UNIVERSITY FOR DEVELOPMENT STUDIES

DETERMINANTS OF COMMUNITY-LED TOTAL SANITATION UPTAKE AND SUSTAINABILITY IN THE SAGNARIGU MUNICIPALITY

DONKOR ADOESOM ISAAC

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DONKOR ADOESOM ISAAC

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A THESIS SUBMITTED TO THE DEPARTMENT OF SOCIAL AND BEHAVOURIAL CHANGE, SCHOOL OF PUBLIC HEALTH, UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PHILOSOPHY DEGREE IN COMMUNITY HEALTH AND DEVELOPMENT

AUGUST 2022

DECLARATION

Student

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

DONKOR ADOESOM ISAAC		9TH AUGUST, 2022
(UDS/CHD/0010/20)	SIGNATURE	DATE

Supervisors

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 for Development Studies.

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ABSTRACT

Approximately 22% of Ghanaians are involved in the practise of open defecation. In 2014, the Sagnarigu Municipality embraced Community-Led Total Sanitation (CLTS) as a strategy to combat open defecation. This study assessed the determinants of CLTS uptake and sustainability in the Sagnarigu Municipality. A cross-sectional study was conducted among 338 randomly selected household heads. Structured questionnaires, Focused Group Discussions, and Key Informant Interviews were used to collect data. The quantitative data was analysed using Statistical Package for Social Sciences (SPSS) version 25. To identify the factors associated with the CLTS uptake, bivariate analysis was performed. Those factors with p-values ≤ 0.05 were considered statistically significant. The results of the study were presented using frequencies, tables and charts. The qualitative data collected were thematically analysed and used to support the quantitative results. The results show that the average age of the respondents was 35.62 years while the minimum and maximum ages were 18 and 79 years respectively, males were 193 (57.1%), 116 (34.3%) were age 31-40 years, 190 (56.2%) had no formal education, 286 (84.6%) were married, and 169 (50.0%) were from household size 11-20 members. The study was dominated by Muslims and Dagomba's, with farming being the predominant 205(60.5%) occupation. Latrines ownership was 100%, knowledge on CLTS was high (85.80%) while very high 335(99.1%) households' CLTS uptake (involvement). With the exception of age of household heads (X^2=11.732, P=0.039), all sociodemographic variables including community name were not significantly associated with uptake of CLTS. There was remarkable progress towards achieving open defecation free in the municipality with over 6,000 latrines constructed in rural communities since 2014. The study recommends continuous monitoring of ODF communities by the municipal assembly field officers and development of a sustainability plan by both donor partners and municipal assemblies.

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DEDICATION

This work is dedicated to the late Nana Kwaku Tefo II (late chief of Teffoboi), my ever-committed parents (Mr. & Mrs. Philip Donkor) and my lovely siblings. May the good Lord bless you all abundantly.

ACRONYMS AND ABBREVIATIONS

APDO: Afram Plains Development Organisation

CHV: Community Health Volunteers

CLTS: Community-Led Total Sanitation

DACF: District Assemblies Common Fund

EHSD: Environmental Health and Sanitation Directorate

FGD: Focus Group Discussion

GOG: Government of Ghana

HBM: Health Belief Model

JMP: Joint Monitoring Program

KII: Key Informant Interview

MICCS: Municipal Inter-Agency Coordinating Committee on Sanitation

MMDA: Metropolitan, Municipal and District Assemblies.

OD: Open Defecation

ODF: Open Defecation Free

RING: Resilience in Northern Ghana

SDG: Sustainable Development Goals

UN: United Nations

UNDP: United Nations Development Program

UNICEF: United Nations International Children's Emergency Fund

WASH: Water Sanitation and Hygiene

WSP: Water and Sanitation Program

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

One of the fundamental determinants of human development and quality of life is sanitation (Sheethal & Shashikantha, 2016). In general, sanitation refers to the provision of spaces and services for the secure removal of humanely produced urine and faeces. The maintenance of cleanliness or hygienic conditions through services like wastewater disposal and garbage collection could also be referred to as sanitation. Other activities that support environmental sanitation include providing and maintaining sanitary facilities, offering services, educating the public, encouraging community and individual action, enacting regulations and laws supported by institutions with clear mandates, allocating adequate funding, and engaging in research and development (Abudulai et al., 2021). Sanitation is very important hence lack of proper sanitation or inadequate sanitation could cause major adverse conditions to the environment, animal and human life (Ibanga, 2015).

A more effective sanitation facility is one that cleanly removes human excreta from human contact. An improved sanitation usually entails physically closer facilities, shorter wait times, and a safer and environmentally friendly effluent disposal (Van Minh & Hung, 2011). According to Harter (2018), environmental pollution is the leading cause of early deaths and diseases the global community currently struggles with. Pollution-related illnesses contributed to 9 million morbidities in 2015 and 16% of premature deaths globally. Waterbodies, which consist of both poor sanitation and contaminated water, came in second place. Faecal transmitted diarrheal illnesses cause a greater incidence of deaths associated with dirty water (Harter, 2018).

Poor sanitation has an impact on all aspects of life, including health, nutrition, development, economy, dignity, and empowerment. Undernutrition, waterborne illnesses, gastro-enteropathy, diarrhoea, and dysentery can all be caused by inadequate sanitation and availability to safe drinking water. In underdeveloped countries, these issues are most prevalent in pre-school age children (Kuberan et al., 2015).

Public health professionals are becoming increasingly conscious that until good hygiene is continuously practised at home, in the community, and in institutions, the expected impacts of enhanced sanitation and hygiene infrastructure in terms of community health benefits cannot be realized (Musoke et al., 2018). An increasingly crucial but difficult issue for governments, international development organizations, urban planners, and sanitation professionals is increasing public access to sanitation services in a world that is quickly urbanizing (WHO/ UNICEF, 2015). Hence, the aim of the Sustainable Development Goals (SDG's) by the United Nations in 2015 was to achieve access to sufficient and equitable sanitation and hygiene for all people, prevent open defecation, and ensure availability and sustainable management of water and sanitation for all (SDG 6.2) by 2030 (UN-Water, 2018).

According to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) Joint Monitoring Program (JMP) for Water Supply, Sanitation, and Hygiene report (2015), there are 946 million people who defecate in the open among the approximately 2.4 billion people who lack access to appropriate sanitary facilities globally. As a result, approximately 1 billion people worldwide suffer from open defecation-related health problems, accounting for nearly 842,000 morbidities from sanitation-related infections each year (WHO/ UNICEF, 2015).

It is reported that 5.9 million children under five mortalities are recorded every year from all causes and diarrhoea is the third biggest causes of mortality in children under five. It is estimated that every day, poor sanitation causes 1,000 under-five children to die from diarrhoeal illnesses each year, inadequate hygiene, or contaminated drinking water. Stunting, or chronic malnutrition affects 161 million children, and it has been connected to WASH, particularly open defecation (WHO/UNICEF, 2015). Improved water, sanitation, and hygiene were predicted to be able to avert roughly 842,000 deaths from diarrhoeal illnesses per year (WHO/ UNICEF, 2015).

Diarrhoea infections have a particularly negative impact on developing countries, which generally have limited safe water supplies, poor hygiene, and poor sanitation (Igaki et al., 2021; Osumanu et al., 2019). Diarrhoea disorders are linked to the infection and spread of a variety of pathogens, posing serious public health risks. However, a large portion of diarrhoeal diseases can be avoided (Igaki et al., 2021). According to Joseph et al. (2020), in impoverished nations, a lack of basic sanitation, the use of contaminated drinking water, and poor hygiene are claimed to be responsible for 88% of all diarrhoeal illnesses and deaths. With 892 million people still using open defecation worldwide, approximately 600 million individuals use a limited sanitation service, which entails better facilities shared with other homes (WHO/UNICEF, 2017).

Many tropical diseases are caused by poor sanitation, with incorrect faecal sludge management and poor sanitation contributing to Africa's 115 fatalities every hour from excreta-related diseases. Poor sanitation costs the continent between 1 and 2.5% of GDP, and faecal pollution causes 1,800 cases of cholera in Ghana and 3,500 cases in Kenya on average per year (Ngakane, 2021).

In sub-Saharan Africa, approximately 63.6% of people lacked access to better sanitation in 2015. The region now has the lowest sanitation coverage (37%) in the world, despite the fact that its population nearly doubled between 1990 and 2015. During that time, access to better sanitation rose by only six percentage points. Due to population expansion, the number of people practising open defecation in the region has increased by about 33 million since 1990, compared to the global total 946 million. As of 2015, the region had an estimated 695 million individuals lack access to sanitation (WHO/ UNICEF, 2015). Of the two billion people who did not have access to basic sanitation worldwide, 300 million lived in Africa. Only 7% of the population had access to sewers, and only 1% of rubbish got disposed of, 19% defecated in open areas, while the rest relied on on-site sanitation (Olufunke, 2016).

In the case of Ghana, the issue is not different from other developing countries. Due to a lack of data, the nation is categorized as having 5 to 25% of its citizens who practise open defecation. Approximately 22% of Ghanaians are involved in the practise of open defecation (Adzawla et al., 2020). Ghana loses 420 million Cedis annually due to poor sanitation. As of 2012, this amount was equal to 1.6% of Ghana's national GDP, or US$22.2 per person per year. While 4.8 million Ghanaians have no latrines at all and defecate in the open, over 16 million utilize unhygienic or shared latrines (Ameyaw et al., 2017; WSP, 2012). The likelihood of open defection is 22 times higher in the poorest quintile than in the richest. (Adjibolosoo, 2017).

The USAID (2020) sanitation profile for Ghana, further indicates that, in rural areas only 0.4% of houses have toilets connected to a sewer system, while 2% have toilets connected to septic systems. The report also indicated that there hadn’t been any increase in the use of safely managed sanitation facilities between 2000-2017. Despite this, only 20% of homes have no handwashing facilities, while 43% have only limited access to soap and water and 37% have only a basic handwashing facility (USAID, 2020). Poor sanitation and hygiene standards contribute to a number of illnesses and fatalities in Ghana. Poor hygiene and sanitation, for

example, are responsible for more than 60% of infections in Ghana. In the nation, diarrhoeal ranks third in terms of morbidity, accounting for 4.3% of all fatalities, behind only respiratory disorders (7.2%) and malaria (44.1%) (Iddrisu, 2016).

Currently, 25% of children under five morbidities are recorded as a result of diarrhoea related infections which is estimated to be more than 9 million incidences every year. About US$33 million is spent each year in Ghana as a direct and indirect outcome of diarrhoeal illnesses. Open defecation has thus been identified as the main cause of cholera affecting Ghanaians annually (Tampah-Naah, 2019). The adoption of SDG 6, which aims to ensure that everyone has access to and can sustainably manage their water and sanitation needs, is a reflection of the growing political importance of water and sanitation concerns worldwide (UN-Water, 2018). Better sanitation (by safely containing human excrement and reducing open defecation) is intended to reduce the presence of faecal pathogens in the environment, which can otherwise be spread via soil, surface water, hands, or flies. Handwashing at key periods can lower the chance of illness as well by lowering the prevalence of enteric bacteria in the hands and fingers (Briceno et al., 2015).

For a variety of reasons, maintaining rural sanitation improvements has been difficult. In general, the financial resources allocated to rural sanitation are horribly insufficient; just a small percentage of developing nations' GDPs is given to water, sanitation, and hygiene (WASH), out of which, only a minor percentage is allocated to rural development and sanitation (Zuin et al., 2019).

In an attempt to attaining Open Defecation Free (ODF) status, many countries in developing world chose the Community-Led Total Sanitation (CLTS) approach (Joseph et al., 2020). CLTS is a participative strategy that aims to influence collective behaviour in rural areas (Deepak & Moulik, 2007; Harter, 2018; Joseph et al., 2020).

CLTS focuses on the behavioural changes that are required to achieve real and long-term results. It entails putting money into community mobilization rather than hardware, and changing the focus from individual family toilet building to the formation of Open Defecation-Free towns as a result of behaviour change messages (Harter, 2018; Kar & Chambers, 2008). Communities are assisted in completing their own open defecation assessments and analyses, as well as making efforts to become open defecation free (Kar & Chambers, 2008).

The CLTS approach incorporates a variety of activities that are implemented in three phases (pre-triggering, triggering and post triggering) at the community level, by local facilitators (Harter et al., 2020). During the pre-triggering phase, each community is visited to learn more about the residents and determine whether they are ready to change their behaviour. By using this knowledge, behaviour change can be affected through participation approaches in the second step (triggering). These methods are then applied during a community activity, such as a transect walk or community mapping, where the community is exposed to contamination by faeces. The best result from this community gathering, sometimes referred to as the triggering event, is that community members now have a better awareness of the fact that "they are eating their own faeces." Third, facilitators assist the community in constructing facilities during the post-triggering phase so that it can stop practising open defecation. The original CLTS process is self-contained and does not require any further funding (Harter et al., 2020; Kar & Chambers, 2008).

The CLTS concept has become the most sought-after sanitation technique since its introduction in Bangladesh in 1999, thanks to its initial success in motivating communities to abandon open defecation. CLTS is presently used in over 60 countries around the world (Cameron et al., 2021; Stuart et al., 2021).

The CLTS approach has however been criticized, with worries that it may be perceived as persistent due to its significant focus on shame and social stigma. Moreover, in the absence of

any subsidies, poor communities may not have the resources necessary to build durable, high-quality latrines, which increases the possibility of "slippage" (reversion to open defecation). Again, only a small percentage of CLTS programmes provide monitoring and follow-up support (Clarke et al., 2021).

Sagnarigu Municipal Assembly began CLTS implementation in 8 communities in 2015 and scaled up gradually to 17 communities by close of the project in September 2019. Due to the urban and cosmopolitan nature of most of the communities in the Municipal area, it has been very challenging implementing CLTS principles and strategies to achieve results. Large sizes of communities, coupled with issues of land tenure and tenancy agreements have indeed made it difficult to get households to construct and use latrines, thus making ODF achievement very difficult (Ring, 2019). The Sagnarigu Municipal Assembly in 2015 trained 116 natural leaders, who facilitated construction of 135 household latrines and 187 tippy taps, providing safe sanitation access to 1,067 people in 17 communities (Ring, 2019).

Despite the fact that the CLTS programme has been in place in the Sagnarigu Municipality for several years now, determinants of its uptake and sustainability have not been evaluated yet. This study therefore sought to explore the determinants of CLTS uptake and sustainability in the Sagnarigu Municipal area.

1.2 Problem Statement

The Metropolitan, Municipal, and District Assemblies (MMDAs) spend a portion of the District Assemblies Common Fund (DACF), as well as other locally generated revenue and funds from donors on sanitation as part of the Government of Ghana's (GoG) numerous strategies to improve Water, Sanitation, and Hygiene (WASH) in the country. The government does this because it recognizes that without finances, implementing these plans and initiatives will be difficult. The country's water, sanitation, and hygiene programmes are said to get 1.7% of the total national budget each year, while each District Assembly is said to set aside roughly

3% of the DACF each quarter for sanitation-related expenses, with the study area Sagnarigu Municipal being no exception (Iddrisu, 2016).

Despite these efforts, the desired impact or improvement in sanitation habits has yet to materialize. The majority of the Government of Ghana's (GoG) WASH plans and activities have failed to benefit rural populations (Adzawla et al., 2020; Iddrisu, 2016). The Sagnarigu Municipal area is among the leading districts in the Northern region with a greater number of its populace involved in open defecation practises. The Municipal Assembly scored 2.5 percentage points and ranked 83rd on the sanitation league table during the 2019 District League (Unicef/CDD, 2019).

CLTS is considered an effective strategy to improve hygiene and sanitation in Ghana's rural areas (Awuah, 2009). The immediate aim of the CLTS programme is to ensure that people stop Open Defecation (OD) and also employ hand washing behaviours. However, no study has been conducted on determinants of CLTS uptake and sustainability in the Northern Region especially in the study area, since its scale-up in 2012 as a national programme.

The Environmental Health and Sanitation Directorate (EHSD) has been reporting on successes based on implementation of the programme merely on either ODF achieved or hand washing facilities and latrines constructed. There have not been any obvious indicated reasons why people wash their hands with soap, possess a latrine or do not possess one, etc. Information on factors influencing CLTS uptake and sustainability could serve as a bridge to the current paucity of sanitation information and contribute to driving advocacy for the community-led total sanitation programme.

It is against this background, the study sought to explore the determinants of CLTS programme uptake and sustainability in the Sagnarigu Municipal.

1.3 Significance of the Study

Several sanitation programmes over the years have been ignored because the factors influencing the beneficiary communities to uptake and sustain the programme are not well taken into consideration before implementing a programme.

Evaluating the impact of the CLTS strategy will allow for the collection of important data from a local perspective that could be useful in informed policy making and the information gained from the study will help to guide future initiatives aimed at addressing sanitation issues as well as hygiene. The results of this study will contribute to addressing the target of SDG 6, which aims at ensuring clean water and sanitation for all.

This could serve as baseline for future research, the findings of which will be used by decision-makers, the donor community, and international organizations. Additionally, the study will inform the Local Government Ministry and provide information to existing interventions, the Ghana Health service and Ministry of Health in developing new approaches to deal with the sanitation problems.

1.4 RESEARCH QUESTIONS

1. What is the knowledge level of the people of Sagnarigu Municipality with regards to the CLTS programme?
2. What is the uptake level of the CLTS programme in the Municipality?
3. What are the determinants of the CLTS intervention uptake in the Sagnarigu Municipality?
4. What are the sustainability factors with regards to the CLTS programme?

1.5 RESEARCH OBJECTIVES

1.5.1 Main Objective

The main objective of the study was to investigate the determinants of Community-Led Total Sanitation programme uptake and Sustainability in the Sagnarigu Municipality in the northern region of Ghana.

1.5.2 Specific Objectives

1. To assess the knowledge level of the people of Sagnarigu Municipality with regards to the CLTS programme.
2. To evaluate the uptake level of the CLTS programme in the Municipality.
3. To assess the determinants of the CLTS intervention uptake in the Sagnarigu Municipality
4. To explore the sustainability factors with regards to the CLTS programme.

1.6 CONCEPTUAL FRAMEWORK

This study is anchored on the Anderson and Newman Framework of health service utilization (Andersen, & Newman, 1995) which is one of the many models which health programmes specifically employ to improve utilization of health interventions among individuals and communities.

The Anderson and Newman Framework of health service utilization is generally used by researchers or individuals in the health sector to determine factors that either facilitate or impede utilization of health service or intervention. The framework was initially developed in the 1960s (Andersen, & Newman, 1995). According to Anderson & Newman, (1995) predisposing, enabling, and need-for-care elements that either speed up or slow down individual usage of intervention are thought to be the three qualities that determine an individual's access to and use of health services (Hwang et al., 2017; Seidu, 2020).

Demographic features, social structural components as well as a person's basic beliefs, attitudes, and knowledge about health interventions are all predisposing factors (Seidu, 2020). The availability of resources such as money and community health workers—individually or collectively—are enabling variables (Markle et al., 2017; Seidu, 2020). Needs factors comprise illnesses, health status and conditions that necessitate health intervention. The approach has been used in sociology, medicine, public health, and psychology, among other fields (Seidu, 2020).

Despite its widespread use across disciplines, the paradigm has been criticized by certain academics. According to some academics, the approach ignores cultural aspects and social interactions (Hwang et al., 2017). Max & Andersen (2008), contended that need is a social construct in and of itself. Despite its flaws, the model is useful for this study, due to the fact that it is a multi-layered theory that has been utilized in various contexts disciplines.

