, for it is not helping at all*." (Trader 2).

Participants' views suggest that the indifferent attitudes shown towards sanitation do not pertain to residents only. Their position indicates that waste managers also tend to exhibit irresponsible environmental behaviour and attitude even in the quest of discharging their duties. The findings again seem to suggest that residents have an awkward impression about waste managers' working attitudes in the municipality. From the findings, it can be inferred that attitudes of waste managers whether or not planned towards sanitation in the Birim Central Municipality has not been the best from residents' perspective. These findings confirm Kollmus et al. (2002) assertion that environmental behaviour is a "behaviour that consciously seeks to contribute to positive or negative impact of one's actions on the natural and the built environment" (p.21).

4.2.8 Environmental sanitation laws

Attitudes towards environmental sanitation laws can be described as individuals' reserved behaviours for conventions proposed to guide sanitation practices. In relation to attitudes towards environmental sanitation laws, an EPA officer revealed that bye-laws on littering, provision of toilet facilities in homes, shopping malls and many other places are deliberately ignored by landlords and shop owners. To him, it is as a result of poor adherence of laws governing sanitation practices. The EPA officer further disclosed disregard for sanitation inspectors account for what

people do in terms of sanitation practices and why they do such. One of the sanitation officers also expressed grave concerns about the way people intentionally ignore sanitation rules and regulations and bye laws in communities in the municipality. Participants' views on this were narrowed to two dimensions: (1) residents' attitudes towards sanitation laws and (2) residents' attitude sanitation inspectors.

4.2.9 Residents' attitudes and sanitation laws

An Assembly member for Oda old town electoral area who was interviewed at Attafuah SHS campus said that people refuse to recognize the existence of instituted sanitation bye-laws in the municipality. He categorically stated that many of residents' actions and inactions towards the environment are as a result of people turning blind eye to sanitation laws. The assembly member said this:

> R18: "*You see, sir, people are just recalcitrant. They simply just cannot obey simple laws. I think the people here are not different from the places I have been. They are not law abiding; they don't care about the laws. They just go ahead to do their own thing."* (Assemblyman 2).

Another assembly member for Aboabo electoral area revealed that the rate at which individuals disregard or disobey rules and regulations binding sanitation practices was overly alarming in the municipality. This is what he had to say:

> R17: "*My brother, do you think there are no laws on cleanliness? There are! But people intentionally break these laws. They throw rubbish everywhere. "They care less where they leave trash. People throw plastics from moving vehicles. What annoys me more is seeing people eating in 'take away' packs and leaving them where they ate them. There are certainly rules and regulation governing the way people are to comport themselves in terms of sanitation practices but what do we see? Care-free attitudes! They do not care about these laws*." (Assemblyman 1).

A college of education student sharing a similar experience disclosed that people refuse to adhere to sanitation laws even after knowing that such laws are in place in the municipality. He said that

it is difficult to fathom why rational people act the way they do when it comes to environmental issues such as proper sanitation practices. He added his voice in this manner:

> R13: "*I cannot lie to you. People's attitudes towards cleanliness are very bad. Some behave as if there are no laws to punish offenders. They see 'Don't Urinate Here' sign but that is where they will ease themselves. Many a time, I am tempted to side with these people that there are no active sanitation laws. For if there were, people wouldn't be behaving the way they are doing."* (Student 1).

Participants' position on attitudes towards environmental sanitation laws suggests that residents do not ascribe to the needed recognition to the rules, regulations and laws governing environmental sanitation practices in the municipality. The findings appear to herald the notion that people living in Birim Central Municipality do not regard sanitation laws and as such portray irresponsible environmental behaviours and attitudes. Based on the findings, it can be deduced that residents' failure to acknowledge environmental sanitation laws accounts for the many environmentally inappropriate behaviours and attitudes in the Birim Central Municipality. These findings tend to conform to Kofi-Tse's (2015) argument as cited in Mensah (2020) that "awareness about sanitation laws is important because some people may go contrary to the laws not because they are disobedient but due to ignorance, although ignorance may not be accepted as an excuse for breaking it" (p.6).

4.2.10 Residents' attitudes towards sanitation inspectors

An officer from the health directorate cited attitude towards sanitation practices in the municipality. He said that sanitation inspectors dispatched by the assembly to ensure that residents comply with sanitation laws loosely apply these codes.

> R7: "*These 'Tankas' (Town Council) people just come here but they do not do anything that we can point fingers to in terms of punishing those who mess their compounds. At times, those who are bold to punish, for me, I see the punishment to be way too mild. How can harsh words and rebukes constitute a suitable*

> *punishment for someone who has not made any attempt to treat her garbage for the past four days?"* (Officer 1).

A teacher also seemed to be in agreement with the health officer. According to her, the officers are often moved by sense of empathy for offenders, and as a result, do not make them (offenders endure the consequences for breaking these laws.

> R16: "*Senior, some of these inspectors are extremely compassionate. They are too merciful. The affections they have got I can say is indescribable. I have seen these inspectors' dropping charges of offenders because their own colleagues plead on behalf of these offenders. Can you imagine?"* (Teacher 2).

A commercial driver disclosed that some residents even bribe their way through in order to avoid being punished. He revealed further that some sanitation inspectors only come to conduct routine checks but not necessarily to inspect cleanliness or sanitation practices. This driver again cited inspectors who usually pay more attention to other things than assessing the nature of the surroundings.

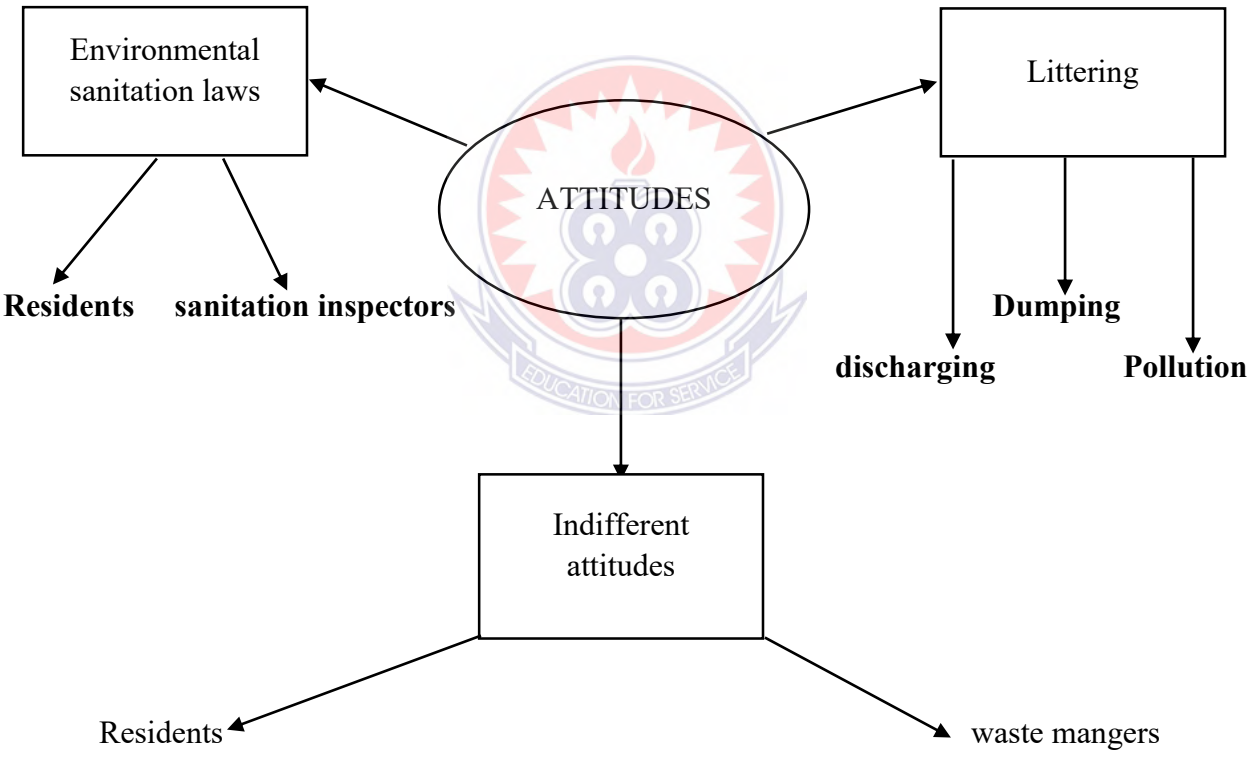
He gave these revelations:

> R9: "*It is quite interesting, you know? We all commit one way or the other but in everything, there is a way out. I have been a victim of sanitation offenses on many occasions. Usually, it becomes necessary that I dip inside my pocket to settle them to avoid my case being processed further to the municipal court. I am not the only one who does this; others do same. Now, anytime, they come around, it is just a matter of 'formality'. There are few inspectors who usually come around purposely for 'something' for porridge and not necessarily about what I do here.*" (Trader 1).

The responses gathered tend to bring forth sanitation inspectors' role in terms of attitude towards sanitation practices in the municipality. Participants' stance regarding officers' attitude was not far different from what they had maintained for residents. Sanitation officers were found to have been compromising compliance of the law with emotions. The findings again seem to suggest that issues pertaining to sanitation practices appear not to be integral in the daily activities of sanitation inspectors in the municipality.

From the findings, it can be deduced that sanitation inspectors' inability to prioritize sanitation-related issues among other things adds to the many irresponsible environmental attitudes and behaviours in the Birim Central Municipality. There is therefore a corroboration between these findings and the position of Kumar (2012), who maintain that strong leadership can play an important role in ensuring compliance with sanitation laws but compliance is influenced by rewards and punishment or sanctions. Views of participants have also been presented in a diagrammatic form as shown in the thematic network below:

Thematic networking showing attitudes of residents towards environmental sanitation



Source: Author's Qualitative Interview Data, August, 2022.

Figure 4.2: Thematic network on residents' attitudes towards environmental sanitation in the Birim Central Municipality.

4.3 Effectiveness of environmental sanitation interventions in the Birim Central Municipality.

In answering this question, the researcher sought the views of sanitation officials, commercial drivers, health workers, teachers, students, assembly members and traders on the subject of sanitation intervention in the municipality. The interview sessions revealed how important sanitation intervention protocols were to residents and as a result needed attention. The following themes were generated from the responses on sanitation interventions: solid waste container, bye laws and punishment, sanitation management, collaboration, monitoring, personal hygiene, education, dump site demarcations, drainage and sewage interventions and community commitment.

Generally, in the course of interaction, it was disclosed that the various environmental sanitation measures put in place to address the problem of poor sanitation are not yielding the desired results. Participants in their responses said that the identified interventions have not been able to address poor environmental sanitation situations in the Birim Central municipality. Participants admitted that there are indeed environmental sanitation interventions put in place in the municipality.

It was found out that the interventions are geared towards sanitation management. The position of those interviewed suggested that if residents religiously adhere to the interventions, it will go a long way in managing poor sanitation challenges in the municipality. Sample expressions of participants in relation to sanitation interventions are captured under each theme as follows: community commitment, collaboration, monitoring, demarcation, dumpsite, education, bye-laws and punishment, solid waste containers and drainage and sewage. To analyze the data collected, a graphically simplified thematic network is generated and displayed at the end of this research question analysis to represent all the themes to discussed.

4.3.1 Community commitment to environmental sanitation

A municipal sanitation officer and an assembly member admitted that there are measures in place to control sanitation practices in the municipality. They mentioned that the assembly is doing its best through series of initiatives to shape the attitudes and behaviours of people living in the municipality on environmental issues. The officer had this to say:

> R2: "*I can say that we are doing our best to see to it that people exhibit the desired sanitation habits. The assembly has a lot of measures in place to help fight environmental sanitation problems in this area. The problem, however, has to do with the will power of the surrounding communities to also assist in maintaining a clean, safe and good environment.*" (Sanitation officer 2)

The assembly member reiterated in this manner:

> R17: "*The assembly is trying but we as people in this neighbourhood are not helping them at all. Although the existing initiatives by the officers are not enough, the readiness of residents to help in ensuring that we abide by sanitation rules and regulation is not reflecting at its best.*" (Assembly member 1)

A second-hand clothes dealer and a driver lamented over inadequacies of these environmental sanitation measures. They expressed deep concern for residents' commitment to assisting in addressing undesirable sanitation attitudes in the area. The participants in question further cited that the level of commitment in certain communities is not enough to supplement the effort of the assembly in addressing poor environmental sanitation issue in the municipality. The degree of commitment among communities to ensuring proper environmental sanitation was found out to differ. The second-hand cloth dealer gave an intriguing revelation about community members' attitudes. She claimed that commitment levels are highly unrelated across communities especially when it comes to the dealings of sanitation. She said this:

> R11: "*In some places, they are serious about keeping their surroundings clean. This is not so in other places I know. There are areas like Joduro, Nkwantanum and Jamaica where filth is not entertained no matter who you are. But there are*

> *also places which of course you know that I cannot name them. They just do not care what you put out there. You can leave carcasses of animals; no-one dares to talk! It is a free zone!"* (Trader 3)

The driver on the contrary disclosed that sanitation practices are always monitored in his community and other known communities even without the knowledge of the assembly. He said that they have inscriptions on walls that caution people about irresponsible environmental attitudes, and to them, there are volunteers who keep eyes on these regulations to ensure that they are obeyed. The driver said this with emphasis and had this experience to share:

> R21: "*Ask yourself why some places are neat but others are not. Where I live, you cannot throw rubbish anywhere and go free. We will ask or force you to pick them up. You cannot do that at all! The 'Don't Urinate Here' signs are almost everywhere. Everyone is watching what the other person does. It is unfortunate that other places I know and have been to are not like that. People do whatever they like, throw thrash, leave polythene and plastic bags behind after using them among others. Senior, if we are to come together, I think we can do something about this once and for all!*" (Driver 1)

The responses obtained indicate that community members lack sense of commitment to addressing poor environmental sanitation issues in the municipality. It was realized that the extent to which some particular communities tend to be on a look-out on sanitation problems is apparently not same with other communities. The findings seem to suggest that community commitment to tackling poor environmental sanitation practices does not adequately reflect the assembly's urge to combating same phenomenon through its proposed and existing interventions.