CONCEPTUAL FRAMEWORK

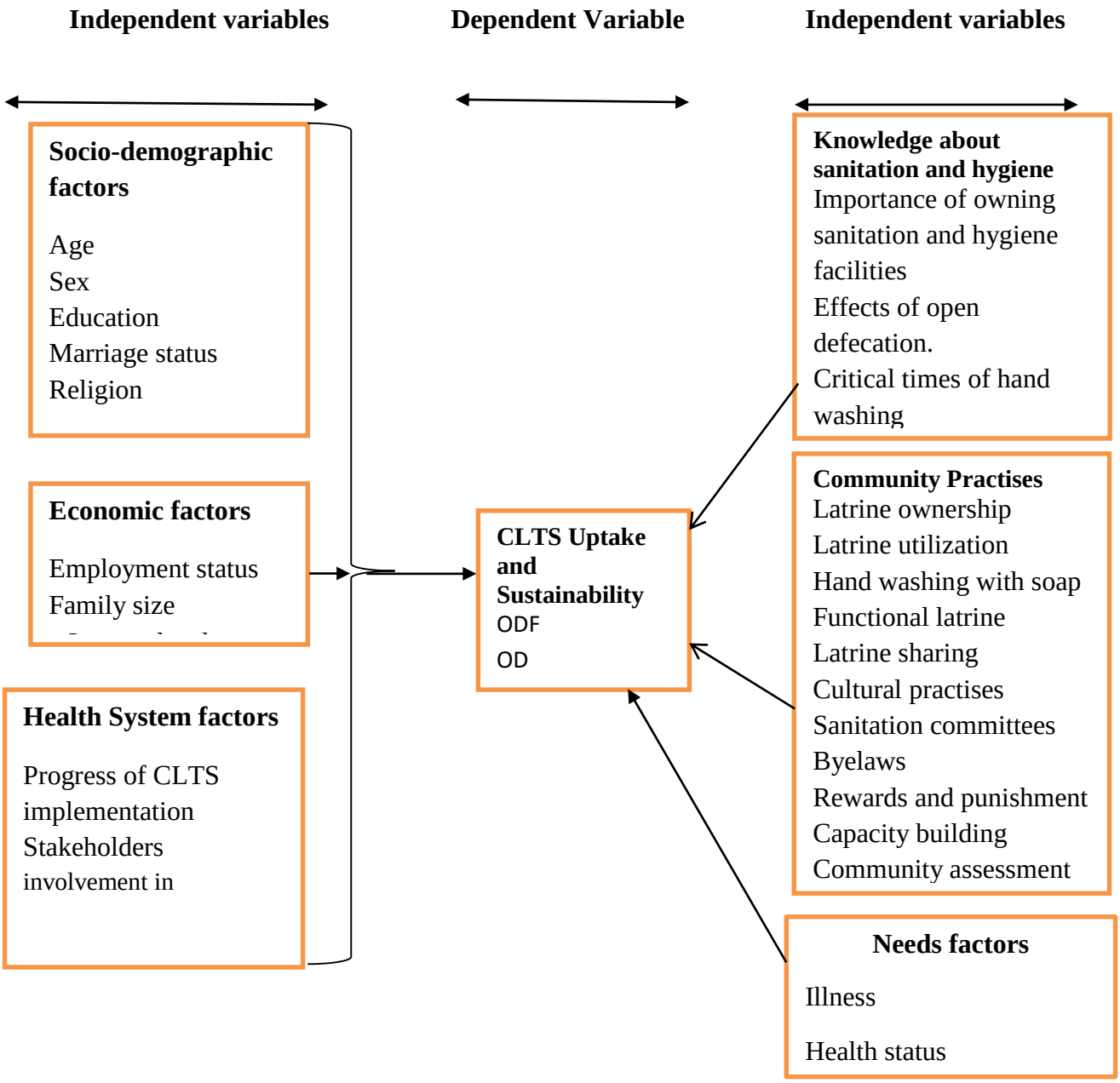

Figure 1. 1 Conceptual Framework

Adopted from (Andersen, & Newman, 1995)

1.7 Theoretical Framework

1.7.1 Health Belief Model

The Health Belief Model (HBM), created in the 1950s by behavioural scientists working for the US Public Health Service, is still used today by psychologists, other health professionals, and health educators as one of the most extensively used conceptual frameworks for understanding health behaviour (Abraham & Sheeran, 2014). Threat perception and behavioural evaluation were the two areas on which the HBM concentrated when examining how people perceive their health and health behaviour. The two main assumptions that were used to define threat perception were perceived susceptibility to illness or health issues and expected severity of the effects of illnesses. Behavioural evaluation also included two different sets of beliefs: those about the advantages or effectiveness of a suggested health behaviour and those about the expenses or obstacles to engaging in the behaviour (Abraham & Sheeran, 2014). The model also suggested that, when the right beliefs are held, cues to action can stimulate healthy behaviour. These "cues" encompassed a wide variety of triggers, such as personal assessments of symptoms, social pressure, and health awareness campaigns. In subsequent iterations of the model, the overall health motivation of a person—or their "readiness to be concerned about health matters" was also taken into account (Abraham & Sheeran, 2014).

Hence, the HBM specified six different structures. The operationalization of the relationships between perceived vulnerability, severity, and overall threat perception lacked defined criteria. Similar to the last example, no formula for developing a general behavioural evaluation measure was devised, despite the suggestion that felt benefits were "weighted against" perceived barriers. Consequently, the model has usually been operationalized as a series of up to six separate independent variables that potentially account for variance in health behaviours.

Even the definition of these six constructs was left open to debate. Numerous research has demonstrated that the different operationalizations of the model enable the identification of beliefs associated with healthy behaviour (Abraham & Sheeran, 2014).

The health status of individuals determines their quest of a health intervention. In this case, community members will adopt the CLTS intervention if they experience the negative impact of open defecation

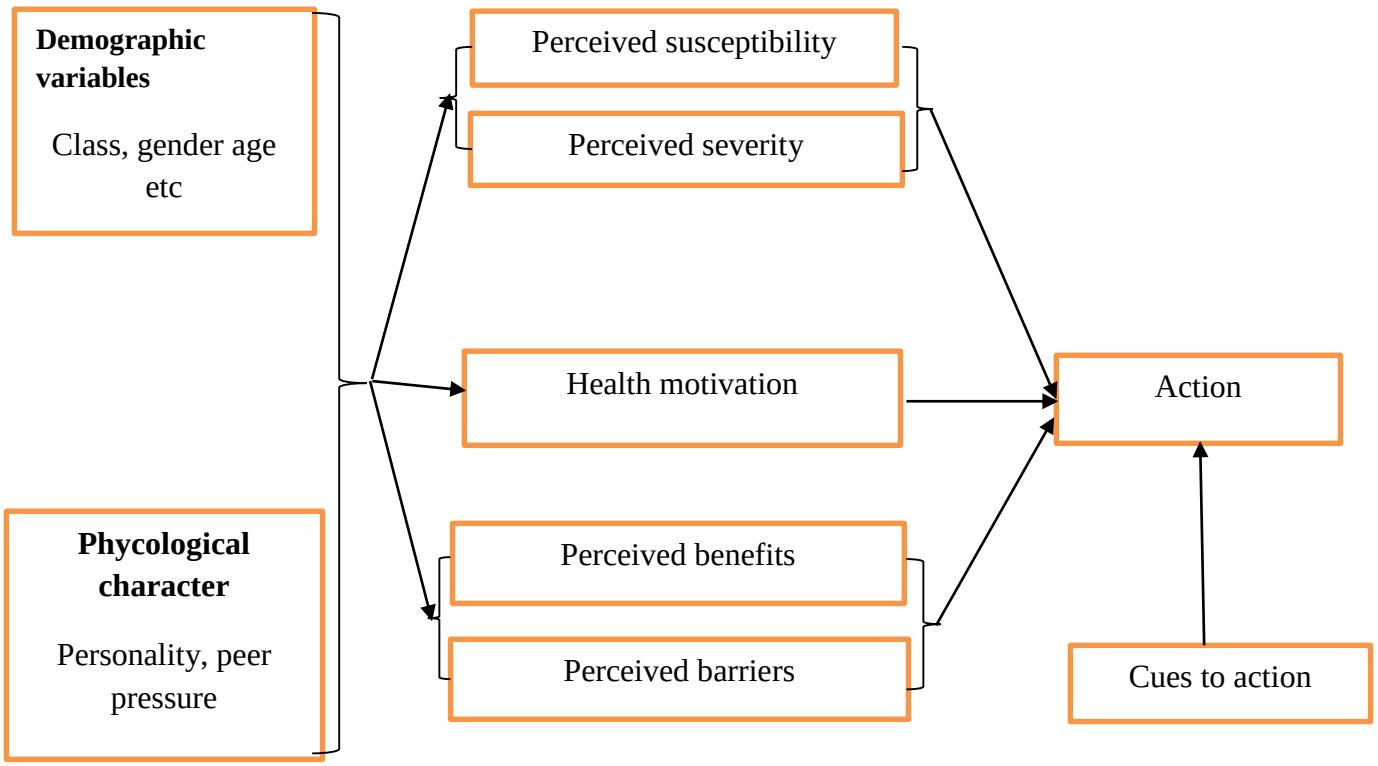

Figure 1.2 Theoretical Framework

Adopted from (Abraham & Sheeran, 2014)

1.8 Definition of Terms

Sanitation; Sanitation is the hygienic practise of promoting health by avoiding human contact with wastes that may include physical, microbiological, biological, or chemical disease agents (Dobe et al., 2011).

Hygiene: refers to the conditions and behaviours that support a healthy lifestyle and stop the spread of disease (Chand et al., 2020).

Diarrhoea: refers to the abnormal discharge of watery stool. Most cases of diarrhoea are due to bacteria, viruses, or parasites (Akram, et al., 2020).

Open defecation: refers to defecating in fields, forests, bushes, bodies of water, or other open areas (Osumanu et al., 2019).

Open defecation free (ODF): Open defecation free is the absence of visible faeces in the surrounding area/village, which signifies the end of faecal-oral transmission. All households and public/community facilities dispose of waste using safe technologies (Mara, 2016).

Community-led total sanitation (CLTS): Community-led total sanitation (CLTS) is a method for enhancing sanitation and hygiene practises in a community that is primarily employed in developing nations. The strategy employs a "triggering" procedure to attempt to influence the behaviour of primarily rural people, which eventually results in their spontaneous and long-term rejection of open defecation practises (Sigler et al., 2015).

Pit latrine: refers to a particular kind of toilet that store human waste in a pit in the ground (Reed, 2014).

Pre-triggering: Pre-triggering is the procedure used to determine whether a community is appropriate for a CLTS intervention. This include visits and a variety of variables that are used to find groups that will respond well to triggering (Crocker et al., 2016).

Triggering It refers to strategies for stoking public support for eradicating open defecation, typically through the construction of inexpensive latrines like pit latrines. CLTS entails doing things that promote one's sense of self-respect and communal pride (Crocker et al., 2016).

Post-triggering: The term "post triggering" describes how energy and awareness generated by the triggering are translated into strategies for eliminating open defecation in the community (ODF). The family members evaluate the availability of water and sanitation services in their neighbourhood as well as the locations of open defecation areas (Preetha et al., 2016).

Uptake: refers to the rate or act of community members accepting or utilizing the community-led total sanitation programme (Ogendo et al., 2016).

Determinants: are the elements that influence the uptake or acceptability of community-led total sanitation programme in a locality. They can either influence negatively or positively (Venkataramanan et al., 2018).

Sustainability: refers to individuals either improving or maintaining community-led total sanitation programme in other for it to achieve its aim (Southwick et al., 2014).

Superstructure: a latrine superstructure is a shelter that gives the latrine user privacy and protection. Superstructures can be made out of everything from bricks, blocks, and stone to corrugated metal sheets, wattle and daub, and even plastic or sackcloth in an emergency (Water, 1971).

Improved sanitation: is a term used to categorize types of sanitation for monitoring purposes. It refers to the management of waste at the household level (Naughton & James, 2017).

Household: refers to one or more persons who share meals and live in the same house (Joseph et al., 2020).

Household head: The head of the household is one of the household members who is recognized as such by the other members of the household unit, or by himself or herself if living alone (Posel, 2001).

Peri-urban communities: refers to settlements that are on the edges of cities or large urban regions but yet have rural traits, such as a heavy emphasis on agriculture. Peri-urban areas are defined as locations that combine rural and urban traits (Nations et al., 2013)**.**

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

2.1 Introduction

This chapter focuses much on relevant studies on factors influencing CLTS uptake and sustainability in Ghana, Africa as well as other parts of the world, provide an overview of the literature in the field and identifies gaps in knowledge. In order to better understand CLTS adoption and sustainability in the Sagnarigu Municipal geographical area, the gaps will then be used to guide the research questions and methods.

2.2 Global burden of open defecation

Numerous health problems and a heavy burden of disease are associated with an inability to appropriately control and treat human excreta (Spears et al., 2013). Globally, 2.4 billion individuals lack access to better sanitation and 946 million of them practise open defecation as a result. Hence, roughly 1 billion individuals globally, suffer from health concerns connected to open defecation, accounting for nearly 842,000 morbidities from sanitation-related infections each year (WHO/ UNICEF, 2015). Rural areas are home to seven out of ten people without better sanitation (UNICEF/WHO, 2015). According to a UNICEF report published in 2018, at least 60 million individuals must quit defecating openly each year between 2015 and 2030 to successfully abolish the habit (Marfo et al., 2019; UNICEF, 2018). Countries with higher percentage of persons practising open field defecation have higher rates of under-five mortality and malnutrition (Bhatt et al., 2019). China, Bangladesh, South Sudan, Ethiopia, Niger, Nigeria and Ghana are some of the countries with higher percentage of persons practising open defecation globally (Abebe, 2020).

Diarrhoea is the most prevalent health problem caused by insufficient water, sanitation, and hygiene (Lawrence et al., 2016). Poor sanitation contributes to 10% of the world's disease

burden, including acute respiratory illnesses, neglected tropical diseases, diarrhoeal diseases, and child malnutrition (Bhatt et al., 2019). More children die from diarrhoeal every day than from AIDS, malaria, and measles put together, despite the fact that it is considered a common ailment (Dandabathula1 et al., 2017).

Every year, nearly 800,000 children below age five die each year from diarrhoea, which is thought to cause 1.7 billion cases globally. An estimated 106 harmful and infectious viruses, 106–108 bacterial pathogens, 103 protozoan cysts, and 10-104 helminth eggs can all be found in one gram of diseased human excreta. The danger of exposure to these bacteria, which can cause serious health concerns such infectious illnesses, diarrhoeal, typhoid and cholera, and viral infections, also rises as a result of improper human waste disposal (Saleem et al., 2019).

Diarrhoea is the third biggest cause of death in children under the age of five. Each day, over 1,000 children under the age of five die from diarrhoeal diseases caused by poor sanitation, inadequate hygiene, or contaminated drinking water. Stunting, or chronic malnutrition affects 161 million children, and it has been connected to WASH, particularly open defecation (WHO/UNICEF, 2015).

Inadequate sanitation and the infections that accompany it are thought to be responsible for 432,000 diarrhoeal deaths each year (Berry et al., 2020). The relationship between diarrhoeal diseases and the environment in which we live is complex. The more we defecate in public, the greater the chance of faecal–oral transmissions and, as a result, more diarrhoeal episodes (Dandabathula1 et al., 2017). Diarrhoeal illnesses are responsible for 829,000 WASH-related fatalities (WHO), 2019). Meanwhile, it is well known, that following the simple hygienic practise of washing hands with soap after defecating can save up to 800,000 lives per year from diarrhoea (Ogbara et al., 2021)

According to the WSP (2010) report, the greatest portion of the overall economic losses was caused by health and water resources. Poor hygiene and sanitation cause 100,000 premature

deaths and at least 180 million illness episodes per year. Annually generated economic effect was estimated to be more than US$4.8 billion (WSP, 2010). The habit of defecating openly is common in developing nations with insufficient funds and access to water for infrastructure. Instead, these folks are forced to defecate frequently in open settings, including in bodies of water. This puts people at danger of diseases such as cholera, diarrhoea, dysentery, by contaminated water (Berry et al., 2020).

In low and middle-income countries (LMICs), open defecation has been associated with violence against women, including rape of women and girls (Marfo et al., 2019). Open defecation has serious repercussions: it kills babies, hinders the physical and cognitive development of surviving youngsters, and diminishes global human capital. Open defecation has large negative externalities: it spreads germs in the environment that hurt rich and poor people alike, including those who use latrines (Coffey et al., 2014).

Poor sanitation has a significant negative impact on economic performance. For instance, a recent study indicated that the cost of inadequate sanitation worldwide increased from USD 183 billion in 2010 to USD 223 billion in 2015 (Daudey, 2018). Also, according to the WaterAid (2016) report, access to sanitation costs the global society US$27 billion per year, since a large portion of the population lacks convenient access to a toilet and must rely on public facilities, which they must queue for, or find a location to defecate openly. Queuing and hunting for an open defecation site both waste time that could be spent on more productive activities, and hence have a negative economic impact (WaterAid, 2016). In India, the cost of poor sanitation is $53.8 billion, or 6.4% of the country's GDP in 2006. In Cambodia, the situation is estimated to costs the country a $448 million each year, or 7.2% of GDP (2005). Indonesia lost an estimated US$6.3 billion in 2006 as a result of poor sanitation and hygiene, accounting for 2.3% of GDP in 2005. Poor sanitation was also projected to have cost the Philippines $1.4 billion in economic expenses, or 1.5% of GDP in 2005. In Vietnam,

inadequate sanitation costs the country around 1.3% of GDP (US$780 million) in 2005 (WSP, 2010).

2.3 Burden of open defecation in Africa

According to recent reports, different places of the world have seen a decline in the prevalence of open defecation. But in Sub-Saharan Africa, there are now 220 million more people faeces in the open than compared to 204 million in 2015 (Abebe, 2020; WHO/UNICEF, 2015). In Sub-Saharan Africa, the proportion of people who practise open defecation has actually increased, and the region now makes up a bigger portion of the global total than it did in 1990. Open defecation will not be eradicated among the poorest in rural regions by 2030 at present rates of reduction (WHO/ UNICEF, 2015). Open defecation is a major problem in Sub-Saharan Africa due to two factors: the rapid population expansion and the slippage of open defecation-free (ODF) certified communities, which refers to residents who do not adhere to all ODF requirements (Abebe, 2020).

The bulk of OD practises, which are referred as defecating in fields, forests, shrubs, bodies of water, or other open places in national surveys, occur in low-income countries' rural areas (Galan et al., 2013). An assessment of access to sanitation by socioeconomic position reveals huge differences, with the richest 20% of the population in Sub-Saharan Africa being five times more likely than the poorest 20% to utilize an upgraded sanitation facility. The poorest people are 18 times more likely to defecate in the open (AMCOW/WSP/UNICEF /WaterAid/CREPA, 2011).

In Africa, open defecation was practised by 222 million persons in 2010, with west Africa accounting for an estimated population of 86 million people involved, followed by East Africa 78 million of its population, 35 million estimated population from South Africa, Central Africa with 15 million and North Africa with 7 million of its population involved (Cross, 2013).

Nigeria, Niger and Burkina are the leading open defecation practising nations with 33, 11 and 9.7 million with their populations involved respectively (AMCOW/ WSP/UNICEF/WaterAid/CREPA, 2011). In Kenya, the cost of an efficient water, sanitation, and hygiene (WASH) solution is expected to be USD 2.2 million per year, whereas in Ghana, the cost is evaluated to be USD 1.2 million yearly (Cofie Olufunke, 2016).

According to Abiodun (2021), about 50 million Nigerians practise open air defecation nationwide. About 30.1% of households in Nigeria, 25.1% of which were in rural areas and 36.6% of which were in urban areas, used improved sanitation facilities that were not shared with other households, whereas 39.9% and 15.5%, respectively, of rural and urban households lacked access to sanitation facilities and engaged in open defecation (Oloruntoba et al., 2019). Poor sanitation costs the continent between 1 and 2.5% of GDP (Olufunke, 2016). The menace costs Nigeria alone NGN 455 billion (US$ 3 billion) each year. This equates to $20 per capita each year and accounts for 1.3% of Nigeria's GDP. Also, open defecation costs Nigeria over a billion dollars every year. If the 46 million individuals who currently defecate in the open choose to use a toilet, the demand for materials and labour will be NGN 1250 billion, or over US$ 8 billion, on a conservative estimate (Abiodun, 2021; Federal Government of Nigeria & UNICEF, 2016).

According to a study conducted in 18 African countries on the economic implications of inadequate sanitation, these countries lose roughly USD 5.5 billion per year as a result of poor sanitation (World Bank, 2015; Joseph et al., 2020).

The cost of failing to act will be much higher in terms of human health, the environment, and the economy. Using the World Bank's lower end of economic loss estimates of 1% and Kenya's GDP of roughly USD 90 billion, the economic loss is estimated to be around USD 900 million. This is 450 times more than the USD 2.2 million cost of putting WASH in place (Cofie Olufunke, 2016).

2.3 Burden of open defecation in Ghana

According to the 2006 Multiple Indicator Cluster Survey in Ghana, 61% of people utilize a wider range of household latrines, such as VIP latrines, flush toilets connected to sewer or septic tanks, and pit latrines with slabs. It also found that metropolitan regions had a higher percentage of people using enhanced facilities (about 83%), compared to fewer than 45% in rural areas (Ministry of Local Government and Rural Development, 2001). The rate of open defecation in Ghana was 19% nationwide in 2015, and only 15% of the population had access to improved sanitation; however, the rate was 34% among rural residents. This is a serious challenge since better sanitation is essential for both sustainable economic development and human health and well-being (Awunyo-Akaba et al., 2016; Obeng et al., 2015). Ghana has the highest proportion of people who rely on communal sanitation, such as public toilets (59%) in the world (Obeng et al., 2015). Only 12.4% of the population uses better, non-shared sanitary facilities (Nyarko & Hayward, 2011).

Regardless of the priorities people set on their possessions, it is also true to accept that roughly 18% of Ghana's extremely poor may find it difficult to construct a simple latrine for about GHC1,015.00 (which is approximately $140) (Nyarko & Hayward, 2011). In Ghana, an average of 1800 cases of cholera are brought on by faeces contamination each year (Cofie Olufunke, 2016).

Inadequate sanitation costs Ghana 290 million US dollars, or 420 million Cedis, each year, according to the desk research by the Water and Sanitation Program (WSP). This translates to US$22.2 per person each year in Ghana, which is 1.6% of the country's GDP (Chalfin, 2014). The report further indicates that, open defecation costs Ghana $79 million a year, but eliminating it would only need the construction and use of less than 1 million latrines (Chalfin, 2014).

2.4 The Introduction of CLTS

Kamal Kar invented CLTS in the course of the 1999–2000 evaluation of the Water and Sanitation Programme of WaterAid and its implementing partner Village Education Resource Centre (VERC) in Mosmoil village, Rajshahi district, Bangladesh (Kar & Milward, 2011). In low-income countries, the most widely used policy intervention for enhancing rural sanitation is community-led total sanitation (CLTS). Community-led total sanitation is centred on the SDG of ending open defecation (OD), which is still practised by some 900 million people (Brown et al., 2019; Kar & Chambers, 2008). CLTS has been applied in 50 nations since its debut in Bangladesh in 1999, of which at least 15 have adopted CLTS as part of their national policy. However, because there have been few published randomised controlled studies for CLTS and few independent evaluations of the program, this level of scale-up has been questioned (Pickering et al., 2015).

CLTS is a novel strategy to enabling communities to end open defecation completely (OD). It aims to stimulate a change in communal sanitation behaviour, which is achieved through a process of collective community engagement aided by individuals from within or outside the community (Kar & Milward, 2011). The CLTS is an effort to take the place of previous top-down interventions that were focused on the supply of subsidized sanitary facilities, as well as a shift from one-way teaching on health hazards as a means of changing sanitation behaviour. It employs a series of participatory facilitation methods to spark community-wide behaviour change with the goal of eradicating OD in a given area (Ficek & Novotn, 2018). Rather than focusing on individual behaviours, CLTS focuses on the entire community. Stopping open defecation has the potential to create a more cooperative approach (Harter, 2018; Kar & Chambers, 2008).

CLTS is effective at enticing people to build and utilize latrines. If CLTS is successful in altering long-standing behaviours, it also has to alter some of the variables that affect the choice

to construct and demolish latrines. Naturally, it cannot alter things that are not under human control, such as income or soil characteristics. CLTS may have an impact on how people evaluate such conditions. It achieves this by altering something in individuals thoughts; it transforms what are known as psychosocial elements in the mindsets of those in charge of latrine construction (Mosler et al., 2018). Since CLTS is focused on empowering communities to change their own behaviours, it does not offer hardware or financial support to households to assist them in building latrines (Harter et al., 2019; Pickering et al., 2015).

According to Kar & Chambers (2008), total sanitation, in its broadest definition, refers to a range of behaviours, such as avoiding all open defecation, making sure everyone uses a latrine, washing one's hands with soap before eating and preparing food, after using the facility, and after coming into contact with a baby's faeces; and community cooperation, which creates fresh instances of societal solidarity and collaboration between the wealthy and the disadvantaged to achieve ODF status through;

1. men, women, youth, and children engaged in a time-limited campaign and local action to eradicate OD, which is followed by a general clean-up.
2. local leaders, elected representatives of the people, the local government, and non-governmental organizations (NGOs) are commonly motivated to assist, support, encourage, and spread ideas as a result of communities' cooperative efforts.
3. stronger links with local business people and sanitation hardware traders/dealers, ODF communities steadily progress up the sanitation ladder, improving the structure and design of their toilets.
4. no starvation or famine in the village, "no children of school age staying out of school," "fair wages for all labours and reduced inequality of men's and women's labour," and numerous other common objectives are regularly followed by ODF communities.

2.5 The Inception of CLTS in Ghana

CLTS was initially addressed at a stakeholder level in Ghana in the year 2004/2005, and the first attempt to implement it was in 2006 in the Central region, when the CWSA regional office trialled it in four communities in the Twifo Heman Lower Denkyira area with the help of a consultant (Quansah, 2011)**.** The lessons learned from these pilots and other programmes such as the APDO's total sanitation experiment, as well as the broader obstacles of sanitation up scaling, prompted a UNICEF- sponsored field trip to Bangladesh and Ethiopia in 2007. Lessons learned on the trip paved the way for wider acknowledgment of the CLTS approach's potential and expanded CLTS implementation in Ghana (Quansah, 2011). Since 2007, the Community Water and Sanitation Agency (CWSA), Plan Ghana, UNICEF, and WaterAid have been piloting CLTS in around 237 villages in Ghana in an effort to scale up improvements in hygiene and sanitation. The Northern, Upper West, Eastern, Central, and Greater Accra regions were the focus of the pilot efforts. The pilot exercises were set up independently by the four groups, with slightly varying institutional setups and facilitators drawn from various local government departments and NGOs (Demedeme & Nutsugah, 2009).

The CLTS was first implemented in Ghana in 2007, following a research tour to Ethiopia and Bangladesh by key stakeholders organized by the Ministry of Local Government and Rural Development (MLGRD) with UNICEF funding. The stakeholders discussed their observations from the study visit as well as their experiences with CLTS in other countries (Kenya, Zambia, and Indonesia). This was a watershed moment in Ghana's heightened commitment to expediting sanitation improvements (Magala & Roberts, 2009). TREND partnered with the CWSA in 2008 to promote CLTS in some districts in the Central, Greater Accra, and Eastern regions: There were eighteen (18) communities in the Greater Accra region, that is in the Ga West, and Dangme West districts. In the Kwahu South of the Eastern Region there were four (4) communities. There were Twenty-seven (27) communities in the Central Region, that is in

the Mfantsiman Municipal, Komenda/Edina/Eguafo/Abirem Municipal, and Abura/Asebu/Kwamankesse district (Quansah, 2011). In 2007, UNICEF began using the CLTS strategy to improve hygiene and sanitation in the I-WASH project. Initially, 16 communities in 4 districts were targeted, but later 258 communities were added. (Magala & Roberts, 2009).

According to the CLTS evaluation by Demedeme & Nutsugah (2009), the programmes resulted in considerable sanitation improvements in more than 200 Ghanaian communities. The communities that were visited had access to latrines in 60% of them, along with clean surroundings, well-kept waste pits, and facilities for washing hands with soap close to the latrines. Over the course of two years, 1857 household latrines were built, which is crucial because, if properly equipped with other PLA tools like the Sanitation Ladder, they can advance and inspire others to construct their own household latrines. Additionally, at least five villages had 100% coverage of improved sanitation facilities. Open defecation has been deemed illegal in 69 villages (Demedeme & Nutsugah, 2009).

The National Environmental Sanitation Policy and the recently developed rural sanitation plan both specify the direction that environmental sanitation in Ghana's rural areas should take going ahead. It has specifically chosen CLTS as the primary method of delivering environmental sanitation services in rural communities, and it has urged all MMDAs to implement the policy at their various levels. According to a national evaluation of four projects conducted by UNICEF, DANIDA, WaterAid, and PLAN Ghana, the implementation of CLTS in rural settings has been very effective since it was introduced in Ghana in 2006 (Wellington et al., 2011)

2.6 CLTS Methodology

CLTS uses four distinct steps to achieve ODF status: pre-triggering, which involves selecting a community; triggering, which entails assisting with community appraisal, observation, and

analysis; post-triggering, which entails offering support and follow-up to communities that responded favourably to the triggering activities; and post-ODF follow-up, which entails addressing concerns about the sustainability of CLTS interventions (Kar & Chambers, 2008; Sigler et al., 2015).

According to USAID (2018), CLTS' core ideas are: 1) no hardware subsidies for households in cash or in kind; 2) no specifications for certain latrine hardware models or designs; and 3) using emotional motivators to modify behaviour, such as pride, disgust, or dignity (USAID, 2018).

2.6.1 Pre-triggering:

This refers to the stage at which communities are evaluated to determine their "challenge level" for CLTS participation. In this phase, implementers from the government and/or non-governmental organizations (NGOs) meet with local authorities to get their consent and cooperation before carrying out a triggering event and learning about any prior experiences with sanitation subsidies (USAID, 2018). Selecting communities, training facilitators, gathering baseline data, and facilitating community admission are all part of the process (Venkataramanan et a., 2018). The facilitators gather data on the target community. Facilitators gather data about the community's sociological makeup, access to water, and present sanitation conditions (Harter, 2018;Harter, Lilje, et al., 2019). In order to "catch that moment" when the entire community is triggered to take action on their sanitation problem, the CLTS approach needs good facilitation abilities. It requires a facilitator with the "proper" skills and a genuine interest in CLTS (Godfrey, 2010).

2.6.2 Triggering

Triggering requires planning a community-wide event where facilitators lead participatory activities meant to arouse shame and contempt (Venkataramanan et al., 2018). A key aspect of

CLTS is the triggering process, which involves the feelings of shame and disgust. Many of the techniques employed in triggering are intended to startle people into realizing that they are surrounded by vast volumes of faeces and that they are coming into contact with it. This realization, along with the ensuing emotions of guilt or shame, jolts people into action (Matthew & Ross, 2013). It is beneficial to involve children in triggering because it's challenging for parents to say no when their kids ask them to quit defecating in public and use a toilet. Parents are driven by a desire to protect their children's health(UNICEF/WaterAid, 2016).

In order to evoke a need for behaviour change on the side of the community, facilitators engage participants in a variety of participatory activities during community meetings. a transect walk where participants guide facilitators to open defecation sites; the production of an open defecation map where participants identify their residences, significant community landmarks, and open defecation sites. Other activities include calculating the amount of faeces produced in the community each year and the medical costs associated with diarrhoeal diseases, in addition, faecal-oral transmission channels are described and illustrated with the intention of educating community members about the concept that open defecation involves "eating each other's faeces" (Harter, 2018).

In order to include representatives from each family in triggering events, facilitators also require the assistance of regional players (such as village leaders and natural leaders). Local actors and natural leaders ought to be involved in the CLTS process as early as is practical, ideally from the beginning. They ought to be inspired to take part fully in the triggering sessions. Local actors have the advantage of being able to directly influence village plans as well as impact behaviour change via their daily interactions with the community (UNICEF/WaterAid, 2016).

According to Okolimong et al. (2020), there is always a visible change in community behaviour whenever the CLTS process is activated by an expert social organizer. This therefore, necessitates the participation of people with the natural attributes of a facilitator, who has a better understanding of the CLTS processes and who needs to be involved directly in the CLTS triggering procedures (Okolimong et al., 2020).

2.6.3 Post triggering

Post-triggering refers to regular follow-up visits with the goal of verifying and confirming ODF status in communities (Kar & Chambers, 2008; Venkataramanan et al., 2018). The community is visited by moderators once a month until there is no longer any open defecation in the community. In the weeks after the triggering activity, they visit the community 1-2 times each week (ODF). Moderators ought to encourage community members and prompt them of the objectives they have set for themselves during these visits. During visits, vulnerable families may receive more community support and children may be encouraged to become change agents (Harter, 2018).

Access to sanitary hardware can be facilitated during post-triggering by establishing "linkages with local marketplaces". While the Handbook does not use the phrase "sanitation marketing," or "SanMark," it does include a number of task that are common in sanitation marketing programmes, such as inviting traders to community meetings and promoting and educating local product and service providers (USAID, 2018).

According to the CLTS Handbook by Kar & Chambers (2008), follow-ups should not be "too frequent" because the process is intended to be "community-led" rather than "outside institution-led." The importance of this follow-up phase is also emphasized, along with the growth of natural leaders, support for the most vulnerable populations, and children's participation as agents of behaviour change (USAID, 2018).

The findings of a study by WaterAid & UNICEF (2016) in the Philippines indicate that, local actors' assistance or participation is crucial in assisting the follow-up and monitoring of community-agreed initiatives, such as creating village rules on toilets and their use during the post-triggering period. The creation of the community's Zero Open Defecation (ZOD) Plan and subsequent monitoring of the plan's execution, including informal influence, are tasks that natural leaders in the Philippines help village leaders with. By emphasizing the value of latrines as part of hygiene instruction, enticing students to contact their parents on their behalf, and lobbying for changes to school sanitation, teachers act as an essential conduit between schools and parents (UNICEF/WaterAid, 2016).

2.7 Effects of CLTS

There is strong evidence that CLTS could "change the game" in the WASH industry; since its introduction in more than 40 countries worldwide in 1999, an estimated 10–20 million people have gained access to basic sanitation (Dwan, 2012; Robinson & Gnilo, 2016). At least 30 countries have included CLTS in their national sanitation programs for rural sanitation, making it the most popular sanitation campaign in the global south (Harter, 2018).

Despite the fact that, improved sanitation entails individual homes constructing and utilizing their own "family" toilet, CLTS intends to foster collaborative action for the entire community to jointly decide to abolish open defecation permanently (Dwan, 2012; Kar & Chambers, 2008). The end results of CLTS, whose stated mission is to eradicate open defecation through the construction and use of latrines, have been researched. The usage of latrines or a decline in open defecation are not guarantees of toilet ownership. In numerous instances, most notably in India, individuals rarely utilize their own family toilets. (Arnold et al., 2009; Mosler et al., 2018).

2.7.1 Latrine construction/ownership

According to a cluster randomised controlled trial done by Pickering et al., (2015) in Mali, access to a private latrine nearly doubled in CLTS villages, rising from 790 (33%) of 2365 dwellings at baseline to 1373 (65%) of 2120 homes in the intervention group at follow-up, as opposed to 765 (35%) of 2167 homes at baseline and 661 (35%) of 1911 homes in the control group. No matter the starting point, mean latrine access increased at the village level. Comparatively, CLTS increased latrine ownership by 26 percentage points (95% CI 19-33) among wealthier households while increasing it by 39 percentage points (95% CI 29-48) among those in the bottom quartile of a household asset index (Pickering et al., 2015). Also, findings from a randomized controlled trial in Indonesia revealed that 275 (14.4%) of 1,908 panel families built a toilet in the previous two years, with 151 (16%) of these toilets built in treatment communities and 124 (13%) created in control communities (Cameron et al., 2013).

2.7.2 Open defecation reduction:

The CLTS intervention's main goal was to increase the use of improved latrines and eliminate open defecation. This could be accomplished by improving existing latrines or constructing new ones (Briceno et al., 2015). The total sanitation and sanitation marketing (TSSM) intervention increases the likelihood of constructing a new latrine by 8.2 percentage points in wards that solely receive TSSM and by 7.7 percentage points in wards that receive both; these two effects are not statistically different from one another. Private latrines, not shared ones, are the main source of new latrine construction. Over and beyond the 38% of control homes who developed new private facilities during the intervention period, there is an increase in probability of 10–12 percentage points that a new private facility will be built. They also found that in the TSSM and merged wards, the likelihood of sharing a restroom with another home decreases by 9.2 and 7.6 percentage points, respectively (Briceno et al., 2015).

The study by Pickering et al., (2015) also indicates that, open defecation rates fell by 24 percentage points (71%) for adult men, 23 percentage points (71%) for adult women, 43 percentage points (49%) for kids aged 5 to 10 years, and 43 percentage points (51%) for kids under 5 years. Of the 2034 [50%] of 4031 families with access to a private toilet, 1972 (98%) of 2018 households said the latrine was their primary defecation destination for female adults while 1915 (98%) of 1960 households said it was their primary defecation location for adult males. CLTS villages had considerably more children under the age of 5 years using a child potty as their primary defecation place than control villages, according to mothers (Pickering et al., 2015).

2.7.3 Health outcome of CLTS

A study by Pickering et al., (2015) indicates that, 694 deaths across all age groups were reported in study households over the course of the trial's final 12 months (331 in control households and 363 in intervention households); 16% of all homes (303 [161%] of 1887 control households and 329 [157%] of 2097 intervention households) reported at least one death. 7% of all deaths were found to be caused by diarrhoeal (50 of 670 deaths with known causes). Compared to control families, CLTS households had a lower risk of diarrhoeal mortality (PR 046; 95% CI 026-083; 34 total diarrhoeal deaths in control vs 16 total diarrhoeal deaths in CLTS). 331 (48%) of all deaths occurred in children under the age of five. The likelihood of reporting a kid under the age of five dying was the same in CLTS and control homes. CLTS families were less likely than control households to report a child death due to diarrhoea (PR 047, 95%). CI0·23–0·98; CLTS had 11 child diarrhoeal deaths compared to 23 child diarrhoeal deaths in the control group (Pickering et al., 2015).

2.8 Criticisms of the CLTS Programme

CLTS has been chastised for a number of reasons, despite its widespread use and the above-mentioned results. One is that during community meetings, it arouses strong negative emotions

of rejection and embarrassment. Provoking such emotions has been criticized as a violation of human rights, an ethically unacceptable practise as well as a return to colonial institutions (Engel & Susilo, 2014; Galvin, 2015; Harter, 2018). Also, the usage of regulations and penalties for those who do not adhere to the group aim was criticized. Such rules and penalties include the closure of open defecators' dwellings, public shaming of individuals who do so, fines for not building latrines, and even public humiliation (Bartram et al., 2012;Harter, 2018). According to Venkataramanan et al., (2018), there is currently no published scientific research on how such activities would affect the social structures of communities in the long run (Venkataramanan et al., 2018). Moreover, due to the extensive variation in CLTS adoption, assessing the influence of CLTS on different behavioural or health outcomes has been critiqued as being difficult, which makes understanding the mechanisms of its impacts difficult. CLTS is likely to have as many faces as the organizations that use it (Harter, 2018; Sigler et al., 2015). Due to this variety, it is yet unknown if benefits correspond to some particular activities, the seriousness of the triggering event, the facilitator's temperament, the number of follow-up visits conducted during the post-triggering period, or other aspects of CLTS implementation (Harter, 2018).

2.9 Open Defecation Free Status

An investigation into water, sanitation, and hygiene practises and related factors in a Buruli ulcer endemic district in West Africa revealed that the majority of families (91, 32%) practised open defecation (Johnson et al., 2015). This was justified by the absence of latrines, which was most likely attributable to most homes' poor socioeconomic position. According to a Plan international post-ODF CLTS sustainability study, each family is supposed to meet the following four CLTS standards or indicators, which are the basis for each country's criteria for determining whether communities are OD or ODF: a functional latrine with a roof and a means of keeping flies out of the pit (either a water seal or a lid), the absence of waste close to the

house, the availability of water and soap for handwashing or a soap substitute like ash, and signs that the latrine and handwashing facilities were used, such as a well-used path (Matthew & Ross, 2013; Okolimong et al., 2020). According to various study, ODF is the interruption of faecal-oral disease transmission routes, and many national sanitation initiatives funded by the Global Sanitation Fund (GSF), including the Uganda Sanitation Fund, have minimal requirements for ODF (Matthew & Ross, 2013).