It can therefore be inferred from the findings that lack of commitment among members of communities in the Birim Central Municipality renders sanitations interventions highly ineffective thereby piling up sanitation problems in the area. These findings align with the Lawrence et al (2016) who report that it requires whole communities to commit to stop defecating in the open and hygienically contain all fecal matter.

4.3.2 Provision of solid waste disposal containers/dumpsters

Another intervention cited was provision of solid waste containers by the assembly. Participants disclosed that the assembly ensures that there are waste containers mounted at vantage points in the municipality. It was stated that the assembly does not only ensure that solid waste containers are provided to residents but it also sees to it that residents make available trash bins at home and at various places of work. The direction of participants' responses paved way for two sub-themes to be generated; public and private.

4.3 3 Public

A food vendor revealed that the assembly has been rendering public services by distributing solid waste containers at vital areas such as the market squares, roadsides, public institutions, offices, among other places. She cited that the assembly executes these services through private companies. The food vendor disclosed this:

> R10: "*That container over there is for the assembly. There are equally bigger waste containers in other areas. You will see some of them on the main streets, from Attafuah School Junction to Old Town and around the Government hospital. Although, they are not much, at least, some have been made available for some of us trading in this market."* (Trader 2)

Nonetheless, a phone dealer showed certain level of dissatisfaction regarding how waste bins are distributed and mounted at corners in the municipality. He registered his displeasure over solid containers allocation and distribution in this manner:

> R12: "*I wish I knew the criteria they use in allocating and mounting the dustbins. Where the containers are in dire need, you will not see any but areas where the containers seem surplus to requirement, that is where you see them scattered all over."* (Trader 4)

Whiles a teacher mentioned that the municipal assembly has removed most of their solid waste containers placed at vantage points in the municipality, an officer at the municipal assembly did

not agree to this to some extent. Notwithstanding this, there was a consensus between these two participants that the assembly's attempt to make solid waste containers available through private waste management companies in the municipality has not been the best, and this, according to them is adversely affecting solid waste management in the area. The teacher echoed these sentiments:

> R15: *"It is been awhile since I saw the dumpsters around here. It has really been a while. There was one placed behind the Attafuah School and another one around where I live. My friend, I can tell you for a fact that the one at my end is no longer there. People have similar complaints. They do not understand why dumpsters in their various communities have been removed. We know that the Assembly and the Zoomlion distribute dustbins. But the fact is the dustbins are not enough. As a teacher, I am very much aware that inadequate refuse containers cannot address sanitation problems in Oda here."* (Teacher 1).

The officer on the contrary had this to add:

> R2: "*You know the nature of our work. We contract Zoomlion to do the distribution of waste containers to interested persons and households on our behalf. However, as a human institution, we cannot serve everyone. It is our wish that we could do what the people want. We understand when people turn to blame us for some of the sanitation issues in the municipality. I am sure it is apparently because we are unable to get every household a dustbin and the community dumpsters. Let us not forget that majority of the communities in Oda have dumpsters installed.*" (Sanitation Officer 2).

4.3.4 Private dustbins

Apart from the assembly's commitment to providing waste bins to households and the public through private companies, the sanitation officers disclosed that the Assembly also entreats households and a section of the public who do not benefit from such distributions for some reasons to make available their own waste collection containers to deal with their own wastes. The officers and a market woman mentioned that upon routine checks on household sanitation, shops, market places, lorry parks, schools, churches, corporate establishments among others, they recommend

that community members utilize other sanitation services rendered by people other than the assembly. Nonetheless, some officers were not at peace with the quantity of waste containers provided and stationed at home and other places by residents likewise the rate at which they utilize the services of private waste collectors. One officer had this to say:

> RO2: "*It is always sad especially when you get to a house where there are no waste containers. I can tell you for sure that several houses in this municipality do not have enough waste bins. You visit a house with a comparatively large occupancy rate but sadly the number of dustbins there are nothing to write home about. You can clearly see that they do not have people taking care of their waste. It is very unfortunate. What can you do about it? We only asked them to try and get some dustbins.*" (Sanitation Officer 2)

The market woman also reechoed this:

> R9: *Not all of us can afford to get these dustbins. We also know that Assembly cannot get everyone these expensive containers in their various houses. But I like what they are doing. The very moment they identify that your household cannot own one, they will tell you to buy one you can afford from the market. So, these containers you see here, as you can see, they do not belong to Zoomlion. They are ours.* (Trader 1)

An officer from the Health Directorate and a college tutor who lives around Mawuli Area claimed they do not actually depend on the Municipal Assembly when it comes to waste treatment and management. They cited that they are aware of the effort of the Assembly in getting every household a trash can and dispose it afterwards; however, having known the limit of their strength, they are compelled to engage the services of tricycle riders to take care of the filth they generate at home and at work. The health officer revealed this:

> R8: "*The truth be told. It is the wish of the Municipal Assembly to provide every household at least a dustbin but it appears highly impossible. As a result, we rely on these 'aboboyaa' riders to pick up our rubbish at home and around our shops. Sometimes, getting them to dispose your waste becomes very difficult so you have no other option than to fall on either 'truck pushers' or 'head potters'.*" (Officer [Health Directorate])

The college tutor had this to say:

> R16: *I live at Mawuli but my shop is around the market. Whenever these officers come over, they advise all of us to try and get our own dustbins and also make sure that we let people who deal with trash cater for the waste we generate here and not necessarily always be waiting for the Assembly to come*. (Teacher 2)

The responses suggest that provision of solid waste containers is a core component of the Assembly's intervention to ensuring proper environmental sanitation in the Birim Central Municipality. The findings also indicate that aside the distribution role played by the Assembly, it also offers advice and recommendations on how and why residents should secure their personal waste containers without relying on the Assembly.

Whiles residents were not much enthused with the distribution role of the Assembly especially at certain crucial places, sanitation front liners likewise expressed displeasure in residents' reluctance to assist by providing their own waste containers to manage waste generated. The responses obtained therefore tend to communicate that solid waste containers provided by the Assembly appear highly inadequate considering the occupancy levels of households in the municipality. This, according to the findings, has compelled residents to either seek the services of private waste managers or acquire solid waste containers of their own to augment this distribution role of the Assembly.

Based on the findings, it can be inferred that provision of solid waste containers as a sanitation intervention by the Assembly tends to be comparatively ineffective in the Birim Central Municipality since residents will have to intrude to supplement the distribution role of the Assembly. There seems to be a conformity between the findings and Seah's and Addo-Fordwuor's (2022) study. They report that municipal and metropolitan assemblies assume the provision of

domestic solid waste containers and communal refuse containers as a priority in the management of municipal and metropolitan solid wastes in municipalities and metropolis.

4.3.5 Bye laws on sanitation and punishment

Another sanitation intervention mentioned during the interview hovered around the establishment and formulation of sanitation rules, regulations and bye laws. A phone dealer and a market woman recounting their experiences acknowledged that the Assembly has systematized measures that deal accordingly with environmental sanitation offenders. To them, these bye-laws are simply a way of seeing to it that even without the Assembly directly observing, individuals demonstrate environmentally appropriate behaviours and attitudes. They asserted that the assembly have varied environmental sanitation laws in addition to its bye laws in its books. The phone dealer shared this experience accordingly:

> R12: "*I won't lie to you, my brother. If you have not been caught, you are tempted to say that there is no law. I know what I'm saying. I have been charged before, sent to court by these inspectors for choking my own gutter. I thought it was a joke but it was real. I found myself in the witnessed box right here in Oda. They have the laws that punish people who do not keep their places clean. Like I said, I have lived and experienced it.*" (Trader 4)

The market woman also had this to say:

> R9: *Master, believe you me, people act as if there are nothing like clear-cut rules guiding hygiene meanwhile there are bunch of them. I have seen people charged, sent to court and bailed with hefty fines. I believe they are doing the right thing to make sure that people living in and around behave well. When these inspectors come around, you only have to comply else you will face the dark side of the law.* (Trader 1).

The controversy, however, from the perspectives of both EPA and sanitation officials lay within the spheres of implementation of the law. Speaking on implementation, the officers posited that sanitation offences usually outnumber sanitation officers thereby making it extremely difficult for

them to implement sanitation laws equitably. Furthermore, they questioned the working nature of the judicial system. One sanitation officer disclosed this:

> R1: "*The laws are there; we have many laws on sanitation. If only we have enough officers to implement the laws and the residents are ready and willing to obey the laws then, I am sure we would have a clean environment. Many a time, the offences are too great to handle in terms of number and frequency. So, on humanitarian grounds, all you have to do is to let go of some of them. With punishment, we use the courts and it takes time. We also have spot fines but all these are not so effective. These challenges are making our work difficult*." (Officer 1 [Assembly])

Regardless of identifying a section believing in the sanitation laws together with their corresponding punishments, others such as workers from the Zoomlion company and students seemed not to be contented with the consequences attached to sanitation offences. They lamented that fines given to those found culpable are not damaging enough to deter culprits and potential offenders from doing what needs to be done as far as good environmental sanitation practices are concerned. In responding to the questions on this subject, a worker from Zoomlion had these experiences to share:

> R19: "*Sometimes, I don't know whether they are pampering people who break the laws or what! The fines are not painstaking enough to make them feel remorseful. How can you fine somebody just 100ghc for a heaped filth that is likely to cause many people to fall sick? Some officers even issue spot fines of 50ghc. Can you imagine?"* (Worker 1 [Zoomlion])

A student in a similar manner added her voice on the subject in this regard:

> R14: *Are we preventing the problem or encouraging people to continue doing it? Do you have any idea how much it costs to go for malaria and typhoid treatment? Hefty fines need to be put on them. This will deter them from repeating such actions.* (Student 2)

The obtained responses tend to portray that the Birim Central Municipal Assembly has established sanitation laws as a way of intervening in environmental sanitation practices in the municipality. The findings suggest that although there are myriad of sanitation laws and aligning punishments,

implementation of the laws remain a challenge in the municipality. Poor implementation of sanitation laws has been found to walk hand-in-hand with scarcity of sanitation inspectors vis-à-vis sanitation offences as well as the nature of the judicial system. From the findings, it can be deduced that there are sanitation laws established to control sanitation practices and environmental behaviours and attitudes of residents in the Birim Central Municipality. These findings confirm Seah and Addo-Fordjour's (1999) position on sanitation management.

4.3.6 Stakeholders' collaboration in handling sanitation issues

There was a consensus among the officers regarding the collaborative role of the Assembly with other stakeholders of sanitation and health in the municipality. They were positive about this role citing instances where they joined forces with other institutions to promote proper sanitation and health practices in some areas in the municipality. Officers from both Environmental Protection Agency (EPA) and the Municipal Environmental Sanitation Office disclosed that they have been working closely with households, key members of communities, the Health Directorate, schools, among others to address sanitation challenges holistically. Series of experiences were recounted where it became necessary that certain sanitation controversies involving a school and members of some households be resolved amicably. The EPA officers shared their experience appropriately with one citing this:

> R3: "*Normally, when there is a problem, it is reported to us. Sometimes, the offenders or those with problems will visit us to launch their complaints. We do our investigation, and where there is the need to contact MHO, we do that. Last year around August, there was a burst pipe at Attafuah Senior High School, and some households around there came to report. We made sure the problem was fixed, and it has been done. Occasionally, they come and report, and we collaborate with the MHO, and where there are difficulties, we put our heads together and solve them. There was this lady at SDA, she rears cattle, and her ranch was established behind somebody's building. This was giving some foul smell, and there was this report*

> *by the community. We came together and made sure that the problem was solved. So, it is all about collaboration and education."* (Officer 1, [EPA]).

Another officer had this to add:

> R4: "*Yes, that reminds me. I believe you know the municipal hospital? Last year, their wall broke down. Unfortunately, that wall was where the mortuary was situated. So, it happened that there was an overflow from the mortuary into the adjourning streets so the occupants there came and made a complaint. We were able to impress upon the Assembly and the hospital management to fix that problem. We made them fix the wall, and that prevented the overflow. This is among the few collaborative works we do as an environmental health institution."* (Officer 1, [EPA])

The responses gathered indicate that beneath the many interventions to good sanitation practices in the Birim Central Municipality is collaboration. The findings suggest that collaborating or working together with stakeholders of environmental sanitation and health is a way the Assembly ensures proper environmental sanitation in the municipality. A cursory look at the findings further indicates that the collaborative role of the Birim Central Municipal Assembly as an environmental sanitation intervention tends to be effective. Hence, an inference can be made that collaboration as a sanitation intervention cannot be overlooked as far as good environmental sanitation practices in the Birim Central Municipality is concerned. These findings can be reaffirmed by Seah and Addo-Fordwuor (2022) who maintain that to ensure sustainability in solid waste management in urban areas, there must be collaboration between the government, private sector and residents.