ODF success rates continue to be a sign of the development of CLTS, based on the final report of a research on the effectiveness of CLTS in rural Mali, despite the inconsistent ODF criteria between countries as a result of various policy situations. In this study, it was determined that the following factors are essential for ensuring that ODF standards are applied consistently: official government approval of the standards, rules and criteria that are sufficiently precise and understandable, with fewer ODF requirements (Laura et al., 2015). These variables, particularly differences in ODF criteria, have made comparing CLTS progress toward ODF designation across regions challenging. According to a study in Uganda by the Testing CLTS Approaches for Scalability project, while the CLTS approach calls for achieving total sanitation and 100% latrine coverage, it is difficult to compare CLTS performance between areas, nations, and districts since, according to observations and interviews in the Tororo district, the concept of ODF is perceived to fall midway between the lack of OD and all indications of total sanitation. These variables, particularly differences in ODF criteria, have made comparing CLTS progress towards ODF designation across regions challenging (Laura et al., 2015; Okolimong et al., 2020, Venkataramanan et al., 2016).

The study by Plan in 2012 also examined results from its CLTS initiatives in four countries Sierra Leone, Ethiopia, Kenya, and Uganda revealed that only 18% of households were mostly ODF if all four parts of CLTS were followed. Only 8% of homes with a working latrine exhibited obvious traces of open defecation around the house, only a small fraction of

households cleansed their hands with water and soap or a soap substitute, indicating that they practised OD (Matthew & Ross, 2013).

2.10 Impact of Sanitation and Hygiene on Health

Many places of the world have insufficient sanitation arrangements. Around the world, a large number of people practise open defecation, and a large number of people lack access to services that prevent faeces from contaminating the environment (WHO, 2018). Inadequate WASH is a major cause of diarrhoea and has been associated with other negative health and non-health outcomes, including various infectious diseases, low nutritional status, decreased security, and lost leisure time (Wolf et al., 2018). Poor sanitation is a major danger to early childhood development in impoverished countries (Hammer & Spears, 2016).

Findings from the WHO, (2018) report indicate that improvements in sanitation were found to be associated with gains in length-for-age and height-for-age scores in an examination of cross-sectional data from eight low and middle income countries (LMICs) (WHO, 2018). Wolf et al. (2018) presented evidence of improved sanitation coverage in communities resulting in greater reductions in diarrhoeal illnesses. Diarrhoea was reduced by an average of 24% when sanitation coverage was less than 75% , and 45% when latrine coverage was greater than 75% (Wolf et al., 2018).

2.11 Knowledge Level of People with Regards to CLTS

Despite the fact that there has been several research on water and sanitation undertaken in Ghana and elsewhere, the bulk of those studies have not clearly addressed the knowledge surrounding the CLTS approach as a strategy for resolving the issue of open defecation. Only few studies looked at respondents' understanding of the CLTS strategy to achieving ODF status.

According to a study conducted in Kenya with 362 participants, 333 (90%) were aware of the CLTS method and were aware of the value of having latrines as well as the challenges connected with a lack of latrines. This was due to the fact that CLTS operations were taking place in the area and were in various phases of implementation (pre-triggering, triggering, follow-ups, verification, and certification) (Joseph et al., 2020). A study conducted in Southern Ethiopia included 630 families who had access to a latrine, it received 99.4% of the responses. 371 respondents (58.9%) were male, and they headed homes (574) in the survey (91.1%) in the majority (Afework et al., 2022).

Meanwhile in terms of community involvement in health programme planning, the results of a study conducted in Kenya revealed that majority of 197 (65.0%) of respondents agreed that community people were involved in health programme planning. This guaranteed that they were in charge of specific initiatives, allowing them to participate and contribute to the implementation of programmes like CLTS (Bokea et al., 2020). According to a study conducted in Mozambique, owning and rebuilding decommissioned latrines is associated with favourable individual and environmental context elements similar to education and soil conditions, CLTS improves the social structure and perceived latrine ownership of others in the community, as well as those who own and maintain latrines having a low risk perception, which is confirmed by information gathered during CLTS interventions. (Mosler et al., 2018). A study conducted by Afework et al., (2022) revealed that even though 466 respondents (74%) were said to have heard an informative message about better sanitation facilities, only 139 (29.8%) of survey participants were aware of the various types of improved sanitation facilities. Regarding information sources, nearly half (49.6%) had spoken with health extension workers. (Afework et al., 2022). A study conducted by Amdia & Yakong, (2019) also disclosed that, a sizeable percentage of respondents 45 (52%) said that CLTS sensitization helped them learn about hygiene and sanitation, 31 (36%) said they learned how to build a home latrine, 6 (7%)

said they built tippy taps (hand washing facilities), and 4 (5%) said they built soak away pits (Amdia & Yakong, 2019)

Another study in Tanzania by Briceno et al., (2015) also inquired as to whether or not residents are aware of the existence of a CLTS committee in the hamlet. The survey found a favourable and substantial 6% rise in awareness among households in TSSM and mixed wards, as well as a 13% increase in TSSM and combined wards. In comparison to control areas, where only 12% of families are aware of a CLTS committee, sanitation areas have nearly doubled their awareness as a result of the programme. When asked if they knew of a mason in their community, households reported an 18% rise over the 14% knowledge level in control villages, meaning a 128% relative gain. The percentage of people who were aware of a mason in handwashing alone wards improves by 9%. Finally, when asked if everyone in the village knew someone who could help build a latrine, TSSM treatment areas showed a significant rise of 7 to 8 percentage points, but hand washing with soap (HWWS)-only wards showed no effect (Briceno et al., 2015).

A study conducted in southern Ethiopia also looked at the kinds of support households received in constructing their latrines, it was discovered that only 94 families (14.9%) in the study received material or financial support for the construction of their latrines; the majority, 81 (86.2%), received assistance from non-governmental organizations (NGOs), while the remaining houses got help from their families (Afework et al., 2022). Harter et al., (2020) concluded in their study that, CLTS's triggering event sets in motion a complex social process among community members. It strengthens social cohesiveness and inclusion by increasing the notion that important persons advocate toilet building and increasing the attention of others in the community to latrine building. By reducing perceived costs and facilitating the reconstruction of a damaged latrine, which is crucial in flood-prone locations, CLTS increases

confidence in the ability to construct latrines. Additionally, CLTS affirms the idea that people who own a latrine are in better physical and mental health (Harter et al., 2020b).

2.12 Factors Associated with Uptake of CLTS

2.12.1 Latrine Ownership and Use

Before any sanitation programme can be deemed effective, a number of factors, such as socio-cultural and economic concerns, must be well addressed. These factors include CLTS acceptance (Priestnall et al., 2020). Cost and affordability, as well as societal or family characteristics, are a few of the variables that affect a sanitation system's technical viability and acceptability. By enhancing latrine ownership, increasing latrine prevalence and usage is a crucial and cost-effective technique for overcoming the illness burden associated with inappropriate excreta management (Ajemu et al., 2020; Leshargie et al., 2018).

Any sanitation strategy's effectiveness is determined by whether it addresses the target communities' social, economic, political, cultural, technological, and geographic needs (Kalimuthu & Hossain, 2008). There is a link between latrine ownership and open defecation and household wealth/social standing. Comparing owners of improved latrines to those of unimproved latrines or open defecators, improved latrine owners are wealthier, more educated, and have higher literacy rates (Osumanu et al., 2019). In Tanzania, 43% of respondents said that their community members would rather buy animals than construct a latrine, and 50% would rather buy a phone than construct a latrine (O'Connell, 2014). These factors either prevent households from having toilet facilities or make them inaccessible to homes, or they encourage people to defecate in public in spite of the facilities being provided and/or accessible (Osumanu et al., 2019). Previous studies have indicated that the chance of owning a toilet rises with higher educational levels for both genders (Afework et al., 2022).

According to a study conducted in Mozambique, 61.4% of respondents claimed to have their own latrines and 94.1% of individuals who had their own latrine said they used it exclusively. About 5.4% reported using the latrine but also defecating in the open, while 0.5% reported just defecating in the open despite having a latrine (Harter et al., 2018). Also, in India a study found that, among 384 respondents, 89.58% knew sanitary toilets. They were aware that the sanitary toilet requires a pan, proper stool disposal, hand washing facilities, and the availability of water (Kawale et al., 2018). In southern Ethiopia, handwashing facilities were found in 187 houses (29.7%), with 95 (50.8%) using only water and 17 (17.9%) using both water and soap (Afework et al., 2022). Meanwhile, the availability and use of improved latrine facilities were found to be linked to the household head's educational status, non-governmental organization assistance (monetary or material), receiving constant informational messages about better latrine facilities, and being regularly observed by a health extension worker (Tamene & Afework, 2021).

According to Cha et al., (2017) in their study, the vast majority of households having a latrine 433(95.7%) claimed that their children under the age of four did not use it; of these children, 84.5% defecated around the house or surrounding the latrine, while others (11.3%) defecated in diapers (Cha et al., 2017). Defecating in neighbours' latrines was reported by 89.2% of respondents from 230 houses without a latrine, while 29 (10.8%) reported defecating in open locations such as the river, forest, or bush (Cha et al., 2017).

Also, respondents according to Joseph et al., (2020) when asked if they had ever defecated in public, 30.0% indicated that they had ever done it. About 26.7% (30/111) had defecated in public during the six months before the research, whereas 33.3% (37/111) couldn't recall when they did that. Bush received 72.6% (82/111) of the vote as the most favoured open defecation location (Joseph et al., 2020).

2.12.2 Perception regarding latrine ownership

Owners of latrines and open defecators have cited privacy as a motive for moving up the sanitation ladder. It is critical for anyone, particularly women, to avoid exposing bodily parts. Around 45% of latrine owners in Bihar, Kenya, and Cambodia, 56% in Rajasthan, and up to 90% in Meghalaya, cite improved privacy as a major reason for latrine building. The study further indicated that, it is "more pleasant" to be able to use a toilet since it avoids people from being scratched, treading on thorns, or dirtying their clothes. Comfort was noted as a positive characteristic in several nations, but it was especially prominent in Cambodia, where 66% of latrine owners describe comfort as a key benefit of owning a toilet (O'Connell, 2014).

A large family size, a better level of education for the head of home, having a child in school, and having a family member who engaged in community-led total sanitation and hygiene (CLTSH) triggers were all linked to latrine ownership (Alemu et al., 2018).

According to O'Connell, (2014) shame and humiliation are also pervasive, which encourages the use and ownership of latrines. In Tanzania, for example, 42% of persons who openly defecate due to collapsed latrines are embarrassed. In Kenya, 89% of families agree that not having a toilet would make individuals in the community feel ashamed, while 37% of latrine owners feel ashamed when their latrine is not in use (O'Connell, 2014). Hence, one of the benefits of having a toilet according to the study conducted by Joseph et al., (2020) indicated that latrines enhanced hygiene, with another 34.1% indicating improved health status. Privacy was mentioned by only 1.1% of the respondents as a benefit of owning a toilet. Despite this, 2% of respondents reported defecating in the open on the day the data was collected, and at least 30% of all respondents claimed to have done so at least once (Joseph et al., 2020).

Meanwhile, when respondents were asked how they felt about community members who do not use latrines, some of the comments included being dirty (28.9%) and causing a commotion (18.8%) (Joseph et al., 2020).

2.12.3 Socioeconomic factors associated with CLTS uptake:

According to Joseph et al., (2020) financial constraints create two sanitation challenges: first, they prevent house owners from building latrines for their households, and second, they prevent them from affording the fees required by public toilet operators, forcing them to resort to open defecation. Studies have also found a link between latrine use and a mother's job, educational position, presence of a secondary school student, frequency of latrine building, and hygienic quality of the latrine (Joseph et al., 2020). Socioeconomic factors influence people's reported behaviour or attitude towards open defecation, and that they should be recognized as fundamental concerns to address rather than blaming open defecation exclusively on "behavioural attitudes'(Adzawla et al., 2020). Poor sanitation and hygiene-related illnesses are among the main causes of illness and mortality among the underprivileged in developing countries (Hirai et al., 2018).

Additionally, studies have shown that households with higher earnings are more likely to build latrines (Nunbogu et al., 2019). A study done in Malawi among latrine owners and non-owners reveals that, the population that is most likely not to accept latrine ownership innovation has fewer financial resources, such as minimal level of affluence. They also believe that building a toilet is expensive, which may be a fair assessment given the difficulty of raising money for it and the high labour demands involved. Due to their smaller home sizes, smaller groups of people, and decreased communication regarding latrine building, the last non-latrine owners appear to be less supportive of the local government (Slekiene & Mosler, 2018).

A study conducted in the upper west region (Wa) in Ghana indicates that, 94% of respondents reported having financial challenges, which make it difficult to purchase building supplies and pay for labour. Respondents expressed worry about already having debt from money borrowed for other things like food, weddings, or farm equipment and the challenge of coming up with the cash to pay such obligations (Osumanu et al., 2019). CLTS is benefiting from latrine subsidy policies, such as in Nigeria, where WaterAid Nigeria concentrated follow-up actions on households with hardware from earlier subsidy programmes (Venkataramanan et al., 2018). Improvements in CLTS results were made in the post-triggering phase as a result of the expectation of receiving ODF status compensation, their actual availability, and the provision of subsidies in triggered regions (Harter, Lilje, et al., 2019).

In northern Ghana, another study looked at the characteristics that might influence household toilet usage at various degrees of latrine completion. The study found that 25.4% of respondents at level-superstructure, 12.4% at level-roof and 18.30% at level-privacy reported they would not use their latrines when it is unhygienic. Furthermore, compared to 2.8% and 18.8% at level-superstructure and level-roof, respectively, 55.3% of level-privacy latrines were clean. Additionally, the survey discovered that roughly 30% of participants at each level claimed they would cease using their latrines if they were demolished (Nunbogu et al., 2019).

A study in Kenya on the uptake of CLTS took into account the study participants' occupation and daily family income as economic determinants. The CLTS strategy was adopted by 84.3% (167/198) of farmers, and 72% (18/25) of those in formal employment. A total of 111 (30%) of the respondents had a daily household income of less than Ksh.100 equivalents to GHS 5.40, with CLTS uptake at 82.9% (92/111). After building toilets, households found it difficult to climb the sanitation ladder due to harsh conditions and a lack of financial resources. These factors served as demotivating elements for homes that practised open defecation (Okolimong et al., 2020).

A study in Mozambique indicates that the stoppage in the latrine usage among respondents were common estimating 47.8% (288) of all respondents, stating that they had previously used a toilet and that at least once, their facility had been out of service. About 52.6% of this group had renovated their latrines and were using them. Damage (67.9%) and a full pit were the most common causes for latrines not being used (19.6%). After that, flooding brought on by severe rains (8.1%) and latrines that were deemed to be too old and out of use (4.4%) by their owners respectively (Mutuku et al., 2021). According, to Mosler et al., (2018), when a prospective location for open defecation is further away, individuals appear to rebuild their latrines more frequently. For instance, 74.5% of persons who lived more than 20 minutes from a location where people were defecating in the open fixed their latrines, but no one did so if the area was only one minute away (Mosler et al., 2018).

The average cost of treating diarrhoea outside of the hospital ranged from US$3.86 for oral rehydration solution-only treatment to US$4.35 for treatment of both diarrhoea and other disorders. Similar to this, there was a 12% cost difference between boys and girls for the average inpatient cost of treating diarrhoea and other illnesses (when combined with a presumptive therapy for malaria and other suspected infections). This was nearly two times as expensive as treating diarrhoea just with rehydration therapy (i.e., $65.14) (Aikins et al., 2010).

Another study in low and middle-income countries considered the cost of illness for childhood diarrhoea, the mean (unweighted) cost of illness per outpatient episode of diarrhoea in children was $36.56 (median $15.73; range $4.30 - $145.47). The average cost per episode for inpatient care was $159.90 (median $85.85; range $41.01 - $538.33). Average total direct costs and average indirect costs for outpatient care were roughly equal, while the median total direct costs were twice as high as the median indirect costs (Baral et al., 2020).

2.12.4 Cultural factors

Community features also influence the type and level of engagement in community activities (for instance, the complexity of the social structure, the values that already exist, the social and economic objectives, the acceptability of the change-agent, the level of internal control, and the level of current involvement in the society.) (Dwipayanti et al., 2019).

Norms have a strong influence on individual behaviour in societies where the group is more important than the individual. Much of the CLTS literature emphasizes the features of communities that make them more receptive to constructive action. Some of these characteristics include modest group size (smaller communities as opposed to larger ones), homogeneous group composition (no significant ethnic or religious variations), shared cultural norms and values, and a long history of cooperative behaviour (Movik, 2010; Movik & Mehta, 2011).

Being mindful of cultural and religious traditions is necessary while using a CLTS technique. It is crucial to comprehend how particular cultural and religious concepts and practises frame current behaviour and norms because the method places such a strong emphasis on generating spontaneous behaviour change. For example, a systematic study of sanitation knowledge and practises in Tamil Nadu, South India, discovered that many peasants engaged in open defecation since it was a long-established custom with no negative connotations; some even considered it to be a kind of social interaction (Banda et al., 2007; Movik, 2010).

According to the findings of a study by Osumanu et al., (2019), 68% of respondents feel that cultural practises and beliefs have an impact on where people defecate. Some people, according to a public restroom attendant, refuse to use the facilities after 9:00 p.m., despite the fact that there are no costs after that time. It was also mentioned that it is believed that witches, wizards, and other evil spirits visit the bathroom at night, and that anyone who is seen by these spirits in the toilet during those hours will be cursed (Osumanu et al., 2019). When a question was

raised about whether cultural issues had an impact on women's participation in CLTS in a study in Ghana “cultural concerns affecting women's involvement in the CLTS” the reply was 'no' by an overwhelming majority of respondents 80(93%), while just 6(7%) of respondents answered 'yes' (Amdia & Yakong, 2019).

2.12.5 Environmental factors

Changes in the terrain and environment have a significant impact on people's behaviour and the creation of specific socio-technical regimes. Settlement patterns, for example, may play a significant role in determining whether or not open defecation is practised. In contrast to densely populated areas, which have less opportunities for open defecation and so offer a more favourable environment for changing practices, sparsely populated areas offer plenty of opportunities for it. The dangers of open defecation will be less severe in dry, arid, and sparsely populated places than in densely populated rural Bangladesh, where settlements are also bordered by water bodies. Other variables include low groundwater tables, few locations to hide when defecating due to low foliage cover, easily-dug soil that is not prone to collapsing, and many more (Movik & Mehta, 2011).

The facilitation of socio-technical transformation is also highly influenced by climatic circumstances. Cold winds and below-freezing temperatures, for instance, make people unwilling to defecate far from their homes in China's Shaanxi province, raising the danger of infection. Frozen soils make digging pit latrines extremely difficult, necessitating the use of plastic pipes to prevent breaking (Kar & Bongartz, 2006).

Simple pit latrines frequently collapse due to floods in rural Bangladesh, according to IDS research, and they are never repaired due to cost restrictions. As a result, the issues associated with sustainability and the ladder strategy are not mutually exclusive. Examining how new and improved technology will affect groundwater and disease vector transmission routes in the long run, and waste disposal is essential in order to better comprehend the risk of contamination. In

terms of disease ecology, collecting faeces in one location may affect disease pathogen and host transmission routes, such as helminths and hookworms (Movik & Mehta, 2011).

2.12.6 Technological factors

There are no pre-made sanitary solutions available under the CLTS framework, and facilitators do not compel rural communities to use a particular technology but rather encourage them to create their own facilities using local resources. The types and costs of construction materials nearby, as well as the community's knowledge and abilities, the existence of masonry traditions and the labour allocation within that community, will thus influence the technological possibilities that develop (Kar & Bongartz, 2006; Movik & Mehta, 2011). Furthermore, The ability of small-town entrepreneurs to use their know-how and area resources to construct affordable latrines strongly depends on the accessibility of materials and technological possibilities through neighbourhood markets (Perez et al., 2012).

According to Curtis (2016), Bangladesh's large-scale production of plastic parts resulted in significantly lower costs. For generating demand for sanitation solutions and sustaining behaviour change, sanitation social marketing concepts are essential. With an emphasis on cost control, maintaining a diverse range of products in different price categories, and ensuring that the supply chain reaches every home, social sanitation marketing entails creating latrine designs that are responsive to consumer needs rather than engineer-defined designs (e.g., through training local masons) (Curtis, 2016).