4.3.7 Dumpsite demarcation

Dumpsite allocation was featured among the plethora of measures put in place by the assembly to tackle sanitation in the municipality. Sanitation officials cited that the assembly does not have a dumping site for the municipality despite acknowledging that it is part of their duties as an assembly to ensure that residents get a demarcated area to dump their thrash. They stated a couple of reasons accounting for dumping site issues claiming that there is no available large-sized land

to convert into dumping site in the municipality, and the cost involved in constructing one is relatively expensive. The officer cited that the municipal assembly relies on the neighbouring district's dumping site which before their chatter to become a district was part of the municipality. This is what a sanitation officer:

> R2: "*If I may say, it's the Assembly's responsibility to ensure that waste is disposed well. However, the Assembly is having some challenges and sometimes too places to dump the refuse become a problem because we don't have sanitary site. Since there are no dumping sites, we are forced to place our big containers at wherever we find available or assumed convenient. Interestingly, people do not even drop their refuse inside them. Some people too dump these dead animals into the containers leaving foul smell not only in the container but in the entire area…We have lost our disposal site to Manso so currently we do not have a final disposal site."* (Officer 2 [Assembly]).

The sanitation officials stated further that lack or absence of dumping site for the entire municipality has left the municipal assembly with no other option than to withdraw most of their waste containers from essential spaces in the municipality since they are not getting places to dump them when they are full. This according to the officers has adversely affected their efforts greatly in managing both solid and liquid waste in the municipality. Nevertheless, an assembly member held a different view claiming that some selected areas have dumping sites in the municipality. One of the sanitation officers had this to say:

> R1: "*Yes, there is no place here in Oda to dump rubbish. Where we used to dump refuse is no longer within our jurisdiction. So technically, we don't have a dumping site at the moment. Perhaps, the reason why we do not have any dumping site of our own has to do with the money involved in constructing one. Besides, this place has developed remarkably; therefore, locating a big land to serve such as purpose is extremely difficult. There is no land!"* (Officer 1, [Assembly] male)

With emphasis, the assembly member expressed his diverse view in this regard:

> R18: "*We have about three places at Aboabo where we normally dump refuse." (Assembly member)*

Officers' positions regarding provision of dumping site as an environmental sanitation intervention seem to have towed separate lanes. Considering the responses however, it appears that dumping sites for residents in the Birim Central Municipality tend to be inadequate especially if the population of residents together with the wastes they generate are carefully considered. Based on the findings obtained, deduction can be made that the Birim Central Municipality is encountering challenges relating to dumping sites thereby rendering the Assembly's effort to intervene in this regard futile. These findings align with the assertion of Kyere et al. (2019) who maintain that constructing new landfill sites may be difficult due the scarcity of land, increase of land price and demand for a better disposal system.

4.3.8 Drainage and sewage interventions

Construction of drainages and sewages was identified among the roles the Assembly plays in ensuring environmental sanctity in the municipality. A teacher said that the government or the municipal assembly is not constructing new drainages and sewages except for the few ones that were constructed during the construction of the main roads in some few areas in the municipality. He said this with emphasis:

> R16: "*There has not been any new gutters constructed. The only drainage or gutter here is the one that was constructed during the construction of the road. You know, it is the duty of the Assembly to either ensure that proper gutters are dug in the communities to facilitate free flow of liquid wastes. Unfortunately, no new gutters have been constructed."* (Teacher 2)

The EPA officials revealed that certain areas in the municipality have new and standard drainage and sewage systems installed either by the Assembly or community members. Regarding this, there was an admittance by an officer that there are levels of drainage and sewage systems installed in the municipality even though to him and others, this cannot be described as the best especially in some areas in the municipality. One EPA officer had this to say:

> R3: "*Oda is a nice town and the drainage system is perfect especially in Community 6. It is well planned. You don't see open gutters around and because of the nature of the buildings there, each house has got a septic tank that serve the people there. Oda has old and new town. Since the old towns had old planning, I don't think they have good drainage and sewage system."* (Officer 1, [EPA])

Disparities between installed drainage and sewage systems across communities in the municipality were also identified by another EPA officer. He was of the view that that standard drainage and sewage are mostly located in the municipal capital whereas sub-standard systems are installed in remote areas in the municipality. This officer further disclosed that poor drainage and sewage systems in the municipality have subjected many areas to frequent flooding whenever there is heavy rainfall. Another officer emphatically gave this revelation:

> R4: "*The drainage systems in the outskirts are comparatively different from those created in urban places like Oda here. When you come here, gutters are covered but you may not see same in rural areas. Unfortunately, our attitudes have rendered our drainage and sewage systems poor. People take advantage of open gutters, fill them with filth and leave them unattended to when they get choked. At the end of the day, when it rains, these same people will complain that lack of open drainages is causing their houses to submerge in water. Recently, we were all witnesses to this sudden flood in some areas in Oda. The issue was not necessarily about the place being a waterlog area but a careful examination revealed that the dugout gutters had been chocked with filth."* (Officer 2, [EPA]).

Furthermore, a worker at Zoomlion asserted that most of the drainage and sewage channels end up in major rivers bodies some of which tend to be the main source of drinking or potable water for residents in the municipality. He had this experience to share:

> R19: "*We don't have a gutter like the one on the road side in front of that house. Nowadays, when you wash, you have no option than to pour the soapy water somewhere for it to dry. This is because the woman over there has always been complaining that the water drains in front of her house so she has blocked that gutters so we don't mess it with dirty water. She claims she spent a lot on the construction of that gutter. The few gutters and open drain, we are scared to throw waste water into them, for some of them join the Birim river so whatever you throw into those gutters, invariably, the river, which serves as a source of potable drinking water to many residents here, is at the receiving end."* (Worker 1 [Zoomlion]).

It appears from the responses gathered that drainage and sewage systems in the Birim Municipality differ pending on geography. Regardless, the findings suggest that the Assembly's effort in constructing and installing drainage and sewage systems in the municipality has not been adequate since drainage and sewage systems remain poor as a result of facility structure, obsolete and residents' attitudes and behaviour. These findings align with Kyere, Addaney and Akudugu (2019) who assert that most cities presently have drainage facility but the drainage lines are not in good state. The picture below shows drainage and sewage intervention of the Assembly:

4.3.9 Monitoring and supervision by sanitary inspectors

Among the myriad of sanitation interventions identified were monitoring and supervision. It was pointed out by the sanitation officers that the Assembly embarks on frequent visits to residents, workplaces, commercial centers, lorry stations, food joints, market places, places of worship and schools to oversee sanitation practices and the status of environmental sanitation in these areas. A food vendor affirmed this in an experience she shared on how sanitation officials used to make follow-up routine checks on her sanitation behaviours and attitudes after she was fined for sanitation offenses. One of the officers said this:

> R1: *One of our core mandates is to monitor what people do. I mean how they conduct themselves hygienically in and out of their homes. We usually go out there to see what people are doing to keep their homes, themselves and the outside environment clean. Officers from the Assembly go around the markets, taxi ranks and stations, schools, restaurants and other places to check sanitation conditions there.* (Officer 1, [Assembly])

The food vendor had this story to tell:

> R10: "*The Assembly people have been coming here from time-to-time ooh. I can say that I see them here twice every week. You will see them today in this house and the other houses the next day. They are really having close checks on us. You know something? I was processed for court over certain sanitation offenses. I pleaded with them, and I was given a spot fine. Even after that, they were still*

> *coming to my place almost all the time to find out how I was comporting myself hygienically."* (Trader 2)

Despite the food vendor and the officials acknowledging monitoring and supervision as effective roles of the Assembly, drivers at the operating at the Oda Main Station on the contrary hurriedly identified certain bodies at the Municipal Assembly as underutilizing this role. They cited that monitoring and supervision tend to be missing not only on the part of the municipal assembly entirely but the Environmental Protection Agency (EPA) also appears ineffective when it comes to environmental sanitation checks in the municipality. He described the dire nature of the situation, and how it is seriously affecting the collective efforts being made to have a better environment. One of the drivers made this statement:

> R22: "*I really do not see sanitation inspectors as I used to. I admit that there are problems with this monitoring and supervision exercise. However, for me, I will blame the Assembly. They are too lenient with offenders. So even take meagre bribes and let culprits. How do you expect sanitation issues to be tackled with such an attitude? Those people at EPA, I don't even know what they do! You don't see them doing anything.* (Driver 2)

Whiles sanitation officials and residents gave similar reasons underlying environmental sanitation monitoring challenges in the municipality, others particular an EPA officer who was interviewed at his residence seemed not to be in tune with the justifications given. An environmental sanitation official echoed this:

> R4: "*We are doing our best to monitor sanitation conditions across communities in the municipality. But the truth be told, my friend, there are issues even with this role we play. We do not have enough inspectors to go around to facilitate this exercise. We are not many so house and area coverage usually becomes extremely problematic. Lest I forget, people's attitudes and behaviours also make our work very difficult."* (Officer 2, [EPA])

The responses gathered indicate that the municipal assembly is intervening in sanitation controversies through monitoring and supervision. The findings ascertained tend to suggest that even though, the Assembly is doing its best to tackle environmental sanitation issues through its

role as supervisors and monitors in the municipality, there is the need to intensify this exercise. Furthermore, it appears that officers are willing to execute their function effectively as sanitation inspectors but due to the existence of certain unfavourable structures, execution of such tasks tends to be difficult. Based on the findings, a deduction can be made that monitoring and supervision of sanitation conditions in the Birim Central Municipality exist; however, they need to be intensified. These findings conform to the assertion that strict monitoring and enforcement remains a key strategy in managing sanitation properly in community level (Seidu, 2018).

4.3.10 Public education on sanitary Issues

Educating the public on environmental sanitation was noted as one of the important preventive measures designed by the Municipal Assembly in dealing with environmental sanitation practices among residents in the municipality. Both officials from EPA and the municipal assembly stated that the municipal assembly has been organizing conferences, seminars and other forms of meetings to sensitise the populace on good environmental sanitation behaviours. The officers said that the assembly often liaises with the information department to execute task of this nature. They said that the information vans are usually used to spread messages on sanitation to people in the municipality.

The officials also mentioned that apart from using information mobile vans, they also create sanitation awareness on community radio stations, flyers, via personal social media handles as well as the Assembly's major social media outlets. Further statements made by the officers revealed that they sometimes make arrangement with organisations and social groups such as churches, Keep-Fit clubs, mosques, schools for talk time at programmes. Through this, they are able to relay environmental sanitation messages to the people in the municipality.

Whiles a degree of dissatisfaction was expressed among officials in relation to residents' receptive attitudes regarding sanitation information in the municipality, the market woman on the other hand claimed that sanitation awareness creation has not been the best as far as this role of the assembly is concerned. Two major dimensions of education was identified. In other words, it was realized that the kind of environmental sanitation education and sensitation that the assembly showed keen interest in hovered around personal hygiene and sanitation management.

4.3.11 Personal hygiene

The EPA and sanitation officers cited that the Assembly has officials who go round schools and market places to educate individuals on how to maintain oneself. They claimed again that the officials from the assembly usually collaborate with health workers to embark on this campaign. One sanitation officer had this to say:

> R2: "*We use the information mobile van to go around the market square and other areas to let people know the need to keep their homes clean. You know, these vans have megaphones that go a bit far so we use this as a means to reach them. As you may be aware, charity, they say begins at home. What this means is that self-cleanliness is a reflection of a clean environment. Because of this, we prioritise the teaching of personal hygiene seriously."* (Officer 2, [Assembly])

The EPA officer similarly made this emphatic statement:

> R3: "*I know that the sanitation officers usually go to the schools and the market areas with the nurses to educate our children in schools and our fellow traders on how to keep their bodies clean.*" (Officer 1, [EPA])

The officials said that they prioritise creating awareness of personal hygiene among residents, and as a result channel their effort towards this angle of sensitization. A student shared his experiences involving an orientation and practical sessions they had with some sanitation inspectors on how to keep some vital parts of the body clean as a testimony to this educative role. He had this experience to share:

> R14: *I remember I once attended a meeting at the assembly, and we were taught how to pay critical attention to some important parts of the human body. I remember we were made to demonstrate what was performed. Honestly, there were few things I didn't know about personal cleanliness if I hadn't attended that workshop.* (Student 2)

From the responses, it appears that the Assembly does not only focus on communal sanitation but it also emphasizes on educating people on the need to keep oneself clean. It can also be seen that the role of the assembly in sensitizing the masses on personal hygiene in the municipality is typically not one-sided. This implies that this aspect of education tends to be a collaborative responsibility which as well seems to cut across the diverse groups of residents in the municipality.

4.3.12 Education on Waste Management

Educating residents on waste disposal and treatment and other related sanitation management practices was cited among the sanitation officials as a core mandate of the assembly in the municipality. They mentioned that sanitation inspectors go round houses, markets, schools, churches, offices, taxi ranks, community radio stations, local information centers, and other establishments to educate individuals on various ways to treat and manage refuse generated.

> R2: "*As you may be aware of, it is our duty to educate the public on sound environmental sanitation practices such as how to dispose safely generated refuse, keep good and healthy surroundings, among others. We do this very often. We visit residences, churches, mosques, schools, shops and market grounds to give this kind of education. We let them know the various appropriate ways to handle waste be it liquid or solid wastes."* (Officer 2, [Assembly])

The sanitation officers stated that they usually use drive time sessions on the local radio stations to convey sanitation management tips. Nevertheless, they claimed that such education should be intensified. One officer had this to share:

> R4: "*Sometimes, there is a need to go extra mile to get your message to the people out there. Many a time we fall on these radio stations situated around us. We have been getting some airtime from Ahenkan FM and Akyemansa Radio during drive*

> *time sessions to talk about sanitation issues such as how individuals can treat or manage wastes without posing any health threat to themselves or others in the community. Myself, I have been on sanitation campaigns on several occasions with the staff here where we go to the taxi and 'trotro' stations, banking halls, food joints, and other places to create awareness on proper waste management practices*." (Officer 2, [Assembly])

The food vendor and the market woman recalled their sanitation experiences with an officer who taught them certain benefits that were associated with proper treatment of refuse generated at home. The food vendor shared her experiences appropriately in this manner:

> R10: "*You get to learn a lot on the radio about sanitation. I listen to radio all the time. Many of the educative programmes are often fused into their drive times. That is where some of us get to learn new things. Sanitation matters involving treatment and management of solid wastes such as effective waste burning and burying happened to be some of the things I have learned. Thanks to these sanitation officers who come on radio from time to time to help us on issues like these. My problem is the time is relatively short for this kind of message to be relayed to the people. There is the need for them to get other avenues through which they can intensify sanitation education.*" (Trader 2)

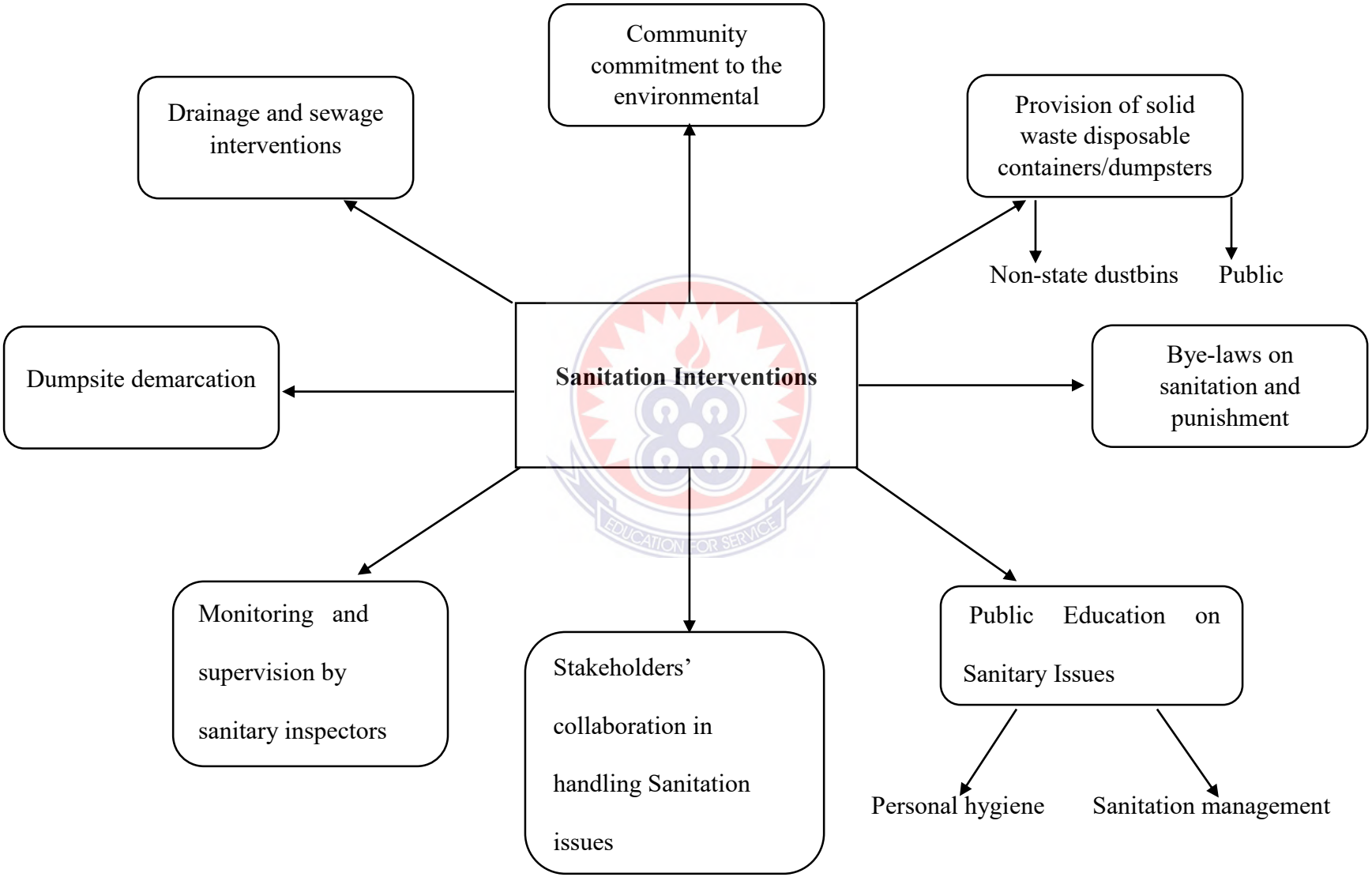
The market woman reiterated the same experience:

> R9: "*I remember some time ago a group of officers from the Municipal Assembly approached us to have some sort of discussion with us. It was about how we deal with the refuse we accumulate at home. I vividly remember how they taught me ways to dispose my garbage without hurting the people around me. I even got to know that my wastes aren't entirely a waste but rather they can be used for so many useful things. They mentioned that the rubbish I generate at home can be used for biogas, manures, organic fertilizers and other things which I cannot really recall."* (Trader 1).

The responses gathered suggest that the municipal assembly devotes time to educate people in the municipality on proper sanitation management practices. The findings indicate that sanitation officials have avenues of meeting residents in the municipality with waste treatment and management (sanitation management) information even though they (avenues) tend not to be overly exhaustive. It can be deduced from the findings that the educative role as compared to the

others of the Birim Central Municipal Assembly as a sanitation intervention appears comparatively effective and multi-dimensional since varied platforms are utilized to reach residents, and crucial angles of sanitation controversies pertaining to them are targeted. Hence there is a corroboration between these findings and the position of Safo-Adu (2019) who maintains that the Assembly organizes regular visits to schools and radio stations in Metropolis, municipalities and district with the aim of engaging students and the public as a whole to rekindle their interest in proper waste management and other related sanitation practices.

Figure: 4.3: Thematic network showing sanitation interventions



4.4. Effects of poor environmental sanitation on the lives of residents in the Birim Central Municipality

In relation to this, sanitation officers, health workers, teachers, students, EPA officers, traders and drivers were interviewed to express their views regarding the effects of environmental sanitation on residents' lives in the area. The positions pertaining to the effects of environmental sanitation on the lives of residents in the Birim Central Municipality were broadly discussed within three (3) domains namely health, time and finance. In analyzing this, a thematic network was designed to graphically simplify the tenets of the nature of effects of the phenomenon on residents' lives in the Birim Central Municipality. This pictorial representation can be found at the end of the analysis of this research question.

4.4.1 Effects of poor environmental sanitation on residents' lives

Effects of environmental sanitation on residents' lives were discussed from three major perspectives; health, finance and loss of productive hours. These perspectives emerged as themes that were initially openly coded, axially categorized and selectively coded afterwards.

4.4.2 Health Challenges

One major effect of poor environmental sanitation according to a health directorate officer was in the area of health. The officer disclosed that sanitation practices have their accompanying effects especially on people's health. He explained that whichever side of sanitation a person chooses to cope with has got its corresponding health implications. The health officer said this:

> R8: "*Nobody needs to tell you that keeping your surroundings untidy will make you sick. Obviously, poor environment comes with diseases and all manner of ailments. The rule is simple: be clean and be healthy or be dirty and be sick! You know what? We reap what we sow. This means that if you choose to*

> *constantly keep filth around you, you don't have to expect diseases to flee from you. Good environmental conditions come with good health and sound mind but poor ones give you so much to think about!"* (Officer 2, [health worker]).

The nurses mentioned that many of the airborne and waterborne diseases recorded in our homes, hospitals and communities are due to the fact that people do not abide by good and appropriate sanitation practices. They narrated how filth is slowing killing people making young children vulnerable to all forms of infections. One of the health workers gave this narration:

> R6: *"I believe you will agree with me that malaria, cholera, typhoid and diarrhea are common in so many places in the country? Oda is not far different! The big question is, why are these diseases common? The answer is simple! It is because we are dirty. We know what is best for us but we choose to do the opposite. Now, choked gutters are everywhere in communities, waste waters are openly disposed, and toilets and urines are not so difficult to spot. Tell me, big bro, what do we expect after engaging ourselves in these? We simply endanger ourselves with these diseases I have mentioned!"* (Health worker 2, [nurse])

Another nurse also made a similar claim:

> R9: *"If only people knew the kind of havoc dirt and irresponsible environmental behaviours and sanitation practices are causing to themselves and others, they would think twice about what they do. Malaria is still killing people. People are not escaping the grip of typhoid, and diarrhea and cholera are still taking lives of people especially young children. I have worked for years as a health worker, and I know what I'm talking about. Children are at high risk of contracting hygienic related diseases. A lot of them even die particularly those who suffer from severe diarrhea."* (Health worker 1, [nurse]).

From the responses, it seems obvious that the state of environmental sanitation walks hand in hand with the state of one's health. The findings indicate that poor environmental sanitation is not health friendly to residents living in the Birim Central Municipality. They further suggest poor environmental sanitation exposes individuals in the municipality to hygienic

related diseases such as malaria, typhoid, diarrhea, cholera among others of which young children tend to be vulnerable. Based on the findings, deduction can be made that poor environmental sanitation has adverse consequences on the health statuses of residents in the Birim Central Municipality.

The findings align with a study by Danso-Wiredu (2019) who reported that numerous sickness and injuries reported in Ghana are related to poor sanitation. They further appear to confirm the report that poor sanitation is the cause of certain human parasitic diseases such as schistosomiasis (sometimes called bilharziasis), and this sanitation related disease ranks second behind malaria in terms of socio-economic and public health importance in tropical and subtropical areas killing more children globally than AIDS, malaria and measles put together (Daramola & Olowoporoku, 2016).

4.4.3 Financial expenditure on health issues

The EPA officials and the teachers established a linkage between poor environmental sanitation practices and financial strengths. They claimed that inappropriate sanitation practices put more burden on their coffers especially when sicknesses emerging from improper hygienic behaviours suffice. One EPA officer echoed this:

> R3: "*You know, apart from buying these Lufart and other drugs to treat our malaria, we also buy mosquito coils, sleeping nets, mosquito repellants, stockings and attires to prevent mosquitoes from biting us. Aside all jokes, these products take a lot of money. I will be frank with you, we also have budget for these. They eat into my salary unknowingly."* (Officer 1, [EPA]).

One of the teachers added his voice accordingly in this regard:

> R15: *I can say that I buy malaria drugs every three weeks. These drugs too, some are relatively expensive ooh [shocked]. I prefer Coartem to the other malaria drugs, and that medicine alone costs around 95ghc. So, assuming I*

> *am saving this money every three weeks, at least, I know I will have something to be proud of. It is sad that you will have to be the one to suffer for someone's reckless dumping, littering, pollution, and so on*. (Teacher 1)

Whiles teachers and officials cited that they spend more money on treating recurring sanitation related diseases such as malaria, typhoid, cholera among others, the market woman also stated that she spends a considerable part of their incomes on products that prevent the spread of such diseases. A driver made this emphatic statement:

> R9: "*Malaria is common here. Myself for instance, I can say on the average, I am likely to contract malaria every two weeks. Because of this, I make sure I have some malaria drugs at my disposal either at home or at my place of work, for I don't know where and when this impending attack will come. It is draining me but what else can I do? I cannot die, and leave money behind."* (Trader 1)

A health worker cited that subsequent visits to hospitals for treatment sometimes become extremely difficult because of previous expenditure on earlier treatment. According to her, many clients do not go back to health centers for checkups and further reviews even after treatment simply because they fear the cost involved. The health worker had this to disclose:

> R6: "*Sometimes clients get frustrated especially when they find out that they are being readmitted for the same condition. As you know, readmission is not free too. So, it gets to a point that they feel reluctant to come back to the hospital for reviews or checkups. Genuinely, some do not have the money for readmission and treatment because the little money they had, they have used it on their first or second treatment. They are consequently left with no other choice than to stay home. A client may visit the hospital thrice or four times in a month for the same malaria condition. If you do not see or meet such a client in the facility again, you should understand."* (Health worker 2, [nurse]).