The fundamental concept is to understand and increase demand and supply for such products by effectively promoting and mobilizing the private sector's production capacity. In this context, it's also important looking into how people's understanding of and attention to environmental impacts of certain technologies influences product ranges, as well as how much market actors think about environmental elements of the technologies they sell (Movik & Mehta, 2011).

According to a study by Clarke et al., (2021), lack of resources to construct or remodel latrines (48.4%, 95% CI 30.8-66.4) and households inability to afford to construct or maintain latrines (48.4%, 95% CI 30.8-66.4) were highlighted by nearly half of all stakeholders as key obstacles to improving toilet quality (Clarke et al., 2021).

2.13 Sustainability of Community-Led Total Sanitation

Sustainable sanitation is defined as maintaining open defecation-free (ODF) status over the long term and adhering to new sanitation practises. The CLTS Handbook lists some indicators of sustainability in relation to the difficulties the community may encounter. Typically, pits filling up or its walls collapsing will be the first obstacle (Hueso, 2013). The power and persistence of behaviour change determine the stability and duration of CLTS to a great extent. As a result, it is critical to comprehend the components that contribute to undermining or maintaining behaviour modification (Movik, 2010).

As a result of CLTS's proof that impoverished rural communities are capable of constructing basic toilets, changing social norms, and achieving spectacular sanitation and hygiene outcomes, rural sanitation has experienced a revolution. The risk of reversion to OD is highest among the poorest and most vulnerable households, and other sanitation and hygiene issues (other than ODF) are also crucial to health and well-being. However, 15 years after CLTS was first implemented in Bangladesh, we now recognize that real sustainability issues exist (Curtis, 2016). CLTS is based on the notion that a community-led process will result in a long-term change in behaviour around latrine upkeep and use. Nevertheless, both technological and social concerns must be taken into consideration in order to assess if the immediate action and behaviour change brought about by CLTS is sustainable (Galvin, 2015).

Promoting follow-up calls and visits will produce better long-lasting outcomes. One of the main reasons why there was no systematic follow-up and supportive monitoring provided by

the districts was that there was no sustained behaviour change in favour of handwashing or the establishment of a permanent form of latrine technology. Numerous well-known CLTS supporters and others have said that after community mobilization, follow-up activities are crucial for influencing behaviour (WSP/USAID, 2011).

Despite the current deficiency of well-researched studies on CLTS sustainability, it is perceived to be necessary to explore the issue because CLTS is such a promising technique and sustainability poses a substantial threat to its long-term effectiveness.

Discussed below are reviewed literature on CLTS sustainability in different continents on how sustainable the intervention is in Ghana and other countries:

2.13.1 Asia

A study in Timor Leste found mixed results in terms of long-term sustainability in one of the settlements. Two families took great care of their latrines, and inspections confirmed that they were well-used and well-maintained. Anal cleansing was done with corn cobs or water, and one family reported their slab support had fallen, but they had repaired it and made it functional once more. The superstructures of these two dwellings had deteriorated, but they had been renovated. They claimed that using a latrine had enhanced their status and that their health had improved as well. Both households stated that they were satisfied with their current latrines and that they had no plans to upgrade to other types, such as the less expensive pour flush versions that were shown to them (Dwan, 2012).

Despite having constructed very durable concrete slab latrines, the other two homes had relapsed to open defecation. The superstructures in both cases had become damaged roughly 2 years after being completed and had not been restored. One family claimed they were terrified to use the toilet because the walls had been ruined, while others claimed they had become "lazy" and had abandoned their superstructures, reverting to open defecation. Both households

claimed that using a latrine was preferable because it was cleaner and provided them a sense of pride and status. These two households agreed that their latrine should be rebuilt and that they would like to do it, however, it was difficult and expensive to deliver substantial materials to their village (Dwan, 2012).

In Indonesia, when respondents without latrines were asked how much a toilet cost them, the average was about four million Indonesian Rupiah (Rp) ($300 USD) (range of 400.000 to 8,000,000 Rp). Toilet construction costs in various parts of Indonesia range from 0.65 million to 2.6 million Rp (about $50 to $200 USD) based on location, style of latrine, and community characteristics including proximity to a water supply and sea level (Hirai et al., 2018). According to a study in Timor-Leste, the majority of stakeholders thought that communities' lack of leadership was a major obstacle to reaching ODF status (64.5%, 95% CI 45.5-79.9) as well as their perception that the government should pay for new facilities rather than people (61.3%, 95% CI 42.4-77.3) (Clarke et al., 2021).

In a 2011, WSP report from Bangladesh according to Hanchett et al., (2011) indicates that, a CLTS program that included 4,329 villages surveyed 3,000 households. At least four years prior to the assessment, CLTS interventions had taken place in each of the communities, and they were all ODF certified. Overall, the results were in line with the WaterAid report, which indicated that latrines safely retained faeces in 90% of cases and that open defecation was uncommon (approximately 3%). Depending on whether open defecation or the usage of a latrine that safely contains faeces is used as the benchmark, this suggests a slippage rate of 3-10% (Hanchett et al., 2011).

Despite minor lapses, the study found that better sanitation standards were maintained. Furthermore, the majority of latrines were comparably long-lasting, as evidenced by the fact that 70% of families had been using their present latrines for at least three years; 95% of

households reported being able to find sturdy latrine materials and qualified masons nearby. In order to maintain ODF and upgrade latrines, households said post-ODF follow-up visits were beneficial (Hanchett et al., 2011). Another intriguing discovery was that the 10% of homes without a sanitary toilet were usually the poorest in the community, showing that affordability was a concern for the poorest families (Hanchett et al., 2011).

A study conducted in Indonesia and Bangladesh revealed that, 68.3% of homes with improved facilities shared by two or more households reported being satisfied with their defecation location, compared to 82.4% of homes with private improved latrines, 70.2% of homes sharing an improved facility with two other homes, and 70.2% of homes with improved facilities shared by two or more homes (Nelson et al., 2014).

The study found that, there were cover slabs on 84% of the latrines and water seals on 39% of them. While 45% of families used the same toilet, 20% had it improved, and 20% had it constructed using the same toilet design (Hanchett et al., 2011).

2.13.2 Africa

A study in Zimbabwe by Whaley & Webster (2011) looked at sanitation projects that were 2-3 years old. The study considered 140 homes in six villages and discovered that 14% of people didn't have access to latrines, however it wasn't clear how many of those households had attained ODF in the first place (Whaley & Webster, 2011).

Several contributory elements that were thought to be affecting the accomplishment and maintenance of ODF were discovered. In general, a successful trigger was found, but post-trigger follow-up was crucial, as were the local authorities in each village. The amount of accessible forest cover for defecation cover, the time of the intervention, and the cost of cement-based latrine models were also recognized as considerations. The relatively high cost

of cement in Zimbabwe was cited as a major factor in the use of local materials in most latrines (Whaley & Webster, 2011).

According to the study, 50% of the first latrines had been damaged by termites, wind, or livestock, and there was a considerable aversion to rebuilding with indigenous materials. The difficulties people experienced in progressing up the sanitation ladder to a durable latrine was identified as a major threat to long-term sustainability (Whaley & Webster, 2011).

According to a review of the UNICEF roll out CLTS approach in west and central Africa by Bevan (2015), since 2008, the organization has helped 18 countries in the subregion install CLTS. It states that the overall rate of communities being triggered to ODF is 39%, but that in places where adequate follow-up was given, as well as verification and celebrations of communities that had reached ODF, the rate had increased to 69%. The effectiveness of facilitation, regular follow-up visits, and appropriate timing to avoid the rainy season and times when farmers need to be in the fields were highlighted as crucial success factors (Bevan, 2015).

While no data for slippage were provided in terms of sustainability, it was noted that first latrines were frequently composed of non-durable indigenous materials (Logs and clay were used to make the slab; branches, leaves, and thatch were used to make the superstructure). Additionally, there was no indication that manufacturers will move to more resilient materials, particularly concrete slabs, and sanitation marketing needs to be studied to provide customers with resilient, conveniently accessible, and inexpensive options (Bevan, 2015).

Also, the study by Mosler et al., (2018) looked at rebuilding of latrines, A total of 288 respondents, or 47.8% of all respondents, stated that they had used a toilet previously and that their facility had at least occasionally gone out of operation. This group's latrines were being used by 52.6% of the participants after renovation (Mosler et al., 2018).

2.13.3 Ghana

A study conducted in Ghana and Ethiopia by Crocker et al., (2017) on sustainability of CLTS outcomes, found that, no regression in behaviour was observed after three sessions. Most latrines in the research communities were unimproved, which meant that their slabs and flooring were made of locally available materials with limited durability. Eighty one percent of latrines in Ghana, where study villages were wealthier and closer to markets, had full superstructures that gave perfect privacy, compared to 6% in Ethiopia, where they were just 6% (Crocker et al., 2017).

In several of the families in the study, latrines fell into disrepair or collapsed the year after installation (45% in Ethiopia and 6% in Ghana), but many were fixed or rebuilt the following year. Although households were dedicated to maintaining latrine usage (as seen by latrine repair rates), a 45% annual latrine disrepair/collapse rate as observed in Ethiopia was likely to discourage households and push them to revert to open defecation (Crocker et al., 2017).

The relationship between CLTS and subsequent sustained latrine usage varied more by region than by intervention, indicating that context may be as important as or even more important than implementation strategy in determining efficacy. Rural villages in Ethiopia and Ghana that were poorer, had higher baseline rates of open defecation, lower levels before the WASH project, and markers of social cohesiveness, the interventions were most successful and their effects lasted the longest. It is plausible to assume that the interventions studied resulted in greater long-term results than previously observed. One of the four approaches used included training to help communities increase capability (Crocker et al., 2017).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter provides detail description of the research methodology used for this study. It covers the study area, study population, study design, sample size, sampling procedure, data collection techniques and tools, quality control, pre-data collection stage, data processing and analysis, Data Sources and ethical considerations.

3.2 Study Area

The Sagnarigu municipal includes the Northern Region's sixteen districts, which has its administrative centre in Sagnarigu. It was carved out of the Tamale Metropolis by Legislative Instrument (LI) 2066. On the 24th of June, 2012 the district was officially launched (GSS, 2014).

There are 79 settlements in the Sagnarigu Municipality, with 20 out of them being urban, 6 of them are peri-urban, and 53 of them are considered rural areas. The municipality covers a total land size of 200.4km² and shares boundaries with the Savelugu Municipality and Nanton District to the north, Tamale Metropolis to the south and east, Tolon District to the west and Kumbungu District to the north-west. Geographically, the Municipality is located between longitudes 0° 36′ and 0° 57′ and latitudes 9° 16′ and 9° 34′ North. In accordance with the 2021 Population and Housing Census Report, there are 341,711 people living in the Sagnarigu Municipality. There are 171,512 females and 170,199 males in the population (GSS, 2021). The percentage of males who are literate is higher (68.3%) than the percentage of females who are literate (52.0%).

The ethnic makeup of the Sagnarigu Municipality is diverse. Dagomba is the Municipality's dominant ethnic group. Other ethnic groups include the Gonja, Mamprusi, Gurushi, Frafra, Akan, and Dagaaba (GSS, 2014; Issahaku & Wumbei, 2020).

In the Municipality, (46.2%) of households do not have access to toilet facilities. The Graphic.com.gh in 2018 reported that, just 5% of villages in the region had ODF status as of June 2016 (Graphic.com.gh., 2018)

Most families within the Sagnerigu Municipality use public restrooms or defecate in the open. Piped water, dug-outs, and rain are the three main sources of water in the Municipality. The rainy season in the Sagnarigu Municipality lasts from May to October, with a peak in August. One hundred and ten millimetres of rain fall on average per year, 95 days of it coming from tropical showers. On average, the dry season lasts from late November to early April. The rainy season is influenced by the wet South-Western winds, whereas the dry North-Eastern winds (Harmattan) affect the dry season. The average dry temperature ranges from 28 to 43 degrees Celsius (December to mid-April), whereas the average night-time temperature ranges from 18 to 25 degrees Celsius (December) (March to early April). Agriculture is the principal source of income for the majority of Municipal citizens, who are mostly involved in crop and animal production. Farmers in the municipality cultivate yam, millet, maize, cassava, groundnuts, cowpea, and soya beans, among other crops (Issahaku & Wumbei, 2020).

The Sagnarigu Municipality is located in Ghana's Savannah Woodland. In nature, the trees are short and dispersed. Dawadawa, Nim, Acacia, Mahogany, and Baobab are some of the most common tree species. During the rainy season, tall grasses grow naturally and are used to produce "Zanamat" and for roofing (Issahaku & Wumbei, 2020).

3.3 Study Population

The study respondents consisted of household heads who have lived in the study communities for more than six months. When the household head was not present, any individual present and at age 18 and above was purposively given priority to take part in the study. Moreover, the study also targeted WASH staff actively involved in the CLTS programme including; Chiefs, Assemblymen of the various communities, the Community Health Volunteers (CHVs) that were enlisted from the four selected Communities. A total of 339 households were visited for interviewing.

3.4 Study Design

Research design refers to lay down overall strategy or procedures that are taken to link the question(s) to data collection, analysis, and interpretation (Clark, 1999). A community cross-sectional study design was used to identify the determinants of CLTS uptake and sustainability in the Sagnarigu Municipality. A cross sectional study design is a form of research study in which data is collected on a particular subject(s) at one point in time or a time frame from a portion or the entire population or to assist answer research questions of interest, frequently for the purpose of planning public health. Along with information regarding the outcome, data can be gathered about a person's attributes, such as their exposure to risk factors (Levin, 2006). The cross-sectional study design was adopted for this work because it enabled data collection on the subject within a shorter period of time as required by the deadline for the submission of the report. Furtherance, the design enabled relatively cheaper data collection from an appreciably large sample that could enable generalization of findings in the targeted population.

Both descriptive and inferential statistics were used to analyse the data. The study employed both quantitative and qualitative research techniques, where quantitative results were well explained with qualitative results and discussions, so that the reasons ascribed to the uptake and sustainability of CLTS by household heads give a clear picture of the situation**.** The study

was conducted in April and May, 2022. Face-to-face interviews were conducted with the aid of an interview guide, along with structured and semi-structured questionnaires as data collection tools.

3.5 Sampling and Sample Size Determination

3.5.1 Sampling for quantitative data:

The sample size for this study was estimated by adopting Cochran's formula by using the following parameters: margin of error (d) at 0.05 or 5%, confidence interval (CI) at 95%, 60% prevalence of variables on CLTS uptake, so assumed prevalence of 30% used = 0.30. Using the Cochran's formula:

$n = \frac{z^2pq}{d^2}$, where:

$n = sample\ size$

$z = confidence\ interval\ at\ 95\% = 1.96$

$p =$ prevalence of variables on CLTS uptake, so assumed prevalence of 30% used $=$ 0.30

$q = 1 - p \Longrightarrow q = 1 - 0.3 = 0.7$

$d = margin\ of\ error = 0.05$

Putting in the values into the equation;

$$n = \frac{(1.96)^2 \times 0.30(1-0.30)}{(0.05)^2}$$

$$n = \frac{3.8416 \times 0.30(0.30)}{0.0025}$$

n= 0.8064

0.0025

n= 322.56

A 5% provision was made for incomplete questionnaire/drop outs;

5% of 322.56 = 16.13

Therefore, 322.56 + 16.13

=338.69

Thus, approximately the total sample size was 339 households.

3.5.2 Sampling procedure

The Sagnarigu municipality currently has ten communities that have taken up the CLTS intervention programme. The study was conducted in four (4) of these communities.

The four study communities were selected by using simple random sampling technique. The names of the ten communities were written on separate pieces of papers, folded up, mixed together and then shaken thoroughly in a small container. Afterwards, the four communities were chosen at random by four individuals. The households were next to be chosen from the identified communities using a systematic random selection process.

Table 3; 1The Distribution of sample size

Selected communities	Number of households	Sample size
Boakurugu	117	100
Batanyili	105	90
Kukpehi	83	71
Kpinjinga	90	77
Total	**395**	**338**

Source:(Sagnarigu Municipal Assembly)

To obtain a sample that was representative enough, a proportionate sampling was adopted in obtaining sample size for each community. To do this; the sample distribution among the communities was done by dividing each community's total number of households by the total number of households of the four selected communities (395) and then multiplied by the study sample size (339). The results are shown in table 3.1.

The sample interval was followed as the researchers move from one house to the next. Each research area's sample interval was computed initially to determine a set and equal interval (k) at which the particular home was chosen.

This was calculated as follows:

Sampling interval (K) = N/n where;

(N) = the total number of households in the study communities

(n) = the sample size =339

K = 519/339 = 1.53, approximately 2

Each family in a specific community had a defined and equal chance of being chosen using this method. The houses in the selected villages created a sampling frame, from which a starting household was chosen at random, followed by every second household after that. Those that match the criteria were tracked down and interviewed. Interviews persisted until every required home had been visited and every eligible respondent had been contacted. The distribution of study households throughout the community was proportional to its population (number of households). The Sagnarigu Municipal assembly provided a list of communities and the number of households.

3.5.4 Sampling for Qualitative data

Two Focus group discussions (FGDs) were conducted in two convenient selected areas in two communities (Boakurugu and Kukpehi), because these communities have larger household populations and were among the communities which initiated the implementation of the intervention. Purposive sampling technic was used to select ten (10) natura leaders in the two selected communities each. Each of these FGDs consisted of 5 men and 5 women. Total sample size was therefore twenty (**20)** respondents.

The researcher also conducted Key Informant Interviews with key stakeholders who were directly involved in CLTS activities in the Municipality. The interviews were face to face. The key informants included two Chiefs randomly selected from the four communities, two Assemblymen randomly selected from the four communities, CLTS coordinator at the Municipal assembly, three WASH monitoring and evaluation officers from two donor partners. This exercise was carried out by the lead investigator. Face-to-face interviews were conducted by the investigator with the officers who have been identified. Total sample size was therefore eight (**8)** respondents.

Hence, the Total Sample size for the study, both quantitative and qualitative data will be three hundred and sixty-six (366) respondents.

3.6 Criteria for Selecting Study Participants

3.6.1 Study Inclusion Criteria

The study included household heads who had lived in the study communities for at least 6 months prior to data collection and accepted to take part in the study.

3.6.2 Study Exclusion criteria

The study excluded individuals who were very sick and weak to attend to the researchers during the data collection period, bereaved households and individuals who were not present at home

were exempted. Individuals in the community less than six (6) months prior to the study were excluded.

3.7 Study Variables

3.7.1 Dependent Variables

The dependent variable for this study was the proportion of households that take up the CLTS intervention. And this was determined by availability of hand-washing facilities with 1) water and soap or ash, 2) no faeces in the vicinity of the house, 3) a functional toilet with a way to keep flies out of the pit, and 4) indications that the latrine and hand-washing facilities are being used. Households were scored as ODF if they satisfied all four CLTS criteria listed above, but those that had less than the four were not.

3.7.2 Independent Variables

Social-demographic variables, economic variables, and health-system elements were the study's independent variables. Gender, marital status, and educational levels were examined in relation to the CLTS technique to determine the social-demographic parameters. Socio-economic aspects were assessed by looking at the relationship between occupation and CLTS, while the health system elements were assessed by looking at the contributions made by WASH programmes to the achievement of the goals

3.8 Data collection and tools

A structured questionnaire was used in this study to investigate the determinants of CLTS uptake and sustainability. This helped to quantify and get a clear picture of the factors influencing the uptake of CLTS and sustainability. The survey gave all the elements in the sample a chance to be selected.

Also, FGDs were held to further explore factors that influenced the uptake and sustainability of CLTS among participants. According to Edith & Chinwe (2017), FGDs are a type of semi-

structured group interviews that are used to collect data. It's an approach that dates back to the 1940s, when Merton and Fiske used FGDs to perform audience research. FGD can be utilized in studies that incorporate participant attitudes, decision-making, perceptions, and experiences. Typically, focus groups are used to collect preliminary data to inform and assist in the formulation of surveys, as well as to clarify research findings from other methods.

FGDs were employed in this study in part because they helped to elicit in-depth information from respondents which survey questionnaires alone were not able to capture.