The responses ascertained suggest that poor environmental sanitation has a close knit with financial statuses of individuals in the municipality. The findings indicate that the health implications of poor environmental sanitation to a very good extent determines residents' access to quality health. Based on the findings, it can be inferred that the health consequences

associated with poor environmental sanitation put more stress on residents' finances in the Birim Central Municipality. The findings tend to corroborate with the Danso-Wiredu (2019) who report that the health impact of inadequate environmental sanitation leads to a number of financial and economic costs including direct medical costs associated with treating sanitation related illnesses and lost income through reduced or lost productivity.

4.4.4 Loss of productive hours

Another effect of poor sanitation was loss of productive hours. An EPA officer, a senior high school teacher and a nurse cited that the adverse effect of poor environmental sanitation on health tends to affect their productive hours as well. They stated that they do not only spend much time joining queues in the hospitals but they also lose profitable hours in consulting rooms. The EPA officer recounted an experience where he had to leave work in the middle of the day to visit a health center because of malaria. He had this experience to share:

> R4: "*I recall sometime back when I had to leave the office one afternoon to the Oda Community Hospital, the private hospital along the highway. I really didn't know what was wrong with me. I left home feeling very fine in the morning but I started feeling feverish in the afternoon. I tried to keep my cool but I could not after an hour, so I had to leave the office and see a doctor friend. Senior, upon getting there, the queue I had to join with my sudden condition was appalling. I had no option than to spend the rest of my day there."* (Officer 2, [EPA])

The teacher likewise had this to say:

> R16: "*You have no idea the time you will waste in some hospitals especially in the government health facilities. I am a teacher; I know what I'm talking about. I have been taking some of our sick students for regular checkups and readmissions. There were times I had to forgo my entire lessons because the queues were so thick that there was no way I was going to make it back to the classroom. Since then, I have come to understand this so whenever a student falls sick for which I have to take him or her to the hospital, I know that I will*

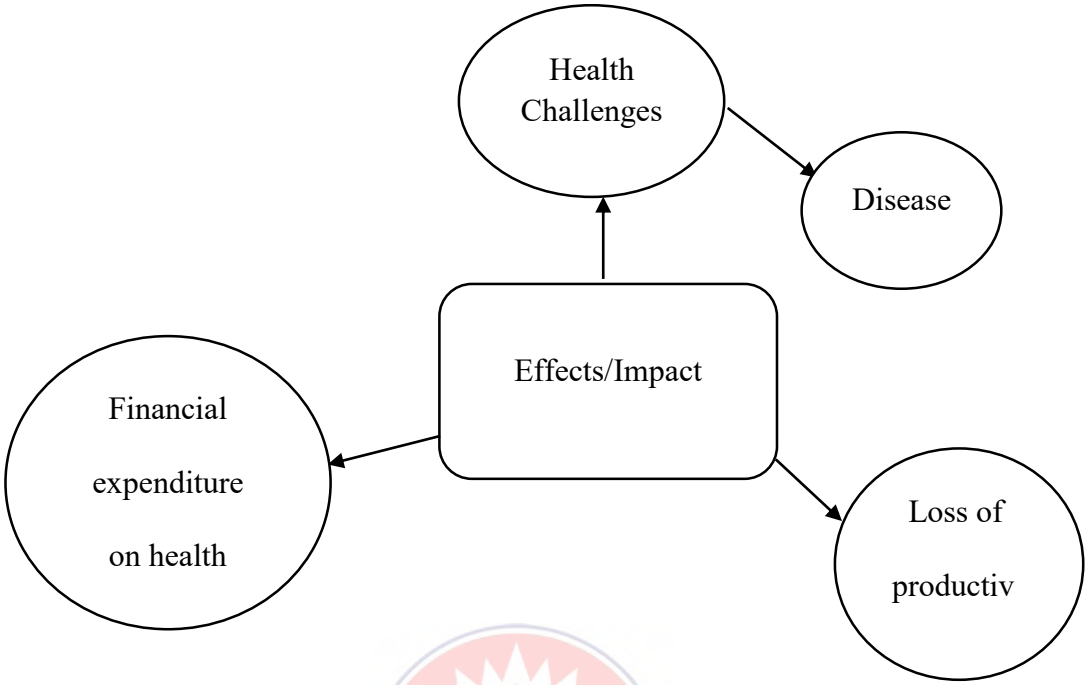
> *not make it to school and the classroom for that matter on time."* – (Teacher 2).

The health worker (nurse) made this revelation known:

> R6: *There is one particular reason why I pray I don't fall sick. You know why? The time alone you waste joining long queues to pick hospital cards is highly unbearable. By the time you get to see the doctor, my brother, I swear, you might have spent the whole day there. On two different occasions I have wasted like six hours all in the name of wanting to see the doctor for diagnosis. Sadly, the result I got after the doctors' checks revealed that I had malaria parasites and typhoid bacteria. Can you imagine? And I had to wait all these hours to be told this?* (Health worker 2)

The responses gathered suggest that poor environmental sanitation affects productive time of individuals in the municipality. It can therefore be deduced from the ascertained positions of participants that working hours of residents in the Birim Central Municipality are wasted at health centers due to contraction of sanitation related ailments. These findings tend to confirm that healthy people produce more and miss fewer days in their production of goods and service Who/Euro. (2016).

Effects of poor environmental sanitation on residents' lives



Source: Author's IDI Qualitative Data, August, 2022.

Figure 4.4: Thematic Network on effects of poor environmental sanitation on residents' lives in the study area.

4.5 Observation made by the researcher

Series of observations were carried out across households and open spaces such as lorry parks, markets, schools, places of worship, premises of establishments, shops, eating places, among other places in the municipality. The mode of the observation was predominately a direct one. However, the other modes included review of official document, community mapping, interview with community leaders and sector agencies, and household and community visits. The rationale behind this research was also to identify the determinants of poor environmental sanitation and explore residents' attitudes towards environmental sanitation in the Birim Central Municipality. Codes were generated for the phenomena observed. They were

assigned according to the presence or absence of the phenomena being observed. See Appendix C for Observation Checklist.

4.5.1 Household observation

Three indicators were used for the household observation to ascertain the determinants of poor environmental sanitation. These indicators were attitudes, logistics/industry, and nature (Act of God). This implies that the occurrence of the phenomenon in households was as a direct result of at least one of the indicators outlined above. There was no special time arranged for the household observation. The exercise was concurrently executed with the interview sessions with participants. In other words, households were immediately observed at the end of the interaction.

4.5.2 Determinants of poor sanitation

During the household visits, participants pointed to areas where garbage is usually heaped after heavy rain. Some traces of accumulated filth were spotted also at the surface areas where these household members referred to. In the course of observing households and the nature of sanitation practices pertaining to members thereof, it was seen that some residences were situated in and around waterlogged areas where flood was eminent. The researcher happened to have encountered moments where water levels in some observed households seemed abnormal. In relation to this, participants asserted that downpour of rain always caused flood in some residences. They described water levels in various households during raining seasons and claimed that such flood frequently dragged filth along and dumped them in these households.

Again, there were scenes of scattered plastics, rubbers and other waste which seemed to have no relations with the activities of household members. They appeared as though had been

spread all over by strong wind. Regarding this, the market woman and the phone dealer confirmed that aftermaths of heavy windstorms often leave refuse haphazardly behind many houses. Similar results were recorded in other households where this same activity was embarked. It appeared that across the majority of the households visited, trash were not necessarily due to the actions and inactions of residents or household members but rather natural phenomena such as heavy rain, flood and windstorm happened to be the cause. Below is sample images of scenes recorded in some selected households:

4.5.3 Behaviours in households

Furthermore, it was witnessed in some households that littering was not a bother to members. Reference can be made to three households where both the elderly and young children were seen throwing candy wrappers and leftover foods in plastics and polythene bags in the compound of the house. Pertaining to this, it was observed that waste generated at home were easily collected and disposed unlike those generated outside the confinements of the home. From the observation, it appeared that residents did not really consider littering behaviours as harmful. This perhaps explained why disposing of wrappers of confectionaries and other related plastics were usually not attended to with all seriousness across households.

Lastly, it was realized that young children who engaged in poor environmental sanitation practices were not prompted. It was noticed that children were ignorant and indecisive to some extent in many situations. From the observation, it was inferred that maintaining safe and healthy surroundings was a problem for children. Consequently, they cared less about the kind of environmental behaviours and attitudes they exhibited. Even though illicit littering was not a big deal in some households, this was not the case in other residences. For instance,

in some households, it appeared that tenants were not happy about the way children littered compounds with plastics and papers.

Waste generated after cooking was common across households. Food residues, leftovers, peels, containers, fishbones, plastics, waste water among others were only attended to after cooking. It was realised that children in some households were constantly reminded to sweep waste generated after cooking. There were also situations where wastes generated after cooking were not dealt with.

4.5.4 Industrial observation in the Municipality

Birim central municipality fairly has some few local industries, majority of which are primarily into wood processing. A visit by the researcher to some of these neighbouring wood processing plants popularly known as in the locality as "Saw Mills" revealed some unpleasant activities of these factories (plants). One such factory that the researcher visited was Sabaa saw mills company which is located close to the municipal capital (Akim Oda). One common feature observed right away was the massive saw dust particles that had the whole area covered. The cloudy nature of the saw dust particles did not only obscure residents' vision but they also seemed to have made air unsafe to breathe during the operations of these wood processing firms.

The phenomenon observed according to participants has associated health concerns. Emanation of smoke from heavy machineries was observed across the timber industries in the municipality. It was found out that thick black smoke was common in the aerial spaces of where these wood factories were situated. Eating places and households within the perimeters of these operating industries often were engulfed in thick black and white smokes. In all, saw

dust particles and smoke spread to the adjourning communities and homes in the industrial areas.

It was again observed that residents who lived close to Sabaa Processing Mills on the Oda-Ofoase-Ayirebi main road were not bothered by the loud noise made by the heavy machines of these companies. Plants, cutting machines and other related sophisticated wood cutting machines always generated unbearable noise when switched on. From the demeanor of those who lived by, it appeared that the situated created some levels of discomfort for them. Furtherance to this, an observation carried out in the night around the industries revealed that night operations of the companies did not only disturb families but they also robbed school-age going young children of good sleeping hours.

It was again noticed that a few of the industries were located along the streams that joined the Birim River. Certain activities rendered the drains of the streams dirty. The colour of edges of the waters seemed quite different from the colour of the stream itself. Furthermore, dirty water such as soapy water and water used for the treatment of logs were eventually channeled into the streams. At one factory, the edges of the stream were stuck with saw dust particles blocking the free flow of dirty water and the stream itself.

It was therefore not surprising when some workers of the company were spotted sleeping in mosquito treated nests in the light of the day simply because the area appeared to have become a breeding ground for mosquitoes. Last but not least, the researcher observed how leftovers from the operations of some selected factories were burnt. It seemed the companies were not entirely meticulous about the nature of the dust and smoke produced, the direction(s) of the particles together with the smoke emitted as well as the settling points of these substances released.

There were few households that were close to some local industries. Visit to these households revealed some harmful activities of the neighbouring factories. For example, a plastic recycling company which was situated at Saw-Mills was always engulfed in thick smoke. At the time of my visit, a section of the area was already in smoke whereas the observed households were engulfed in heavily condensed black and white smoke. It was realized that the clouds of smoke were emitted from the factories' recycling plants. In relation to this, it was realised that residents did not only suffer from the smoke emitted from these plants but they also seem to find it extremely difficult coping with the noise from the machines.

Again, certain activities of one local textile factory were noted during the household visit. Particularly, the smell that accompanied production in the factory was nothing good to write home about. The kind of odour the factory left behind in and around surrounding households was strong making air barely fresh to breathe. At some point, members had to cover their mouths and noses with either nose masks or handkerchiefs. It was noticed that the observed households did not demonstrate the same degree of care for the smoke and the noise the factories generated. While some complained, others seemed unperturbed by the situation.

Below are sample pictures captured in some factories:

4.5.5 Community observation

Series of observations were also carried out at vantage areas in a number of communities in the municipality. The indicators (nature, attitude and behaviour, and industry) were used during the household visits were applied in the community mapping to assess the determinants in poor environmental sanitation across communities in the study area. Lorry stations, market places, food joints, school premises, streets, places of worship and offices were observed to

ascertain whether or not the indicators are factors contributing to poor environmental sanitation in these areas.

It was realized during the community mapping that drainage systems installed in most of the communities were not in good shape. They could hardly contain the pressure from waste water that channeled through them especially whenever it rained. For example, there was overflow of waste water in some market areas in the municipality which traders claimed it was largely due to rainfall. Residents also lamented over the poor state of installed drainage agitating that it is a major cause of sanitation issues in some areas in the municipality. Nonetheless, interaction with other residents revealed otherwise. These community members attributed the poor state of their surroundings to the frequent rainfall experienced in the area. Their response to an extent was consistent with what was observed. Pavements turned muddy, aftermath of rain caused gutters to choke, and filths presumed to have been dragged by flood were spotted heaped along dredges at lorry stations and open spaces. A scene of the phenomenon is captured below:

Indiscriminate littering was also cited in the open spaces of some visited communities in the municipality. In relation to this, residents stated that it is not always the case that people leave or dump thrash knowingly or unknowingly anyhow in the area. They however maintained that heavy windstorm usually whirls people's rubbish and scatters them around as though someone has caused it. This assertion seemed to have fallen in line with what was noticed. In course of the exercise, pieces of papers, plastics and other forms of wrappers were seen floating mid-air whilst others found their way in choked gutters.

4.5.6 Attitude of residents

Indiscriminate littering was a common practice among residents, traders, passersby, students, children and even the elderly in many communities in the municipality. It was observed at some market places and commercial areas that commercial activities generated filth. It was noticed that a chunk of the waste accumulated were from shop owners. Some of them were seen throwing food wrappers, plastics, and several other containers in the open spaces of the market in the evening. This apparently seemed to be the order of life among the shop owners in the markets. Taxi ranks and lorry stations were also filled with plastics. Those who patronized ice-creams, confectionaries and foods from food vendors were spotted dumping leftovers in the streets of the station whereas others left the rubbers exactly at the very spot where they bought them. Below is a scene of sanitation attitude of community members at Oda Central market and commercial areas:

4.5.8 Interventions observed by the researcher

As part of the phenomenon observed by the researcher during the study, it was revealed that there are some interventions that have been introduced by households, the assembly, government and non- governmental organizations (NGOs) in addressing poor environmental sanitation situations in the Birim Central Municipal Assembly. The common intervention observed at the household level was in the area of solid waste collection.

Many households had dustbins supplied and placed at vantage points for refuse. It was noticed that the bins had pick up schedules by hired or paid companies like the zoomlion and other sanitation officers. Visits were paid to a designated dumping site which during the course of observation, it was found out that there was a demarcated landfill for the municipal assembly where all wastes collected in the municipality are to be dumped.

Apart from the demarcated landfill spotted, the presence of bigger waste containers which apparently appeared to have been provided by the municipal assembly for the dumping of wastes were also seen. These containers were mounted in the market squares, lorry stations, commercial centers and other openings in the municipality. Hawkers, market women and pedestrians were seen making judicious use of the containers. Wastes generated by shop owners and food vendors were constantly directed into the containers.

Some areas had their containers full whilst others had refuse spilling over theirs. These containers also served as gathering points for all the refuse that the zoomlion workers swept on the streets, markets and other areas of the municipality at dawn for onward transportation to dump sites. It came up clear during the period of observation that many communities have containers placed at vantage places or sensitive places like the market, lorry stations, schools, and banks for people to dump refuse they have generated.

It was also a common feature to see private individuals who were also sweeping, collecting and gathering refuse in front of people's shops and stores for a fee. It was cited that these sweepers are normally paid by shop owners as part of the interventions to keep their working areas clean. Banks, government institutions and other establishments in the municipality also demonstrated their role in ensuring proper sanitation practices. Almost every office the researcher visited on had dustbins placed at strategic points for not only customers but passersby who had any form of refuse to deal with. There were waste containers placed inside and outside of the premises of some organisations to cater for wastes generated by customers.

It was also observed that the municipal assembly periodically went on the four local radio and community stations in the municipality to educate residents on the importance of having a

clean environment as well as the effects of having poor sanitation on their health and that of their families. It was observed that officers from EPA also partnered the municipal assembly to visit schools in the municipality to educate students on the need to keep their environment clean. They also embarked on sanitation campaigns such as visiting market places to educate market women on the need to maintain clean environment. The preceding images are scenes captured on the phenomenon as pertained to the municipality. Additional scenes can also be found in the Appendices

4.5.9 Summary of Analysis in relation to the theories used for the study.

The core of the data analysed hovered around four questions raised in the study. In analysing data obtained for each question, global themes and sub-themes were generated. Pertaining to research question 1, determinants of poor sanitation was deduced as the global theme whereas education, training and sensitization, poor enforcement of laws, population increase, logistics, cost, and attitudes and behaviour constituted the sub-themes. Research question two on the other hand had attitudes as the major theme along which the analyses were performed. Meanwhile, environmental sanitation laws (residents and sanitation inspectors), littering (dumping, discharging and pollution), and indifferent attitudes (residents and waste managers) comprised the minor themes.

Data obtained for the third research question were analysed along sanitation intervention forming the central theme. However, the sub-themes generated and discussed were community commitment, drainage and sewage intervention, dumpsite demarcation, monitoring, collaboration, education (personal hygiene and sanitation management), bye-laws and punishment, solid waste container (private and public). Effects of poor environmental sanitation comprised the universal theme for the fourth and last research question.

Nonetheless, beneath this theme were secondary themes (health, disease, financial expenditure on health issues and loss of productive hours) which formed the bases for the data analysed for the aforementioned research question.

The analyses showed that residents' actions, perceptions and knowledge walk hand in hand with their sanitation practices. It was realized that people's attitudes and behaviours go a long way to influence their involvement in all environmental sanitation controversies. These findings seem to corroborate with Ajzen's and Fishburne's Planned Behaviour theory (1975) which stipulates that individual's behaviours are largely a manifestation of their intentions. Lastly, the environmental sanitation measures identified also indicated that the status of sanitation practices are dependent on interventions. This finding can be said to have been underpinned by the WASH-IBM model (2030) which states that provision of sanitation facilities is another way of addressing sanitation problems in a given community.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This section of the project highlights the summary of key findings, conclusions drawn and recommendations made based on the study findings. With respect to summary of key findings, major answers obtained for all four research questions are summarized in this aspect of the report. Again, conclusions drawn based on the findings ascertained for all the formulated research questions can also be seen in this section. Lastly but more importantly, the researcher has outlined a number of recommendations in relation to the findings obtained, which can as well be traced in this chapter.

5.1 Summary of key findings

The study revealed that variables such as education, training and sensitization, poor enforcement of sanitation laws, population hike, logistics for waste management, payment of waste collection, attitudes and behavior, and natural geographical occurrences contribute to poor environmental sanitation in the Birim Central Municipality. It was realized in the study that lack of education, training and sensitization of residents account for environmental and sanitation issues in the Birim Central Municipality. The study also pointed out attitudes and behaviours as crucial components as far as environmental sanitation is concerned.

It was found out that the nature of attitudes, behaviours and mindsets of residents inform sanitation practices which invariably can as well be a driving force beneath poor environmental sanitation in the Birim Central Municipality. The role of law enforcement was also identified as a crucial determinant in this study. It was disclosed that law enforcement and prompt response from sanitation inspectors influence the nature of sanitation likewise its practices among people living in the Birim Central Municipality. On this, the study showed

that poor enforcement of sanitation laws contributes to environmental sanitation problems in the municipality.

The study again made reference to population as a major determinant of poor environmental sanitation. It was seen that population increase due to urbanization could result in environmental sanitation problems in the Birim Central Municipality. Furthermore, cost was identified as yet another determinant of sanitation. It was found out the residents' sanitation behaviours were tied to their economic statuses. That is, people's financial budgets determined the kind of environmentally responsible attitude to exhibit. The study in addition highlighted the role logistics play in environmental sanitation. It was seen that availability of waste treatment and management facilities such as dumpsites, sanitation inspectors, waste collection bins and other related sanitation logistics contribute to waste generation and the manner in which all kinds of waste are handled among residents in the Birim Central Municipality.

Lastly, it came to bear that natural geographical occurrences contribution to poor environmental sanitation. It was realized that windstorm and heavy rain usually cause areas to flood leaving waste in and along drainages, scattering refuse around households and open spaces in the Municipality.

The study revealed residents' attitudes towards environmental sanitation. Littering was found out to be the most exhibited environmentally inappropriate behaviour in the Birim Central Municipality. The study identified three major littering habits namely dumping, discharging, and pollution (rubbish burn). It was noticed that individuals, groups and agencies to an extent demonstrate different littering behaviours and other aligned irresponsible environmental attitudes as a result of their everyday duties. The study found that littering which includes

dumping, pollution, and discharging appear to have become a habit among residents in the Birim Central Municipality.

Pertaining to attitudes of residents towards environmental sanitation, it was seen that no or little recognition was given to rules, regulations and laws governing environmental sanitation practices. The study disclosed that residents' failure to acknowledge sanitation laws contributes to the myriad of environmentally inappropriate and attitudes in the Birim Central Municipality. It was also found that sanitation inspectors often compromised compliance of the law with emotions. The study showed that overseeing proper sanitation practices and dealing with sanitation controversies did not seem integral in the daily activities of sanitation inspectors in the municipality.

Thus, it was revealed in the study that sanitation inspectors' inability to prioritise sanitation-related issues pile up to the irresponsible environmental attitudes and behaviours in the Birim Central Municipality. It was realized in the study the indifferent attitudes of both residents and waste managers towards waste management. It was noticed that residents seemed much concern about responsible sanitation practices at home than those pertaining to the outside communities. Residents' impression about waste managers was also revealed. Indifferent attitudes of waste managers were identified as contributing to the series of inappropriate environmental behaviours in the municipality.

The effectiveness of poor environmental sanitation interventions in the Birim Central Municipality was explored. In relation to this, it was found out that there is no one-sided laid down sanitation intervention. The study revealed myriads of sanitation interventions instituted and usually embarked by the Assembly and residents. These poor environmental sanitation interventions according to the study ranged from provision of solid waste container

(private and public), bye-laws and punishment, collaboration, monitoring, education (personal hygiene, sanitation management), dump site demarcations, drainage and sewage interventions and community commitment.

It was evident in the study that community commitment to addressing poor environmental sanitation practices did not wholistically reflect the assembly's zeal to fighting same phenomenon through its proposed and existing interventions. It was noticed that that lack of commitment among members of communities in the Birim Central Municipality piled up sanitation issues thereby rendering sanitations interventions highly ineffective. Again, it was revealed in the study that provision of solid waste containers as a sanitation intervention by the Assembly tends to be comparatively ineffective in the Birim Central Municipality since residents will have to intrude to supplement the distribution role of the Assembly. The study further showed that there are a number of sanitation laws in the municipality that come with their corresponding punishment should one break them even though their implementation was not entirely a challenge. It was seen that poor implementation of sanitation laws is due to the limited number of sanitation officials and the nature of the judicial system.

Again, the study showed the collaborative role of the Assembly. It was realized that the Assembly collaborates and works with stakeholders of environment and health to ensure that proper environmental sanitation practices suffice in the Birim Central Municipality. The study found that the collaborative role of the assembly appears to be relatively effective since through that it keeps close checks on the status of environmental sanitation practices. It was also revealed that dumping site seemed to be a challenge for the Assembly and residents in the municipality. The study disclosed that the Assembly did not have a demarcated dumping site for the entire municipality; it instead relied on other districts' sites to treat wastes

generated by its residents. It was seen that challenges relating to dumping sites rendered the Assembly's effort to intervene in environmental and sanitation issues futile.

More so, it was also evident in the study that the Assembly's effort in constructing and installing drainage and sewage systems in the municipality has not been adequate. Drainage and sewage systems were found out to be weak and obsolete, and residents' attitudes and behavior continue to be questioned. The study showed that the municipal assembly intervenes in sanitation controversies through monitoring and supervision. It was identified that the monitoring and supervisory roles of the assembly as far as ensuring proper environmental sanitation practices is concerned needs intensification. The study disclosed how on-guard officers are to execute their functions effectively as sanitation inspectors but due to the presence of certain unfavourable structures such lack of vehicles, delays in prosecuting offender, political power plays, personal logistics among others, executing such tasks gets difficult.

The educative role of the assembly was revealed to be comparatively effective in the Birim Central Municipality. It was found out that much time is devoted by the assembly in educating people in the municipality on proper sanitation management practices. It was again noticed that there are various avenues through which sanitation information get relayed by officials to residents in the municipality although they seemed inadequate. Lastly, the educative role of the Birim Central Municipal Assembly was seen as being comparatively effective and multi-dimensional.

The study identified three categories of effects of poor environmental sanitation. It was realized that poor environmental sanitation adversely affects health statuses, productive time and finances of residents living in the Birim Central Municipality. Pertaining to the effect of

the phenomenon on health, it was seen that many hygiene-related diseases such as malaria, typhoid and cholera are highly attributable to poor environmental sanitation practices of residents. It was again found out that people tend to lose profitable working hours to health center visitations and consultations especially when stricken by sanitation related ailments. The study also disclosed that residents who fall victims to hygiene related diseases tend to spend much money on medications which invariably drain their coffers.

5.5 Conclusion of the study

Based on the findings, the study concludes that poor environmental sanitation has different root cause. From the study, it can be concluded that poor environmental sanitation is considerably associated with education, laws and legislation, population, logistics, finance, natural geographical occurrences, industry, attitude and behaviour in the Birim Central Municipality. This implies that numerous factors play crucial role in the determination of proper and poor environmental sanitation in the Birim Central Municipality.

Conclusion can also be drawn that attitudes of individuals towards environmental sanitation will always remain indifferent. Based on the findings, the study concludes that sanitation practices at people's residences will usually deviate from what they are likely to show outside their residences in the Birim Central Municipality. The study again concludes that it is not only residents who exhibit irresponsible sanitation behaviours but waste managers also do same in the Birim Central Municipality.