3.9 Direct observations

The researcher and assistants with the help of a well-developed checked list assessed sanitary and hygiene practises in households. This entailed looking for CLTS parameters that are specified in the new CLTS protocol. These included; the presence of latrines with squat-hole lids and hand-washing facilities with running water and soap/ash, as well as the absence of any faeces in the homestead. This information was collected from each of the households visited using a checklist.

3.10 Data Analysis Technique

The Statistical Package for Social Sciences (SPSS) version 25 was used for data entry and analysis. For continuous variables, the means and standard deviation were determined (example, age). Frequencies and percentages were used to analyse the categorical variables (for instance, sex and educational level). Cross tabulations and frequencies were calculated in relation to significant characteristics. The chi-square test was employed to find correlations between category variables. In all analyses, statistical significance was determined as a p-value of 0.05 or lower with a 95% confidence interval. FDGs were recorded and afterwards transcribed verbatim for qualitative data, with the resulting texts being carefully examined using thematic content analysis. Broad themes were extracted from the transcripts first, followed by the identification of coded themes. Accounts were given to statements of meaning

that were presented in the majority of the relevant data when identifying themes. Independent codes were utilized to confirm the themes retrieved from the data in order to ensure the findings' trustworthiness.

For anonymity's sake, the researcher represented the Global communities respondent 1, the Sagnarigu Municipal WASH respondent, APDO representative, Global communities representative 2, assembly member 1, assembly member 2, chief 1 and chief 2 with KII 1, KII 2, KII 3, KII 4, KII 5, KII 6, KII 7 and KII 8 respectively

3.11 Quality Assurance

To aid the researcher in collecting quantitative data, 4 research assistants with a minimum of a secondary education and familiarity with the dialects and norms of the study area were recruited and trained. The questionnaires were administered in both English and the Dagomba language for participants who do not speak English. The researcher reviewed the questionnaires collected each day for errors, completion, and numbering issues to ensure that the data is cleaned up to reflect the results on the ground accurately.

The questionnaire was pre-tested in two communities (Satogu and Chagnaayili) with features similar to those chosen for the study but not included in the communities selected for this study. Data was collected from a total of 15 households in these two communities in order to assess the accuracy and ease of understanding the questionnaire and addressing the challenges faced. The pre-testing of these tools aided in the validation of the research tools. It also provided participants the chance to put their knowledge of data collection methods to the test, which aided in the study tools refinement.

3.12 Validity and Reliability of Research tools

Validity and reliability are critical components of every scientific research. Each determine how accurate and appropriate a study instrument is in producing result for one study in a

particular population and in the context of another population on or related similar subject (Roberts & Priest, 2006; Vakili & Jahangiri, 2018). To ensure validity of the current study instrument and the results it generated, the researcher conducted a pilot study in selected communities that were not originally part of the sampled communities for the main study. The researcher also sought appropriate inputs from professionals and experts in environmental health and sanitation from the environmental health division of the Tamale Metropolitan Assembly. Expert inputs from the study supervisors ensured that the data collection tools validly covered all of the objectives for the study.

For reliability, a cumulative alpha co-efficient of 0.74 obtained for the thematic areas of the test instrument indicated the instrument was adequately reliable. The reliability coefficient was determined using the SPSS software That is, there was adequate internal consistency.

3.13 Ethical clearance

Permission was sought from the Kwame Nkrumah University of Science and Technology Review Committee with clearance number CHRPE/AP/145/22. Administrative approval to commence data collection was obtained from the Sagnarigu Assembly to carry out the study within the various communities and Municipal Health Directorate for assistance during the research.

Consent was sought from respondents who participated in this study. The respondents were briefed on the aims, importance and benefits of the study. Respondents were assured of confidentiality of data that was collected and that it was to be used solely for academic purposes. The participants were further reminded of their right to opt out of the study at any time during the process.

CHAPTER FOUR

RESULT

4.1 Introduction

The data collected from the field were analysed and the results are presented in this chapter. According to the research objectives, the analyses were both quantitatively and qualitatively. The following were taken into consideration: the demographic features of the respondents, level of knowledge of household heads on CLTS, factors impacting CLTS uptake among household heads, and factors influencing CLTS sustainability in the Sagnarigu municipality. FGDs and In-dept Interviews were also used to corroborate or refute the quantitative data's findings**.**

4.1.1 Demographic characteristics

As stated in table 4.1, there were 338 participants in the study. The respondents' average age was 35.62, with a minimum of 18 and a maximum of 79.

4.2 Socio-demographic Characteristics of Household Heads

The table 1 below shows the socio-demographic characteristics of the respondents. A total number of 338 respondents were interviewed with the highest number of respondents, 103 (30.5%) from Boakurugu with males dominating (57.1%). With the category of age, respondents within the age range 31-40 dominated (34.3%).

Also, majority (50.0%) of respondents were from household size 11-20 members while the fewer respondents were from household with a size 31+ members (0.6%). In terms of religion, Islam had the majority of respondents (91.1%) while Christianity and traditional religion had 7.1% and 1.8% respondents respectively.

Majority of the respondents were married (84.6%) with most of them having no formal education (56.2%). The Dagomba ethnic group made up majority of respondents (98.8%). 60.5% of the respondents were farmers.

Table 4.1: Sociodemographic Characteristics of Household heads

Variable	Frequency (n) (n = 338)	Percentage (%)
Community Name		
Batanyili	75	22.2
Boakurugu	103	30.5
Kpinjinga	72	21.3
Kukpehi	88	26.0
Gender of household heads		
Male	193	57.1
Female	145	42.9
Age of household heads		
<= 20 years	24	7.1
21 – 30 years	99	29.3
31 – 40 years	116	34.3
41 – 50 years	65	19.2
51 – 60 years	25	7.4
61+ years	9	2.7
Size of households		
<= 10 members	116	34.3
11 – 20 members	169	50.0
21 – 30 members	51	15.1
31+ members	2	0.6
Religion of household heads		

Christianity	24	7.1
Islamic	308	91.1
Traditionalist	6	1.8
Marital status of household heads		
Married	286	84.6
Single	43	12.7
Separated	1	0.3
Divorced	2	0.6
Widow	6	1.8
Educational status of household heads		
No formal education	190	56.2
Primary	34	10.1
Junior High	57	16.9
Senior High	39	11.5
Tertiary	18	5.3
Ethnic group of household heads		
Dagomba	334	98.8
Gonja	2	0.6
Frafra	1	0.3
Mamprusi	1	0.3
Occupation of household heads		
Driver	10	3.0
Farmer	205	60.5
House Wife	20	6.0
Student	21	6.2
Tailor	16	4.7

Unemployed	10	3.0
*Others	56	16.6

**Others: Business man, Business woman, Butcher, Hair dressers, Mason, Mechanics, Trader, Security, Self-employed, and Teacher,*

4.3 Knowledge of community Household heads on CLTS

Out of the 338 respondents who were asked if they had ever heard of CLTS before, 99.1% of household heads responded 'Yes'. More than half of the respondents (71.3%) indicated their source of information/knowledge about CLTS was the Environmental Health staff/sanitary inspector. The entire 335(100%) respondents further indicated that the CLTS intervention had totally ensured social harmony in the community.

Household heads when asked whether they knew the steps involved in CLTS implementation, majority (83.6%) of the household heads said 'Yes'. All the 280 (100.0%) respondents who said they knew the steps involved in CLTS implementation also knew the scaling up stage of the CLTS while 90.7% of the respondents revealed that the entire community was involved in the CLTS process and 99.1% of them indicated that the communities appointed natural leaders. Almost all (99.7%) respondents indicated "Yes" there were trainings on the CLTS programme in the community. Hence, (71.3%) of them revealed the training programmes were specifically related to construction of latrines. (99.4%) of the household heads indicated poor families have equal role in the in the implementation of the CLTS intervention. Majority (98.8%) of household heads indicated that women have proportionate and active role in CLTS implementation. On women's participation, majority (99.7%) of household heads further specified that "all women (either from rich/poor families) were equally participative in the implementation of CLTS activities. On the general community participation, majority (94.3%) of respondents indicated that community members benefited equally from the CLTS programme while 5.7% said community members did not benefit equally from the programme.

With regards to technological options for the construction of cheap latrines, 52.8% of the respondents indicated that there are no adequate technological options for the construction of cheap latrines and 65.4% indicated there was no form of support for poor people. In addition, 82.8% indicated that they were given technical support while 17.2% said they were given material support. With regards to the availability of systems for the assessment of the CLTS programme, majority (90.7%) indicated that there is a system for assessing CLTS performance in their communities.

Table 4.2: Knowledge of Household Heads on CLTS

Variable	Frequency (n)	Percentage (%)
Have you heard of CLTS before?		
Yes	335	99.1
No	3	0.9
Total	338	100
Source of Information on CLTS among Household heads		
Local Health Staff	1	0.3
During formal/training	58	17.3
Local NGO	37	11.1
Environmental Health Staff/Sanitary inspector	239	71.3
Total	335	100
Impact of CLTS		
Social harmony	335	100.0
Total	335	100
Household heads who know the steps involved in CLTS Implementation		
Yes	280	83.6
No	55	16.4

Total	335	100
Steps involved in CLTS implementation		
Pre-triggering	168	60.0
Triggering	90	32.1
Post-Triggering	90	32.1
Scaling up	280	100.0
Were you involved as a community in the CLTS processes?		
Yes	304	90.7
No	31	9.3
Total	335	100
Has the community appointed natural leaders?		
Yes	332	99.1
No	3	0.9
Total	335	100
Has there been any training on the CLTS program in the community		
Yes	334	99.7
No	1	0.3
Total	335	100
What are those training programs related to?		
Construction of hygienic latrines	239	71.3
Management training related to CLTS	32	9.6
Gender participation on CLTS	64	19.1
Total	335	100
Do poor families have equal role in implementation of CLTS activities?		
Yes	333	99.4

No	2	0.6
Total	335	100
Do women have proportionate and active role		
Yes	334	99.7
No	1	0.3
Total	335	100
If yes for Q2.11, which category of family are they from?		
Rich families	1	0.3
Poor families	2	0.6
All are equally participative	332	99.1
Total	335	100
Do you feel community members has benefited equally from CLTS		
Yes	316	94.3
No	19	5.7
Total	335	100
Adequate technological options for the construction of cheap latrine		
Yes	158	47.2
No	177	52.8
Total	335	100
Was there any form of support for poor people		
Yes	116	34.6
No	219	65.4
Total	335	100
In what form was the support		
Material support	20	17.2
Technical support	96	82.8

Total	116	100
Is there any system of assessing CLTS performance in this community?		
Yes	304	90.7
No	31	9.3
Total	335	100

When asked if participants have ever heard about the CLTS programme, a respondent had this to say;

"yes, we have heard about CLTS. Staff from the Sagnarigu municipal assembly came here to teach us the benefit of building latrines. And in fact, we have seen the benefits of building the latrines especially in the raining season" (32-year-old man, FGD 1),

"yes, they (Sagnarigu municipal assembly) taught us how to dig the pit, cover and plaster/cement it. They also selected one person among us to teach him latrine construction. The municipal assembly gave us tools to enable us dig and build latrines on our own as a community. Natural leaders always went round the community to help people who were unable to dig such as widows and the aged. The Sagnarigu municipal assembly also reduced the price of cement from GHC50.00 to GHC40.00 per bag for us at the initial stage of CLTS implementation" (41 years old magajia, FGD 2),

When asked how the training on CLTS were carried out in the communities, a participant indicated,

"*the entire community members were triggered together at a formal gathering and natural leaders were selected during the process. CLTS intervention communities were monitored/ visited at least twice every week. He also added that, the knowledge level of CLTS communities is up to expectation. The knowledge level on CLTS is high, because they know how to construct local/cheaper latrines by themselves and considered that role as their duty"* (KII 2)

When asked how participants would describe the knowledge level of ODF communities in the Sagnarigu municipality on CLTS, a respondent revealed,

"ODF communities in the municipality have good concept about CLTS (latrine usage and hand washing) and the need to improve upon their sanitation. They are still building some collapsed latrines and keeping their environment clean (consciousness without anyone telling them). The natural leaders still call our offices for help when the need arises. In general, they are still climbing the sanitation ladder" (KII 4)

In trying to ascertain if people in these communities have the capacity necessary to construct latrine facilities, respondent has this to say,

"yes..... people in these communities have the capacities necessary to construct their own latrines because they have the necessary latrine construction knowledge and materials available to build cheaper latrines" (KII 2).

When asked how often do you monitor (follow up) on CLTS implementing communities, a participant indicated,

"we visit implementing communities twice a week and once a week after declaring a community ODF. Monitoring is done by different group of staff. Some monitor these communities on weekly bases whiles others monitor on monthly bases. Monitoring comprises of field coaching, giving of technical support to the community members and mentoring of natural leaders" (KII 3)

When asked whether there is a system of assessment by the community in regard to achieving the goals of CLTS, a participant indicated;

"*yes, there is a system for assessing the community. That is, we monitor nearby surroundings to look for faeces and check in the latrines to see how recent it has been used. Faeces around indicates people are still practising OD and droplets of urine or water within/inside the latrine help us to assess whether households are using the latrine or not. Also, the anal cleaning papers/sticks helps us to know how recent/frequent the latrine has been used"* (39 years old man, FGD 1)

4.3 Latrine Ownership and Use

On latrine ownership and use, all 100.0% of household heads indicated that they own a latrine and 16.6% revealed that not everyone in their households uses the latrines. Majority (83.4%) of the household heads further revealed that adults use their own latrines when at home, while 16.6% indicated that they use neighbours' latrine while at home.

Majority (99.7%) of the respondents indicated that adults use public latrines when away from home while 12.1% of the respondents indicated that they use neighbour's latrine when away from home. Also, 88.5% of the respondents indicated that children in various households use their latrines while at home. In addition, majority (68.0%) of the respondents revealed that children use public latrines when away from home.

On the question of anal cleaning after using the toilet, majority (67.8%) of the household heads indicated that they use papers as anal cleansing material while 90.8% of the respondents revealed they wash their hands always after using the latrine. On hand washing, 66.9% of the respondents indicated that they use soap as a detergent to wash their hands, while 30.2% indicated that they use ash as a detergent for hand washing.

With regards to cleaning of the latrines, majority (58.3%) of the respondents revealed that their latrines are cleaned 2-3 times within a week. About 14.2% of the respondents revealed that they share their latrines with other household members. Out of the number 48(14.2%) that share latrines,13.3% indicated that they share their latrine with only one household. On respondents' recent open defaecation experiences, 33.1% indicated that they have ever defecated in the open in the past 1 year while 29.0% indicating that they did defecate in the forest/bush. Out of the respondents who have ever defecated in the open, 44.6% of them revealed that they have forgotten the last time they defecated in the open. In justifying the act, majority (59.8%) of the household heads indicated that they only defecate in the open when they are in the farm/bush.

Table 4. 3: Latrine Ownership and Use

Variable	Frequency (n)	Percentage (%)
Do you own a latrine?		
Yes	338	100.0
Total	338	100.0
Does everyone use it all the time?		
Yes	282	83.4
No	56	16.6
Total	338	100.0
Where do adults defecate while at home?		
Our Latrine	282	83.4
Neighbours' Latrine	56	16.6
Total	338	100.0
Where do adults defecate when away from home?		
Bush	1	0.3
Public latrine	289	99.7
Total	290	85.8

Other specify		
Use neighbour's latrine	41	12.1
Dig and burry in the bush	8	2.4
Total	49	14.5
Where do children defecate while at home?		
In our own latrine	299	88.5
In a neighbour's latrine	20	5.9
Total	319	94.4
Other specify where children defecated while at home?		
No child here	3	0.9
They use chamber pot	10	3.0
They dig and burry	6	1.8
Total	19	5.6
Where do children defecate while away from home?		
Bush	10	3.0
Public latrine	230	68.0
Total	240	71.0
Other specify where children defecate when away from home?		
Use neighbours' latrine	52	15.4
Dig and burry in the bush	43	12.7
No child here	3	0.9
Total	98	29.0
Anal cleansing material		
Water	47	13.9
Maiz cob/sticks	7	2.1
Papers	229	67.8

Tissue Papers	52	15.4
Fibre	3	0.9
Total	338	100.0

Do household members wash their hands after using the toilet?

Always	307	90.8
Sometimes	31	9.2
Total	338	100.0

Which detergent do you use to wash your hands after using the toilet?

Soap	226	66.9
Ash	102	30.2
Water only	10	3.0
Total	338	100.0

How often does a member clean the latrine?

Daily	39	11.5
Once a week	74	21.9
2 – 3 times a week	197	58.3
Once in a while	28	8.3
Total	338	100.0

Do you share your latrine with other families/neighbours?

Yes	48	14.2
No	290	85.8
Total	338	100.0

How many households do you share the latrine with?

A household	45	13.3
1 - 3 households	3	0.9
Total	48	14.2

In the past 1 year, have you defecated in the open?		
Yes	112	33.1
No	226	66.9
Total	338	100.0
If yes, where in the open did you defecated?		
In the forest/bushes	98	87.5
In the open ground	14	12.5
Total	112	100.0
When was the last time you defecated in the open?		
Today	2	1.8
Yesterday	5	4.5
Within this week	31	27.7
Last month	13	11.6
Some months ago,	11	9.8
Forgotten	50	44.6
Total	112	100.0
Why do you prefer defecating in the open?		
When I am in the farm/bush	67	59.8
Because our latrine is full	11	9.8
Due to distance from home	33	29.5
Because our latrine has collapsed	1	0.9
Total	112	100.0

When asked if every household in the village owns a latrine, a respondent indicated that,

"there are no specific people who own and use latrines. We all have latrines, we supported each other as community members, especially the vulnerable to dig and build cheap latrines while the municipal assembly also subsidized building materials like cement for community members to buy. Every household in this community owns a latrine. Only that, currently some household's latrines are almost full and others have collapsed" (48-years-old man, FGD 2)

When asked if there are benefits/impacts realized by the program since its inception the municipality, a participant revealed,

"*open defecation has drastically reduced in CLTS intervention communities due to the acceptance of the CLTS concept (latrine usage) and this has helped to improve the municipal assembly's ODF performance in the region and country as a whole"* (KII 2).

In trying to understand how sustainable the CLTS intervention is, a participant indicated,

"Latrine use in these communities is very encouraging i.e., community members do not practise open defecation again. Initially there were no households without a latrine, but currently, some household latrines have become full and they feel reluctant to build new ones" (KII 8).

Inquiring from participants on how they would describe the knowledge level of ODF communities in the Sagnarigu municipality on CLTS, a respondent indicated,

"the ODF communities in the Sagnarigu municipality have all stopped the habit of OD. You won't see faeces in between the houses. ODF communities also consciously manage children's faeces by helping them to use chamber pot and later pour it into the latrine. This means the faeces are not exposed to house flies and other animals. And individuals who are caught practising OD are sanctioned" (KII 1).

4.4: Perceptions regarding latrine ownership and use

Respondents when asked about the advantage of owning a latrine, majority (35.8%) of them replied that it is comfortable and convenient while 43.2% revealed that they decided to own a latrine because of good health. Meanwhile majority (52.7%) of respondents further indicated that persons who own latrines are educated. When respondents were further interrogated on their opinions on people who still defecate in the open, majority (56.2%) indicated that due to lack of education some individuals still engage in open defecation.

Respondents, when asked how satisfied they were with their current habit in defecation, majority (56.2%) made it known that they were very satisfied.

Table 4.4: Perceptions regarding latrine ownership and use

Variable	Frequency (n)	Percentage (%)
Advantage of owning a latrine		
Good hygiene/cleanliness	34	10.0
Good health	44	13.0
Privacy	81	24.0
Comfortable/convenience	121	35.8
Safety	57	16.9
Prestige	1	0.3
Total	**338**	**100.0**
Why did you decide to have a latrine		
Good hygiene/cleanliness	134	39.6
Good Health	146	43.2
Privacy	3	0.9
Comfortable/convenience	37	10.9
Safety	18	5.3

Total	**338**	**100.0**
Your opinion on people who have their own toilets		
They are clean	158	46.7
They are rich	2	0.6
They are educated	178	52.7
Total	**338**	**100.0**
Household heads opinions on people who still defecate in the open?		
They are dirty	107	31.7
They are poor	8	2.4
They cause disturbance by using our latrine	1	0.3
They are uneducated	190	56.2
They do it because they are customized to it	27	7.9
Nothing is wrong with them	5	1.5
Total	**338**	**100.0**
How satisfied are you with your current habit in defecation?		
Very dissatisfied	4	1.2
Dissatisfied	19	5.6
Satisfied	125	37.0
Very satisfied	190	56.2
Total	338	100.0

Table 4.5: Economic factors

With regards to distance to the defecation site, majority (63.6) of the respondents indicated that the distance is less than 100 meters while majority (82.2%) respondents perceived that it will take a person less than 30 minutes to and from the defecation site.