The study concludes that there are variety of sanitation interventions in the Birim Central Municipality; however, they need to be intensified for them to be effective. From the findings, the study infers that poor environmental sanitation interventions are basically spearheaded by the Assembly even though residents play subliminal role in the municipality. From the

numerous interventions the study seemed to have clearly identified, I conclude that educative and collaborative roles as poor environmental sanitation interventions appear to be more effective than the others are.

With regard to the effects of poor environmental sanitation, the study concludes that the effects of poor environmental sanitation hover around three entities, namely health, time and finance. It was again concluded that poor environmental sanitation exposes residents to diseases, wastes profitable hours and puts pressure on budgets of residents in the Birim Central Municipality.

The study primarily rallied on the shoulders of the theory of Planned Behaviour (TPB) and the WASH-IBM model. These theories were combined to explore environmental sanitation attitudes among residents in the Birim Central Municipality. With TPB illustrating how people's behaviours become a reflection of their own intentions accumulated over a period of time (attitude), WASH-IBM puts into perspective how the provision of facilities can influence one's sanitation practices. The study therefore concludes that individuals' involvement in sanitation practices are driven by only two major factors: sense of reasoning and stakeholder commitment.

5.6 Recommendations

- The study recommends that the Birim Central Municipal Assembly should collaborate with Zoom Lion Limited and other Private waste management organizations in the sanitation sector within the municipality to supply waste bins to community members.

1. The Birim Central Municipal Assembly and other interested organizations/institutions should consider assisting landlords in areas such as Old Town, Oda Zongo, and Camp

to build toilet facilities in their homes. This will encourage the regular use of toilet facilities when it comes to defecation. It will also minimize the occurrence of sanitation related diseases in the Birim Central Municipality.

2. The Birim Central Health Management Team should consider organizing periodic sanitation health education at social gatherings, schools, market places and at community durbars on the need to live a healthy environment and practice proper methods of waste disposal.
3. All media houses located within the Birim Central Municipality should be encouraged by the Municipal Assembly, the EPA, Health Directorate, opinion leaders such as sub-chiefs, pastors, imams, community front liners among others to advocate and broadcast programs geared towards the need and importance of residents keeping their environment clean.
4. Sanitary inspectors in the Birim Central Municipality should be empowered by the Municipal Assembly through the Ministry of Environment, Science and Technology and Ministry of Local Government and Rural Development with logistics to help them discharge their duties of educating, arresting and enforcement of the laws to keep/improve the environment clean. Again, it is important that a considerable quota be allocated to the recruitment of sanitation inspectors.
5. Apparently, it appears that the adverse effects of poor environmental sanitation practices are seemingly inevitable. Therefore, healthcare cost can be curbed or absorbed. The Ministry of Health could come up with policies that spells out free or low-cost medication for hygiene-related diseases for some classes of people. For instance, the elderly and children who tend to be vulnerable to sanitation related

diseases can be exempted from footing such bills. Individuals should also always be on a look-out and budget for unforeseen contingencies in this regard.

6. Again, the Ghana Health Service should consider diversifying priorities to all manner of working classes who visit health facilities for healthcare services. This is to say that people who get attacked at work by hygiene-related aliments have to be fast-tracked irrespective of their line of work. This will help them save some profitable time to go back and work should they experience a spontaneous or remarkable recovery.
7. The Birim Central Municipal Assembly should consider introducing an award scheme for the neatest community in the Birim Central municipality to encourage or serve as a motivation to other communities to try to keep their communities clean and also, the Birim Central Municipal Assembly should look at investing in waste collection vehicles as a way of managing domestic waste in the municipality.

5.7 Implication of the study to policy

Implications of the study results showed that, there is the need for teachers, nurses, sanitary officers and residents within the municipality to intensify as well as assist in the fight of improving the sanitation management situation. Consequently, sanitation authorities could use the results or findings of the study to develop more ways or policies of improving good attitudes and behavior of residents especially in relation to handling waste in the communities within the Birim Central Municipality.

The findings would also make significant contributions to environmental and sanitation policies with regard to their planning and implementation. The findings of the study may be used as a reference point by interested institutions, organizations and stakeholders in the

implementation of environmental sanitation health campaigns. Media programmes could also use the findings of the study to sensitize community members about good sanitation practices within the Birim Central Municipality.

The world cannot afford to ignore the sanitation crisis. Addressing this situation requires action from government at all stages, business organizations, civil society organizations and residents. Consequently, policy makers on environmental and sanitation health ought to design a framework that will include individuals irrespective of their line of work, community or religious or political affiliation to contribute their quota to ensuring that environmentally appropriate practices, behaviours and attitudes are exhibited everywhere in the country and perhaps beyond.

5.8 Areas for further research

Apparently, the study aimed at exploring attitudes of residents towards environmental sanitation in the Birim Central Municipality. Consequently, the role of gender was not exclusively captured in the study. Future research in this area should consider measuring sanitation attitudes between males and females. Moreover, ages of participants were not assessed to find out how they inform their sanitation experiences. Therefore, subsequent studies should aim at establishing the relationship between people's age and their sanitation belief systems.

In addition, knowing people have the power to manipulate their own views and opinions in a study like this, I suggest that any inquiry of this nature should focus on exploring beyond views, perceptions and opinions about sanitation attitudes to include sanitation practices of residents. Last but more importantly, another study can also throw more light on sanitation practices among sanitation managers.

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APPENDIX A

LETTER OF INTRODUCTION

INTERVIEW WITH RESIDENTS

Dear Sir,

REQUEST FOR AN INTERVIEW

I am a PhD student of the University of Education, Winneba carrying out a study on Environmental Sanitation and Attitude of Residents in Birim Central Municipality as part of my research project. As a stakeholder in this community your views are important in this study and l would be grateful if you could grant me an interview on this important topic.

I would like to assure you that the information you provide in the interview will be treated confidential and anonymous and will be used solely for the purpose of this research.

Position……...

Venue……

Date……..….

1. How would you describe the sanitation conditions in Birim Central Municipality?
2. Is improper or indiscriminate disposal of garbage a major problem is this community?
3. What do you consider to be the major causes of littering in the community?
4. Do you have any permanent place of disposing refuse?
5. Do the residents actually use them?
6. Do you have enough waste containers or incinerators?
7. Why do people defecate at unauthorised places?
8. Do you have enough public toilet facilities in the community?
9. Do individuals have toilets in their houses?

10. Do residents pay for using the place of convenience?
11. If yes how much do they pay?
12. Would you attribute the using of unauthorized places as places of convenience to the fees being charged for using the toilet facilities?
13. What about those who cannot pay for the fees charged for using the place of convenience?
14. What do you consider to be the causes of indiscriminate refuse disposed in the community?
15. Does the environment situation cause diseases in the community?
16. Which diseases are common in the community?
17. Have you had any opportunity of educating your fellow residents on how to keep their environment clean?
18. Do you have any difficulty in solving environmental sanitation problems in the community?
19. Suggest some possible measures that can be adopted to provide clean environments in Birim Central Municipality
20. Are there some sanitation interventions put in place by the assembly, government and NGOs?
21. What are some of the interventions? if any
22. Are these interventions effective?
23. What are the effects of these poor sanitation situation on residents?
24. Do you have any further comments or questions regarding this discussion?

APPENDIX B

Interview with the Assembly member of Assembly member

1. Are you aware of the problems associated with improper disposal of refuse in Birim Central Municipality?
2. What is your general impression about the environmental sanitation in Birim Central Municipality?
3. Is littering or improper disposal of refuse a major problem in Birim Central Municipality?
4. What do you consider to be the major causes for littering of the environment?
5. Do you have enough waste container or incinerator in the community?
6. If yes do you use them?
7. Are the waste containers emptied regularly by zoomlion or the municipal assembly?
8. How many dump sites are there in your community?
9. What do you have to say on the distance to the dumpsite?
9. What are the methods for disposing the waste?
10. What are some of the common diseases that affect the residents of your community as a result of poor sanitation?
11. Who is responsible for the cleaning of the community?
12. Do you often take the chance to educate your community on the need to clean their surroundings?
13. If yes what are some of the lessons you teach them?
14. What do you suggest should be done to improve sanitation in Birim Central Municipality?
15. Who is responsible for the cleaning of the environment?
16. Do you have enough toilet facilities in Birim Central Municipality?
17. Do the residents pay for its usage?

18. If yes how much do they pay?
19. Do the residents actually patronise it?
20. Do you see the work of the Zoom lion to be very important in your community?
21. Would you offer any possible assistance for waste management in Birim Central Municipality?
22. Do you have any further comments or questions regarding this discussion?

APPENDIX C

Interview with Zoom Loin Company Ghana Limited workers and Coordinators

1. How would you describe the environmental sanitation in Birim Central Municipality?
2. In your view what are the residents' attitude towards sanitation?
3. In your view what is responsible for the indiscriminate deposal of refuse in Birim Central Municipality?
4. Do they have places for disposing of refuse?
5. Are the residents provided with enough waste containers?

If yes are the waste containers emptied regularly?

6. Do various household have toilet facilities in their homes?
7. Those without toilet facilities do they resort to the use of public toilet?
8. Are the public toilet facilities enough to cater for the residents?
9. Does one need to pay for using the facility?
10. What about children and adults who cannot pay?
11. Are/is the toilet facilities kept clean and maintained always?
12. Do you see the work of the zoom lion important in Birim Central Municipality?
13. Do your outfit experience challenges in line with their duty in Birim Central Municipality?
14. Where are the problems if there are any in the community?
15. What are your suggestions on how to keep proper environmental sanitation in Birim Central Municipality?
16. Do you have any further comments or questions regarding this discussion

APPENDIX D

Interview with Assembly sanitary inspectors/ Environmental protection Agency (EPA)

1. What is your general impression about the environmental situation in Birim Central Municipality?
2. Is improper disposal one of the major problems is Birim Central Municipality?
3. What do you consider to be the major causes of poor sanitation in Birim Central Municipality?
4. How many dumpsites are in Birim Central Municipality?
5. How far are the dumpsites from the community?
6. Does the community have enough waste containers?
7. What could be done by the following persons or institutions to ensure good sanitation
   i. Household
   ii. Opinion leaders
   iii. The District Assembly
   iv. Youth
8. Which diseases are common because of the filthy nature of the community?
9. What are the causes of the diseases?
10. Are there enough public toilet facilities in the community?
11. What about individual homes?
12. Do the residents pay for the usage of the public toilet facilities?
13. What about those who cannot pay for the fees?
14. Do they have any alternative?
15. If yes, what alternatives do they have?
16. Do the assembly have waste containers to supply people in the municipality?

17. Do residents have to pay for the containers supplied?
18. Have residents raised issues in relation to the cost involved in securing a waste container?
19. Are the waste containers empties regularly?
20. Have you had the opportunity of educating the residents on how to keep their environment clean?
21. On your usual inspections what happens to those who live in filth?
22. Do the residents have difficulties in solving sanitation problems?
23. Are there sanitation interventions by the municipal assembly?
24. What are some of these interventions?
25. How effective are these interventions?
26. Suggest possible measures that can be used to solve sanitation problems on Birim Central Municipality?
27. Apart from what have been discussed do you have something else to say?
28. In your view, what do you think are some of the effects of poor environmental sanitation on residents?

APPENDIX E

OBSERVATION CHECKLIST FOR ENVIRONMENTAL SANITATION AND ATTITUDE AMONG RESIDENTS OF BIRIM CENTRAL MUNICIPALITY

Examples of environmental sanitation problems are provided below. Please indicate how serious you view each example by using the following numbers next to the examples:
Grading Scale:
Not very serious [1]
Somehow serious [2]
Very serious [3]

NO.	AREAS OF OBSERVATION	GRADING SSCALES 1	2	3
	Determinants of Poor Environmental Sanitation			
1.	Residents have positive attitudes towards environmental sanitation.			
2.	Residents have questionable attitudes towards environmental sanitation.			
3.	Sanitation inspectors are present.			
4.	Status of sanitation in crowded/densely populated communities. Good [ ] Bad/Poor [ ]			
5.	Residents can afford sanitary expenses.			
6.	Sanitation facilities such as public toilets, dustbins, dumpsters, landfill are present in the community.			
	Attitudes of Residents			
7.	Residents intentionally litter their neighbourhood.			
8.	Traders knowingly leave waste behind in the market squares and in front of shops.			
9.	Waste managers intentionally do not cater for spilled over waste from vans, tricycles, waste containers and other waste collection moving vehicles.			
10	Residents, traders and passersby dump rubbish into drainage and gutters whenever it rains.			
11	People throw wastes in open spaces when there are no onlookers around. They burn rubbish openly without controlling the emitting smoke or quenching the ash.			
12	Residents are ignorant of sanitation offenses, safe sanitation practices and environmentally appropriate behaviours.			
13	Sanitation inspectors turn blind eyes on sanitation offenses.			
	Sanitation Interventions			
14	There are drainage and sewage systems in the communities.			
15	There are dumpsites/landfills for refuse in the communities.			
16	There is collaboration between the assembly and stakeholders including residents and the public on ways to address sanitation issues.			