On diarrhoeal diseases, 7.7% respondents revealed that members of their households have ever had diarrhoea in the last two weeks, while 14.4% of them indicated only one person was affected. Another 3.8% of the respondents indicated that they had it once in the last two weeks.

On the question of hospital visits, 5.6% of the respondents indicated that the individuals affected by diarrhoea once visited a health centre/hospital for medication. In addition, 3.8% of the respondents indicated that they spent less than GHC100.00 in seeking health care.

Lastly, all the 338 household heads indicated there were no cultural practises or beliefs in their various communities that hinder or prevent one from constructing a latrine.

Table 4. 5: Economic factors affecting Latrine ownership and usage

Variable	Frequency (n)	Percentage (%)
How far is the defecation site?		
Less than 100 meters	215	63.6
Between 100 to 200 meters	123	36.4
Total	338	100.0
How long does it take an individual to and from the defecation site?		
Less than 30 minutes	278	82.2
Between 30 minutes and 1 hour	59	17.5
More than 1 hour	1	0.3
Total	338	100.0
Are there members of the family who have had diarrhoea in the last two (2) weeks?		
Yes	26	7.7
No	312	92.3
Total	338	100.0

Approximately how many members of your family were affected with diarrhoea		
One	15	4.4
Two	11	3.3
Total	26	7.7
Approximately how many times were they affected?		
Once	13	3.8
Twice	11	3.3
Thrice	1	0.3
Four and more	1	0.3
Total	26	7.7
How many times were they hospitalized as a result of the diarrhoea?		
Did not go to hospital	6	1.8
Once	19	5.6
Twice	1	0.3
Total	26	7.7
Amount spent on hospitalization on each member as a result of hospitalization		
Less than GHC 100.00	13	3.8
Between GHC 100.00 and GHC 500.00	8	2.4
Total	21	6.2
Are there cultural beliefs and practises that have hindered you from constructing a latrine?		
No	338	100.0

When asked how long (in minutes) will it take one back and forth the defecation site, a participant emphasized that,

"about 100 meters or sometimes more than that, especially in the dry season whereby all the bushes have been burnt down, you need to walk to a far distance to be able to hide yourself. It may take you at least 30 minutes to and from, but during the dry season it is likely to take you more than that" (KII 7).

When asked how sustainable do you think CLTS has been, a respondent revealed,

"*the programme has helped us a lot but the latrines are not durable to be used for a long time. And as a results of this community members will soon be giving up because, they cannot keep on digging and building latrines after it has rain"* (53 years old man, FGD 3).

In finding out some of the problems associated with people defecating on the open grounds, the following responded were given:

"if you go to + bush to defecate, you have to look around to be sure that no one is looking at you or is around to see your nakedness" (41-years-old man, FGD 2).

"the incidence of diarrhoea in the community has decreased. At first, even at midnight we had to transport diarrhoea cases to town (hospital) frequently. But now, it barely happens (48-year-old respondent, FGD 2).

When asked if there were any cultural practises and beliefs in the communities that hinder people from constructing and using latrines, participants have emphatically said *no!"* (KII 5,6,7 & 8).

4.6 CLTS sustainability

On the issue of sustainability, respondents when asked how long they have been owning their latrines, majority (55.0%) indicated that they have owned latrines between 3 years and 5 years. Only 4.1% indicated that they had a latrine before the implementation of the CLTS intervention

in their communities. Majority of the household heads 53.6% made it known that the latrines were built in collaboration with family/household members.

Furthermore, 77.2% of the respondents revealed that they spent about GHC100.00 to construct their latrines while 14.2% of the respondents revealed that not all household members use their latrines all the time. Majority (72.8%) of the respondents indicated that they were very happy with their latrines but, majority (74.6%) further indicated that they would prefer a concrete squatting plate latrine if there was help.

More than half (69.8%) of the respondents further elaborated that their preferred latrines would cost about GHC600.00 - GHC1000.00 to construct. Also, respondents when asked how much they would be prepared to pay/offer for a latrine, 46.4% of the respondents indicated that they can only afford GHC100.00 while 21.9% indicated that they cannot or have no amount to offer. Respondents when further interrogated on how they would get the money, majority (33.7%) said they will wait for harvest to sell farm produce while 32.2% of them indicated that they will seek help from an NGO. Meanwhile majority 51.5% of the remaining 99 respondents specified that, they would pay through savings from their sales/salaries.

Majority (93.8%) of the respondents indicated that they would get materials/services for latrine construction from town/market, while, 29.0% indicated that their latrines smell is a challenge they face. In addition, a total of (29.9%) respondents said they ever made some repairs/replacement/upgrading on their latrines while (5.9%) respondents indicated they replaced their roofing and (17.2%) said they did some plastering/cementing works on their latrines. About 7.7% of the respondents also indicated that they knew households that had gone back to OD. Respondents, when asked what was good about owning a latrine; 55.9% of them

said safety and security while 43.8% indicated that it promotes good health.

Table 4. 6 CLTS sustainability

Variable	Frequency (n)	Percentage (%)
How long have you had a latrine?		
1 year	3	0.9
2 years	149	44.1
3 years – 5 years	186	55.0
Total	338	100.0
Did you have one before the project?		
Yes	14	4.1
No	324	95.9
Total	338	100.0
Who built the toilet?		
Landlord	157	46.4
Family	181	53.6
Total	338	100.0
How much did it cost you to build the toilet?		
Less than GHC 50.00	17	5.0
GHC 100.00	261	77.2
GHC 200.00 – GHC 500.00	53	15.7
No cost involved	7	2.1
Total	338	100.0
Does everyone use it all the time		
Yes	290	85.8
No	48	14.2
Total	338	100.0
How happy are you with your latrine?		
Very happy	246	72.8

Reasonably happy	66	19.5
Unhappy	26	7.7
Total	338	100.0

What sort of latrine would you prefer?

Bush materials	2	0.6
Concrete squatting plate	252	74.6
Pour flush	84	24.9
Total	338	100.0

How much do you think your preferred latrine would cost?

No cost involved	1	0.3
Less than GHC50	1	0.3
GHC 100	4	1.2
GHC 200 – GHC 500	96	28.4
GHC 600 – GHC 1000	236	69.8
Total	338	100.0

How much would you be prepared to pay?

Less than GHC 50	44	13.0
GHC 100	157	46.4
Between GHC 200 – GHC 500	61	18.0
Between GHC 600 – GHC 1000	2	0.6
No cost involved	74	21.9
Total	338	100.0

How could you get this amount of money?

Wait for harvest	114	33.7
Get a loan	5	1.5

Wait for Government	11	3.3
Help from an NGO	109	32.2
Total	239	70.7

Other specify for how you would you get your preferred latrine

Savings from my sales/salary	51	15.1
Sell fire wood/farm animal	37	10.9
My father/husband will pay	9	2.7
We will contribute as a family	2	0.6
Total	99	29.3

Where would you get materials/services?

Buy/borrow from this community	21	6.2
Buy from town/market	317	93.8
Total	338	100

What problems have you had with your latrine?

Smell	98	29.0
Collapse due to rain, termites, wind	16	4.7
Invite snakes/rodents	8	2.4
No problem yet	216	63.9
Total	338	100.0

What repairs/replacement/upgrading have you done

Roofing	20	5.9
Door/gate	11	3.3
Plastering/cementing	58	17.2
Painting	12	3.6
Total	101	29.9

Do you know any households that have gone back to open defecation?		
Yes	26	7.7
No	312	92.3
Total	338	100.0
What is good about having a latrine?		
Pride	1	0.3
Safety and security	189	55.9
Health	148	43.8
Total	338	100.0

Inquiring what ways CLTS can be sustainable especially durability and acceptability of local materials, a participant indicated,

"it (CLTS) can be sustainable if there is Commitment on the part of community key stakeholders to keep on educating and encouraging community members to uptake by rebuilding collapsed latrines. Also, post ODF monitoring of CLTS activities by the Municipal Assembly staff" (KII 3)

In trying to identify what ways CLTS can be sustainable, especially durability and acceptability of local materials, a respondent indicated;

1. *The municipal assembly supporting CLTS activities even when donor partners withdraw their services*
2. *Consistent support from stakeholders such as chiefs, assemblymen, community members*
3. *Donor partners (NGO's) should have sustainable plan for implementing communities in terms of funds, logistics etc* (KII 2)

When questioned what do respondents think about CLTS and its effectiveness, a participant revealed,

"CLTS is a very good and an effective approach that helped to build the capacity of community members in latrine construction, behaviour change and the uptake of hand washing and sock-away facilities. Also, CLTS is very effective, because the concept is easy to carry out and may not involve any amount of money" (KII 6)

When asked what respondents think are the strengths of the CLTS concept, participants revealed:

1. *It ensures social solidarity*
2. *It helps practitioners to better understand communities and their issues*
3. *Through CLTS, ODF communities have been able to get support in the form schools, drinking water, improve nutrition for their kids from other donors*
4. *CLTS improves inclusion (everyone has a say)* (KII 3 & 4)

On what respondents think are the weaknesses of the CLTS concept, a participant had this to say;

"CLTS is very expensive. It requires capacity building of assembly staff to have the required skills. Funding field staff to monitor activities. You can continuously monitor a community for a year without it attaining ODF status" (KII 1).

When asked how sustainable participants think CLTS has been, a respondent indicated that,

"Sustainability of latrines is difficult due to the water log nature of the municipality hence most latrines usually collapse during the raining season" (KII 2)

When asked where does it (CLTS) work best and worst, a participant revealed,

"it (CLTS) works best in rural communities and worst in urban and per-urban communities. But even in rural communities, different factors influence its uptake such as cultural practises, behaviour, community leadership and many more. You can work in a rural community with only three households but will not be able to achieve ODF status" (KII 1)

The municipal WASH coordinator indicated that,

"CLTS works best in rural communities and where all stakeholders are supportive".

4.7 Public health impact of CLTS uptake

The study found that the CLTS intervention was introduced in the Sagnarigu municipality in 2014. Since its introduction, several communities have been triggered and ten (10) of these communities have so far been declared ODF. Since the introduction of the CLTS programme, about 6302 latrines have been constructed through the municipal assembly and donor partners working in the municipality.

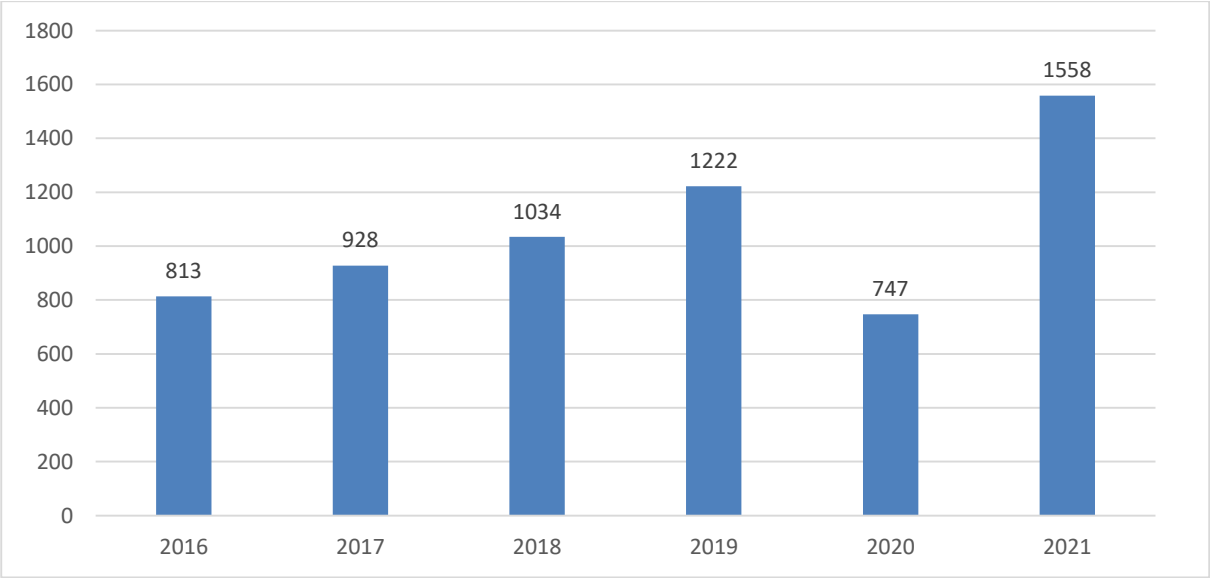

Figure 4.1: Latrines constructed since through CLTS

4.8 Uptake of CLTS among community members

The pie chart below shows the uptake of CLTS among community members. The majority (99.11%) of the household heads had high uptake of CLTS.

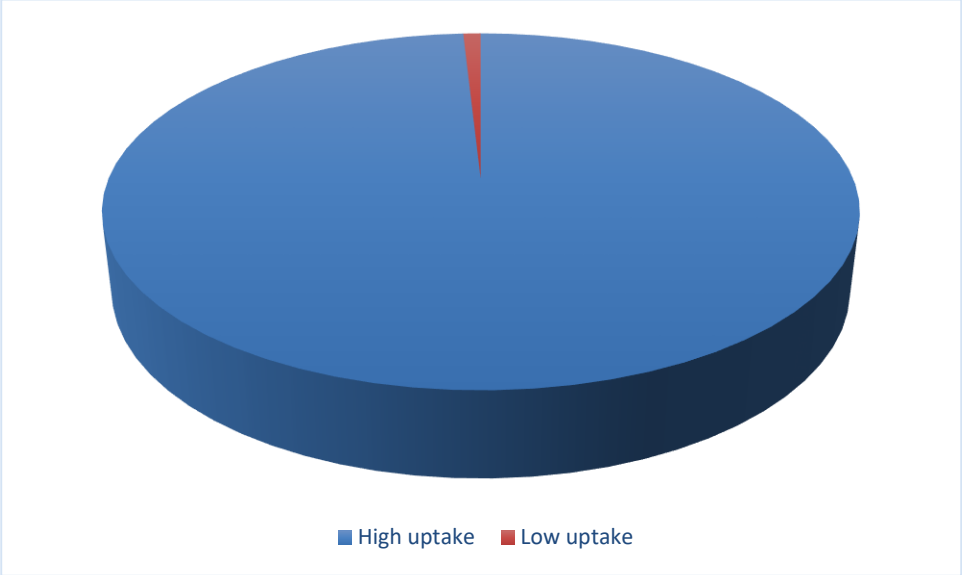

Figure 4.2: Uptake of CLTS among community members

Knowledge level of Household heads on CLTS

The bar chart below shows the knowledge level of household heads on CLTS of which 85.80% of respondents showed high knowledge level.

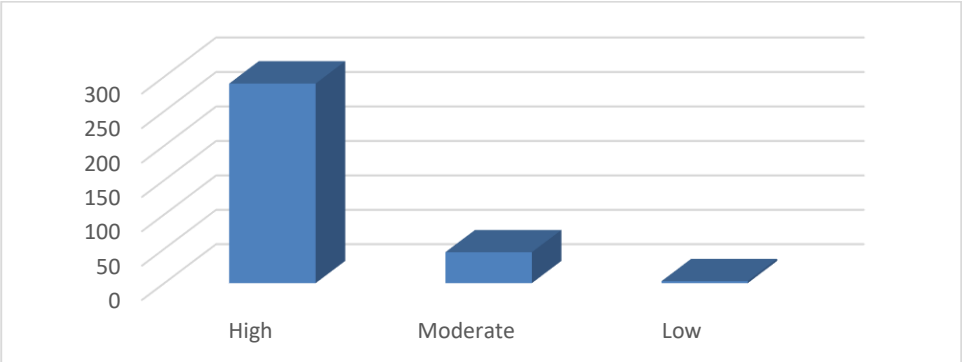

Figure 4.3: Knowledge level of Household heads on CLTS

4.8 Association between uptake of CLTS and Participants' Characteristics

Boakurugu (2.9%) had a lower uptake of CLTS than the rest of the communities. The chi-square test showed no statistically significant association between name of community and uptake of CLTS (X^2 = 6.906, P = 0.075). Within the category of age group, household heads age less or equal to 20, 41-50 years and 51-60 years had a high uptake of CLTS than the other year groups, representing (100.0%) respectively. The chi-square test showed statistically significant association between the age group of household heads and uptake of CLTS (X^2 = 11.732, P = 0.039).

Also, on the category of household size, households with size ranging from 21-30 and 30+ members had high uptake of CLTS 51(100.0%) and 2(100.0%) respectively while households with sizes 11-20 and ≤10 had low uptake of CLTS of 1.2% and 0.9%. The chi-square test showed statistically no significant association between household size and uptake of CLTS (X^2=0.644, P=0.886).

On the category of religion, Islam had low uptake of CLTS (1.0%) as compared to Christianity and traditionalist which both had high uptake of (100.0%) respectively. The chi-square test showed no statistically significant association between religion and uptake of CLTS (X^2=0.295, P=0.863). On the category of marital status, married household heads had lower uptake of (1.0%) while single, separated, divorced and widow all had high uptake of 100.0% respectively. The chi-square test showed no statistically association between marital status and CLTS uptake (X^2=0.550, P=0.968).

Within the category of educational status, household heads with senior high and tertiary education had high uptake of 100.0% respectively. While household heads with no formal education, junior high and primary education had low uptake of 0.5%, 1.8% and 2.9% respectively. The chi-square test showed no statistically significant association between

educational status and CLTS uptake (X^2=2.909, P=0.573). Also, on the ethnic group of household heads, Dagomba had low uptake of CLTS (0.9%). Other ethnic groups such as Gonja, Frafra and Mamprusi all had high uptake of 100.0% respectively. The chi-square test showed no statistically significant association between ethnic group and CLTS uptake (X^2=0.036, P=0.998). On the category of occupation of household heads, farmers showed a high uptake (99.5%) of CLTS. The chi-square test showed no statistically significant association between the uptake of CLTS and participants occupation (X^2=2.815, P=0.589).

Table 4. 7 Association between uptake of CLTS and Participants' Demographic Characteristics

		Uptake of CLTS				Chi-Square Test (P – Value)
		Low Uptake		High Uptake		
		(n)	(%)	(n)	(%)	
Community name	Batanyili	0	0.0	75	100.0	$X^2 = 6.906$
	Boakurugu	3	2.9	100	97.1	(0.075)
	Kpinjinga	0	0.0	72	100.0	
	Kukpehi	0	0.0	88	100.0	
Gender	Male	1	0.5	192	99.5	X^2 =0.698
	Female	2	1.4	143	98.6	(0.403)
Age of Household heads	<= 20 years	0	0.0	24	100.0	**X^2 = 11.732**
	21 – 30 years	1	1.0	98	99.0	**(0.039)**
	31 – 40 years	1	0.9	115	99.1	
	41 – 50 years	0	0.0	65	100.0	
	51 – 60 years	0	0.0	25	100.0	
	61+ years	1	11.1	8	88.9	

Size of households	<= 10 members	1	0.9	115	99.1	X^2 = 0.644
	11 – 20 members	2	1.2	167	98.8	(0.886)
	21 – 30 members	0	0.0	51	100.0	
	31+ members	0	0.0	2	100.0	
Religion of household heads	Christianity	0	0.0	24	100.0	X^2 =0.295
	Islamic	3	1.0	305	99.0	(0.863)
	Traditionalist	0	0.0	6	100.0	
Marital status of household heads	Married	3	1.0	283	99.0	X^2 = 0.550
	Single	0	0.0	43	100.0	(0.968)
	Separated	0	0.0	1	100.0	
	Divorced	0	0.0	2	100.0	
	Widow	0	0.0	6	100.0	
Educational Status	No formal education	1	0.5	189	99.5	X^2 =2.909
	Primary	1	2.9	33	97.1	(0.573)
	Junior High	1	1.8	56	98.2	
	Senior High	0	0.0	39	100.0	
	Tertiary	0	0.0	18	100.0	

Ethic group of household heads	Dagomba	3	0.9	331	99.1	X^2 = 0.036
	Gonja	0	0.0	2	100.0	(0.998)
	Frafra	0	0.0	1	100.0	
	Mamprusi	0	0.0	1	100.0	
Occupation of household heads	Farmer	1	0.5	204	99.5	X^2=2.815
	Student	0	0.0	21	100.0	(0.589)
	Tailor	0	0.0	16	100.0	
	Unemployed	0	0.0	10	100.0	
	Others	2	2.3	84	97.7	

4.9 Association between knowledge level of household heads on CLTS and Participants' Demographic Characteristics

Concerning the knowledge level of household heads on CLTS and participants' characteristics, analyses revealed that Batanyili had high knowledge of 94.7% while Kpinjinga, Boakurugu and Kukpehi had low knowledge level on CLTS, 1.0%, 1.4% and 1.1% respectively. The chi-square test showed no statistically significant association between participant characteristics and knowledge of CLTS (X^2=11.064, P=0.086).