17	The assembly educates residents/people on environmental sanitation behaviours and practices.			
18	There are dustbins and other waste collection containers for residents and public.			
19	Laws on sanitation are in place for residents to abide/adhere to.			

Community name:

……..

Location:

……...

GPS Code/Address:

…….

Date of inspection/observation:

……

Participant/Site Code:

……..

Mode of Observation:

……..

A. Direct Observation (D.O.)

B. Review of Official Document (R.O.D.)

C. Community Mapping (C.M.)

D. Interview with residents (I.R.)

E. Community and Household visits (C.V. & H.V.)

APPENDIX F

Akim Oda main lorry park littered with polythene bags

Akim Oda main lorry park littered with polythene bags

Landfill site at Ateankama Nkwanta, Manso

Indiscriminate dumping at central lorry station, Akim Oda Nkwanta,

Private waste collector at Central Market, Akim Oda

Dumpster at Central Market, Akim Oda

Landfill at Ateankama Nkwanta, Manso

Installed drainage at Jamaica, Akim Oda.

Aftermath of flood outside households in Jamaica, Akim Oda.

Aftermath of flood outside households in Jamaica, Akim Oda.

Smoke from a wood processing factory at Saw Mills, Akim Oda

Aftermath of flood, Liberty, Akim Oda.

Akim Oda Central Market

Waste container mounted at Oda Central Akim lorry station

Dirty water from a wood processing factory at Saw Mills, Akim Oda.

Landfill site for Birim Central Municipality at Ateankama Nkwanta, Manso.

Waste collectors in front of Multi-Credit company, Akim Oda.

Zoomlion cleaners sweeping the main road behind the Akim Oda central market

APPENDIX I

Letter of Introduction

UNIVERSITY OF EDUCATION, WINNEBA
FACULTY OF SOCIAL SCIENCE EDUCATION
DEPARTMENT OF SOCIAL STUDIES EDUCATION

Our Ref.: SSE/SM.1/VOL. 1/173

Date: 17th March, 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF INTRODUCTION: MR. SAMUEL NYAMEKYE OTCHERE

We write to introduce Mr. Samuel Nyamekye Otchere to your outfit. He is a Ph.D Social Studies student with registration number 200023771 from the above named Department.

As part of the requirement for the award of the Ph.D degree, he is undertaking a research on the topic "Attitudes of Residents' Towards Environmental Sanitation in the Birim Central Municipality". We will be most grateful if you could grant him permission to undertake the study, including collecting data.

We wish to assure you that any information provided would be treated confidential.

Thank you.

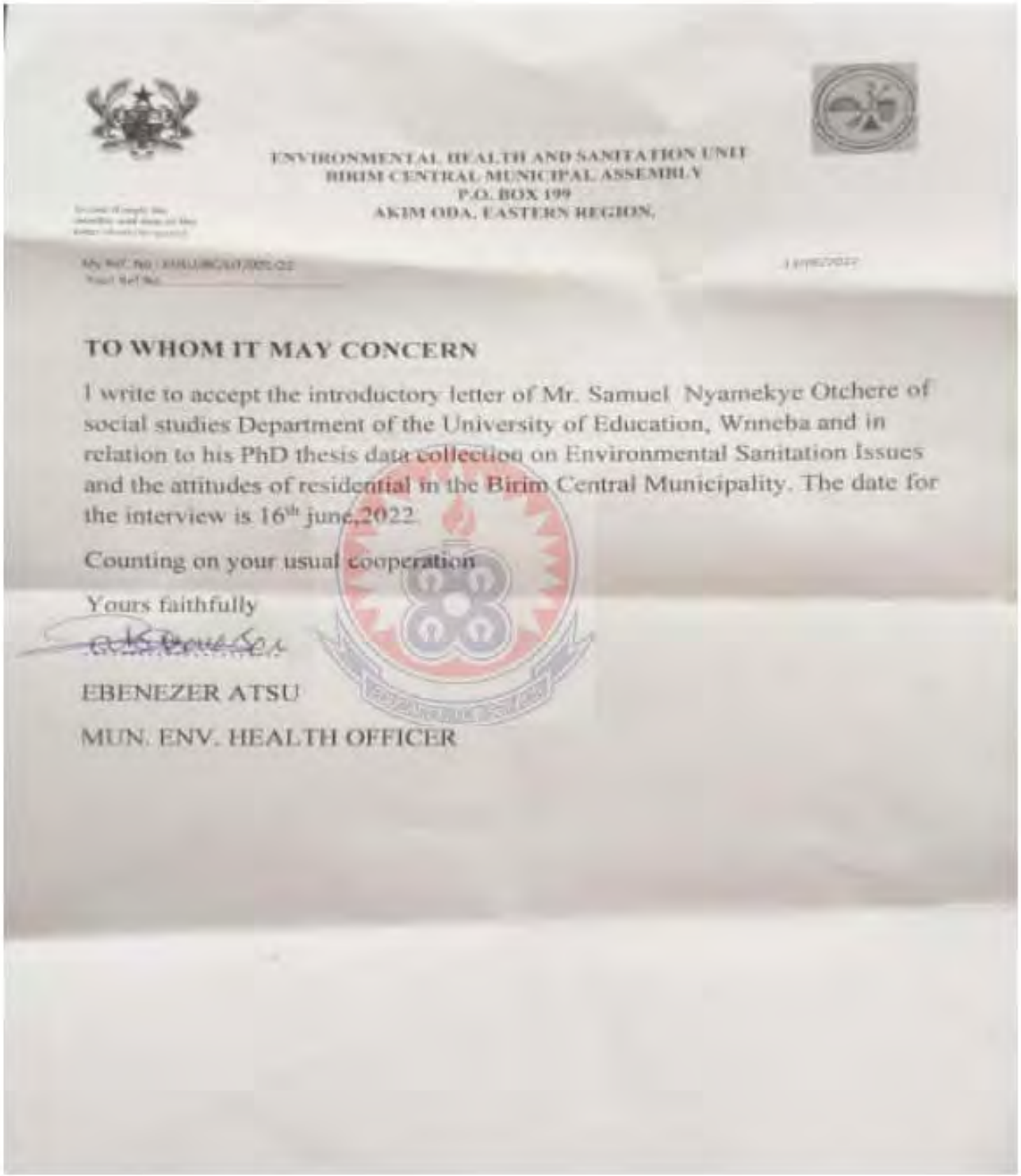
Yours faithfully,

MGN

Margaret G. Nyala (Mrs.)
for: Head of Department

APPENDIX H

Acceptance letter (Community Entry Ticket 1-Environmental Health)



ENVIRONMENTAL HEALTH AND SANITATION UNIT
BIRIM CENTRAL MUNICIPAL ASSEMBLY
P.O. BOX 199
AKIM ODA, EASTERN REGION.

TO WHOM IT MAY CONCERN

I write to accept the introductory letter of Mr. Samuel Nyamekye Otchere of social studies Department of the University of Education, Winneba and in relation to his PhD thesis data collection on Environmental Sanitation Issues and the attitudes of residential in the Birim Central Municipality. The date for the interview is 16th june,2022

Counting on your usual cooperation

Yours faithfully

EBENEZER ATSU

MUN. ENV. HEALTH OFFICER

APPENDIX I

Acceptance letter (Community Entry Ticket 2 - EPA)

Tel: +233 50 867 7491, +233 501 130 1718
Email: akimoda.districts@epa.gov.gh
Website: http://www.epa.gov.gh
Ghana Post (GPS): EB-0007-3267

Environmental Protection Agency
P. O. Box OD 161
Akim Oda
Eastern Region

10th June, 2022

TO WHOM IT MAY CONCERN

I write to accept the Introductory letter of Mr. Samuel Nyamekye Otabere of the Social Studies Department of the University of Education, Winneba, and in relation to his PhD thesis data collection on Environmental Sanitation in the Birim Central Municipality and ready to grant you an interview on the sanitation situation in the Birim Central Municipality. The arranged date for the interview is 17th June 2022.

Counting on your usual cooperation.

Yours faithfully,

OMANHENE, KWAKU BOATENG
AG. DIRECTOR
AREA HEAD – AKIM ODA

UNIVERSITY OF EDUCATION, WINNEBA

SCHOOL OF GRADUATE STUDIES
ASSESSMENT/POST VIVA CORRECTIONS FORM (PHD)

Name of Candidate: SAMUEL NYAMEKYE OTCHERE

Index Number:200023773

Programme: DOCTOR OF PHILOSOPHY (PHD) SOCIAL STUDIES EDU.

Date of Viva Voice 27th February 2024

Topic: ENVIRONMENTAL SANITATION BEHAVIOURS AND ATTITUDES OF RESIDENTS IN BIRIM CENTRAL MUNICIPALITY

SUGGESTED CORRECTIONS	RESPONSES	INTERNAL EXAMINER'S REMARKS
Title of the thesis. "**PRACTICES**" which is a key variable in your title is missing in the objectives for the study.	It has been modified with "**BEHAVIOUR**" replacing "**PRACTICES**" in the title and in the objectives of the thesis. As indicated on the cover page and the inner page ii.	Candidate has replaced 'practices' with 'Behaviour' in the title of the thesis
The concept "**ENVIRONMENTAL BEHAVIOUR**" finds itself throughout your study though it has not been operationalized in the thesis.	The concept "**ENVIRONMENTAL BEHAVIOUR**" which is found throughout the thesis has been operationally defined in the thesis. Page 19.	Candidate has operationalized environmental behaviour in the work.
Rephrase your Research Question 3; the word "**POOR**" negates its rationale.	Research Question 3 has been rephrased taking away the word "**POOR**", it now reads "How effective are the environmental sanitation interventions in the Birim Central Municipality?" Page 15.	Research Question 3 has indeed be rephrased with the deletion of the word "poor"
Properly operationalize "**attitude**" and "**behaviour**". They are two different constructs and therefore cannot be used interchangeably. Refer to page 18.	The concepts "**attitude**" and "**behaviour**' which are two different construct and cannot be used interchangeably have been properly and differently operationally defines. Page 18.	Candidate has made a distinction between the constructs 'attitude" and behaviour" in the work.

It is clear in your work that your participants were asked questions during observation. You need to rework that section ensuring that interviews as one of your instruments for collecting data was exhaustive/appropriately used.	The issue of the researcher asking participants questions during the observation sessions has been addressed by taking away all the questions asked, with the researcher exhaustively and appropriately observing the phenomenon independently. Pages 168 – 177.	Candidate has removed the questions asked participants during the observation of environmentally degraded communities in Ada.
Show in the work how you identified your key informants.	It has been addressed by clearly explaining how and why the CONVENIENCE and PURPOSIVE sampling techniques were used in selecting the informants or participants for the thesis. Pages: 95-98.	Candidate has clearly shown how the purposive and convenience techniques were used to select participants.
Read the environmental sanitation policy of Ghana (2009) in order to establish the effectiveness or otherwise of the existing environmental sanitation interventions.	The environmental sanitation policy of Ghana has been read and incorporated into the work establishing the effectiveness or otherwise of the interventions identified in the thesis. Pages 44 – 48.	Candidate has included Ghana's sanitation policy in the literature review.
Show in your analysis how the different backgrounds/levels of education of your respondents (teachers, nurses, drivers, environmental sanitation officers etc.) influenced their behaviour in relation to sanitation.	It has been addressed in the analysis of research questions one and two, clearly stating how the occupational backgrounds of participants (teachers, nurses, drivers, environmental sanitation officers etc.) influenced their behaviour during the research. Pages 112-139.	Candidate has shown how the backgrounds of participants influenced their behaviour on environmental sanitation.
Confirm your findings with literature to show whether they confirm or deviate from literature.	It has been addressed by making sure that all finding s are in line or confirms the stated literature in the thesis. Pages 112-167.	Findings are in line with the literature

Clarify whether your study made use of the environmental sanitation policy of Ghana or bye laws on sanitation in Birim Central Municipality.	It has been clarified by establishing in the work the use of both the Environmental Sanitation policy of Ghana in the literature review of the thesis and the bye laws on sanitation in Birim Central Municipality in the analysis of research question 3. Pages 44-48 and 140-160.	Candidate has reviewed Ghana's environmental policy and included it in the work
Let your conclusions reflect your findings.	The conclusions have been made to reflect the findings of the thesis. Pages 184 and 185.	Candidate has reworked his conclusions to reflect his findings.
Base your recommendations on your findings.	The recommendations of the study have all been reorganized to be in tune with the findings of the thesis. Pages 185-187.	Candidate has redone his recommendations to be in line with his findings
Ensure to reference all in-text citations.	All in-text citations have been referenced accordingly. Pages 189-203.	All intext citations previously left out have now been included in the list
Be consistent in using APA version 7 format throughout the work.	The APA version 7 referencing format has been used in referencing the thesis.	Candidate has complied with the APA version 7 referencing format
Correct all typographical errors and do an expert proofreading of the entire work.	All typographical errors identified by both external and internal examiners have been corrected and the entire work thoroughly read to correct mistakes.	Typographical errors have been corrected

INTERNAL EXAMINER'S NAME.....DR. SETH P. FRIMPONG.....

SIGNATURE.....

DATE.....4TH APRIL, 2024.....