On the category of gender, more males had high knowledge (94.3%) on CLTS with females showing moderate knowledge of (24.1%) on CLTS. The chi-square test showed statistically significant association between gender and knowledge of CLTS (X^2=26.829, P<0.001). With regards to the category of age group, age groups 31-40, 41-50 and 51-60 had high knowledge of CLTS (86.2%), (87.7%) and (100.0%) respectively. Participants in the age group ≤20, 21-30 and 60+ had moderate knowledge on CLTS (29.2%), (13.1%) and (22.2%) respectively. The chi-square test showed no statistically significant association between age group and knowledge on CLTS (X^2=13.341, P=0.205). On the category of household size, households with less than or equal to 10, 11-20 and 21-30 all had high knowledge with (84.5%), (86.4%) and (90.2%) respectively while households with size 31+ showed moderate knowledge on CLTS. The chi-square test showed statistically significant association between size of households and knowledge of CLTS (X^2=15.204, P=0.019)

Within the category of religion, traditionalist had high knowledge on CLTS (100.0%), Christianity had moderate knowledge of (16.7%) while the Islamic religion showed low level of knowledge on CLTS (1.0%). The chi- square test showed no statistically significant association between religion and knowledge of CLTS (X^2=1.452, P=0.835). On the category of marital status of household heads, married and widowed showed high level of knowledge

on CLTS (86.4%) and (100.0%) while single and separated household heads had moderate knowledge on CLTS (16.3%) and (100.0%) respectively. Divorced participants had high knowledge of (50.0%). The chi- square test showed no statistically significant association between marital status and knowledge of CLTS (X^2=10.738, P=0.217).

Also, with regards to the category of education, no formal education and primary education had moderate knowledge on CLTS (11.6%) and (14.6%) respectively while junior high education had a low knowledge (3.5%). Senior and tertiary education household heads had high knowledge of CLTS (76.9%) and (94.4%) respectively. The chi- square test showed no statistically significant association between educational status and knowledge of CLTS (X^2=10.294, P=0.245). On the category of ethnic group, Dagomba had low knowledge on CLTS (0.9%), Gonja had moderate knowledge of (50.0%) while Frafra and Mamprusi had high knowledge on CLTS (100.0%) respectively. The chi-square test showed no statistically significant association between ethnic group and knowledge of CLTS (X^2=2.675, P=0.848)

Table 4. 8 Association between knowledge level of household heads on CLTS and Participants' Demographic Characteristics

		Knowledge Level of Household Heads						Chi-Square Test (P – Value)
		Low Level		Moderate Level		High Level		
		(n)	(%)			(n)	(%)	
Community name	Batanyili	0	0.0	4	5.3	71	94.7	$X^2 = 11.064$
	Boakurugu	1	1.0	18	17.5	84	81.5	(0.086)
	Kpinjinga	1	1.4	6	8.3	65	90.3	
	Kukpehi	1	1.1	17	19.3	70	79.5	
Gender	Male	1	0.5	10	5.2	182	94.3	**$X^2 = 26.829$**
	Female	2	1.4	35	24.1	108	74.5	**(<0.001)**
Age of Household heads	<= 20	0	0.0	7	29.2	17	70.8	$X^2 = 13.341$
	21 – 30	2	2.0	13	13.1	84	84.8	(0.205)
	31 – 40	0	0.0	16	13.8	100	86.2	
	41 – 50	1	1.5	7	10.8	57	87.7	
	51 – 60	0	0.0	0	0.0	25	100.0	
	61+	0	0.0	2	22.2	7	77.8	

Size of household	<= 10 members	2	1.7	16	13.8	98	84.5	**X^2 = 15.204**
	11 – 20 members	1	0.6	22	13.0	146	86.4	**(0.019)**
	21 – 30 members	0	0.0	5	9.8	46	90.2	
	31+ members	0	0.0	2	100.0	0	0.0	
Religion of household heads	Christianity	0	0.0	4	16.7	20	83.3	X^2 =1.452
	Islamic	3	1.0	41	13.3	264	85.7	(0.835)
	Traditionalist	0	0.0	0	0.0	6	100.0	
Marital status of household heads	Married	3	1.0	36	12.6	274	86.4	X^2 = 10.738
	Single	0	0.0	7	16.3	36	83.7	(0.217)
	Separated	0	0.0	1	100.0	0	0.0	
	Divorced	0	0.0	1	100.0	1	50.0	
	Widow	0	0.0	0	0.0	6	100.0	
Educational Status	No formal education	1	0.5	22	11.6	167	87.9	X^2 = 10.294
	Primary	0	0.0	5	14.6	29	85.3	(0.245)
	Junior High	2	3.5	8	14.0	47	82.5	
	Senior High	0	0.0	9	23.1	30	76.9	
	Tertiary	0	0.0	1	5.6	17	94.4	

Ethic group of household heads	Dagomba	3	0.9	44	13.2	287	85.9	X^2 =2.675
	Gonja	0	0.0	1	50.0	1	50.0	(0.848)
	Frafra	0	0.0	0	0.0	1	100.0	
	Mamprusi	0	0.0	0	0.0	1	100.0	

4.10 Multiple responses for check list (Researchers Observation on household latrines)

All the 338 latrines observed were dry pits made with concrete slaps with majority (97.6%) of the households using ordinary paper as anal cleansing material and only 54.1% of these households had hand washing materials (water, soap or ash) available for use after using the latrine. Also, majority (75.5%) of latrines had a well-fitting lid while 79.6% of latrines were well used with 92.3% being recently used. Majority (90.2%) of latrines had vent pipe while 55.3% of latrines had thatch as superstructure.

Table 4.9: **Multiple response for check list**

Variable	Responses (N)	Percent (%)
Latrine type (Dry Pit) [concrete]	338	100.0%
Latrine type (Slab Condition) [Good]	240	71.0%
Latrine type (Slab Condition) [Medium]	91	26.9%
Latrine type (Slab Condition) [Poor]	27	8.0%
Latrine type (Slab Condition) [Cracked]	68	20.1%
Anal cleansing materials [Water]	84	24.9%
Anal cleansing materials [Paper]	330	97.6%
Anal cleansing materials [Maize cobs/Sticks]	254	75.1%
Hand washing materials) [Yes]	183	54.1%
Hand washing detergent [Ash]	111	32.8%
Hand washing detergent [Soap]	85	25.1%
Fly proof	201	59.5%
Hygienic (Lid)	255	75.4%
Well used	269	79.6%
Recently used	312	92.3%
Evidence of OD	51	15.1%

Depth of pit	45	13.3%
Vent pipe	305	90.2%
Superstructure material [Wood]	338	100.0%
Roofing material (zinc)	151	44.7%
Roofing material (thatch)	187	55.3%

Latrine Condition

Majority (82.54%) of latrines in the study communities were in good condition with only 17.46% not being in good state.

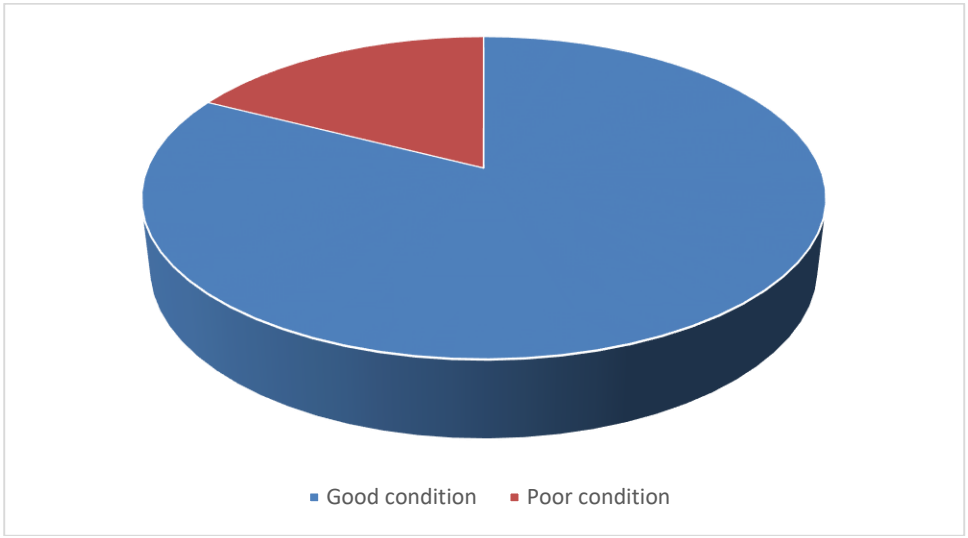

Figure 4.4: Latrine Condition

4.11 Association between household heads' characteristics and condition of latrine

With regards to community, majority (29.3%) of latrines in Batanyili community had latrines in poor conditions while majority (88.3%) of Boakurugu community had latrines in good conditions. The chi-square test showed a statistically significant association between community and condition of latrine (X^2=10.136, P=0.017).

With the category of gender, males (18.1%) showed poor condition of latrine while females (83.4%) showed good latrine condition. The chi-square test showed no statistically significant association between gender and latrine condition (X^2=0.144, P=0.704). Irrespective of religion, a majority of the household had latrines in good conditions. The chi-square test showed no statistically significant association between religion of household heads and condition of latrine (X^2=1.073, P=0.585).

On the category of marital status most married household heads (17.8%) showed poor latrine condition while of singles (86.0%) had good latrine conditions. The chi-square test showed no statistically significant association between marital status and latrine condition. With regards to ethnic groups of household heads, Dagomba (82.5%) had good condition of latrines.

With the category of ages of household heads, age range 31-40 years had poor conditions of latrines while age range <=20 (95.8%) had good condition of latrines. The chi-square test showed no statistically significant association between age of household heads and latrine condition (X^2=4.697, P=0.454). Meanwhile, on the category of size of households, 16.6% of members within the range of 11-20 members had poor latrine conditions while household size <=10 members (88.8%) showed good condition of latrines. The Chi-square test showed statistically significant association between household size and latrine condition (X^2=14.922, P=0.002).

Table 4.10: Association between household heads' characteristics and condition of latrine

		Poor Condition		**Good Condition**		**Chi-Square Test**
		(n)	(%)	(n)	(%)	**(P – Value)**
Community Name	Batanyili	22	29.3	53	70.7	**X^2 = 10.136**
	Boakurugu	12	11.7	91	88.3	**(0.017)**
	Kpinginga	11	15.3	61	84.7	

	Kukpehi	14	15.9	74	84.1	
Gender	Male	35	18.1	158	81.9	$X^2 = 0.144$
	Female	24	16.6	121	83.4	(0.704)
Religion of Household heads	Christianity	4	16.7	20	83.3	$X^2 = 1.073$
	Islamic	53	17.2	225	82.8	(0.585)
	Traditionalist	2	33.3	4	66.7	
Marital Status	Married	51	17.8	235	82.2	$X^2 = 2.078$
	Single	6	14.0	37	86.0	(0.721)
	Separated	0	0.0	1	100.0	
	Divorced	1	50.0	1	50.0	
	Widow	1	16.7	5	83.3	
Ethnic Group of household heads	Dagomba	59	17.7	275	82.3	$X^2 = 0.856$
	Gonja	0	0.0	2	100.0	(0.836)
	Frafra	0	0.0	1	100.0	
	Mamprusi	0	0.0	1	100.0	
Knowledge level of household heads	Low	0	0.0	3	100.0	$X^2 = 2.324$
	Moderate	11	24.4	34	75.6	(0.313)
	High	48	16.6	242	83.4	
Age of household heads	<=20 years	1	4.2	23	95.8	$X^2 = 4.697$
	21-30 years	17	17.2	82	82.8	(0.454)
	31-40 years	20	17.2	96	82.8	
	41-50 years	14	21.5	51	78.5	
	51-60 years	6	24.0	19	76.0	
	61+ years	1	11.1	8	88.9	
Size of households	<=10 members	13	11.2	103	88.8	**$X^2 = 14.922$**
	11-20 members	28	16.6	141	83.4	**(0.002)**

21-30 members	18	35.3	33	64.7
31+ members	0	0.0	2	100.0

4.12 Association between participants' characteristics and uptake of CLTS

Binary logistic regression analysis was conducted to determine the predictors of CLTS uptake. The results are shown in table 4.11 below.

Compared to low level of knowledge, household heads with moderate level of CLTS knowledge were 0.3 times less likely to uptake CLTS. Compared with household with <=10 members, households with 11-20 members were 0.6 times less likely to uptake CLTS.

Also, married household heads when compared with single and widow household heads showed 2.9 and 6.2 times respectively less likely for singles and widows to uptake CLTS. On ethnicity and uptake of CLTS, household heads from the Gonja ethnic group had 6.2 times less likely to uptake CLTS.

On education level and uptake of CLTS, household heads with senior high education compared to no formal education household heads were 0.2 times less likely to uptake CLTS.

Table 4.11: Determinants of CLTS uptake among household heads

Variable		B	OR(CI)	P-value
Knowledge level of household heads	Low	Reference	Reference	Reference
	Moderate	-1.155	0.3	1.000
	High	-17.657	0.0	0.999
Age of household heads	<= 20 years	Reference	Reference	Reference
	21 – 30 years	-13.589	0.0	0.999
	31 – 40 years	-14.727	0.0	0.999
	41 – 50 years	-15.583	0.0	0.999
	51 – 60 years	-30.920	0.0	0.998
	61+ years	-50.215	0.0	0.997
Size of household	<= 10 members	Reference	Reference	Reference
	11 – 20 members	-0.595	0.6	0.705
	21 – 30 members	16.356	12687733.3	0.997
	31+ members	2.534	12.6	1.000
Condition of latrine	Poor condition	Reference	Reference	Reference
	Good condition	-16.125	0.0	0.997
Religion of household heads	Christianity	Reference	Reference	Reference
	Islamic	-16.665	0.0	0.998
	Traditionalist	-14.977	0.0	0.999
Marital status of household heads	Married	Reference	Reference	Reference
	Single	1.065	2.9	1.000
	Separated	-15.753	0.0	1.000
	Divorced	-14.222	0.0	1.000
	Widow	1.829	6.2	1.000
Ethnic group of household heads	Dagomba	Reference	Reference	Reference
	Gonja	1.895	6.7	1.000

	Frafra	-16.146	0.0	1.000
	Mamprusi	1.656	5.2	1.000
Educational status of household heads	No formal education	Reference	Reference	Reference
	Primary	-17.460	0.0	0.995
	Junior High	-17.371	0.0	0.995
	Senior High	-1.709	0.2	1.000
	Tertiary	-17.421	0.0	0.999

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

The conclusions of the study are discussed in this chapter. The findings were compared to those of other studies conducted in Ghana and around the world. In places where the findings contradict or disagree with those of other studies, suggestions are offered for the likely causes of the discrepancies**.**

5.2 Sociodemographic Characteristics of Household heads

According to Amdia & Yakong (2019) respondent demographic variables such as age, sex, education level, occupation, and religion show a substantial relationship with societal change. Respondents' socioeconomic factors are crucial since they help shape their behaviour in responding to an invention.

Findings from this study showed that gender distribution among the respondents was not even, as males dominated with 57.1%. This is expected, since the study is located in a society considered as largely patriarchal. Indeed, the number of women household heads is quite remarkable. This is similar to a study conducted in Zambia where 219 of the 300 household heads interviewed were men, while 81 were women (Tembo & Mukuka, 2018).

The vast majority (82.2%) of respondents in this study fell within the age range of 21-50 years. This means that the larger proportion of the respondents were active (within the working force) and this is as a result of household heads being considered as the study's target population. These categories of age group are energetic to perform activities like digging, building the superstructure of the latrine, plastering, sweeping, digging/construction of soak aways and weeding around their households. The age group of 51-60 years, which accounted for 7.4% and the age group 61+ years which accounted for 2.7% were the least participated household

heads, suggesting that the aged are not able to partake in CLTS activities. This is similar to a study conducted in Ghana with majority of respondents (33.3%) been between the ages of 36 and 45 (Amdia & Yakong, 2019).

Half (50.0%) of respondents were from household size of 11-20 and household size less than or equals to 10 members (34.3%). Households in the study communities have larger household sizes, probably because of the rural and indigenous nature of the communities. This large household sizes could play advantage role in latrine construction in terms of financial contributions and human resource for communal latrine construction exercises. This was affirmed in one of the FGD that larger households are able to contribute financially towards the construction of a latrine or rebuilding of a collapsed latrine or support each other where man power is needed unlike a smaller household where everything rely on the breadwinner. This was followed by the least respondents from household size 31+ members (0.6%). This indicates that, a handful of households with size more than 30 participate in sanitation related activities. In such households, it is difficult to organize/control members, hence they sometimes are not willing to take part in sanitation activities, especially the women in terms of the cleaning of the latrines.

In Ghana, the two leading religious' groups are the Islam and Christianity and the northern part of the country is well known to be dominated by the Islamic religion of which the Sagnarigu municipality is not an exception (Amdia & Yakong, 2019). Hence the Islamic religion with the majority of respondents (91.1%) while Christianity and traditionalist had 24(7.1%) and 6(1.8%) respondents respectively shows that the Sagnarigu municipal is Muslim dominated community.

The study found majority of the respondents to be married or in a relationship with only few of the respondents were single or not married. This gives a clear view of the category of respondents the engaged. This category of respondents falls within the reproductive age group

hence they are influential in transmitting information on CLTS to their spouses, children and other relatives they might be taking care of. This is a higher than the findings of a study conducted in Ghana with 77.2% married or in a partnership, while 3.8% being divorced (Semabiah, 2019).

5.3 Knowledge level of Household heads on CLTS

The knowledge level of household heads on CLTS was rated based on 20 questions. Household heads who scored between 15-20 marks were classified as having high knowledge of which 85.80% of respondents showed high knowledge level on CLTS, between 10-14 as moderate of which 13.31% of the respondents were rated as having moderate knowledge on CLTS and household heads who scored less than or equal to 9 marks were also classified as having low level of knowledge on CLTS of which 0.9% of household heads showed low level of CLTS knowledge. The results from the study indicates that 99.1% of the respondents had heard of CLTS and its processes. They also showed knowledge on improved sanitation, more especially the benefits of owning a latrine (avoiding open defecation). The high knowledge (85.80%) shows CLTS activities were carried out in the study communities and household heads actually partook and understood the processes. For instance, with regards to household heads interviewed, 60% knew the pre-triggering stage, 32.1% knew the triggering and post triggering stages while 100.0% of them indicated they knew the scaling up. Also, respondents further indicated there were trainings for community members; 70.7% of them indicated the trainings were on construction of hygienic latrines, 9.5% indicated that the trainings were CLTS management related, while 18.9% indicated that the trainings were related to gender participation on CLTS and its activities. About 93.5% of the total respondents indicated they feel their community members have benefited equally from the CLTS intervention. This is greater than the results of a research done in Kenya, when 52.2% of the households knew about

CLTS. As opposed to control sites, where only 20.9% of families were aware of CLTs, 100% of households in intervention regions did so (Makotsi et al., 2016).

5.4 Association between knowledge level of household heads on CLTS and Participants' Demographic Characteristics

When knowledge level of household heads on CLTS and participants' characteristics were cross tabulated, gender and size of household were found to be significantly associated with knowledge level of participants with (X^2=26.829, P<0.001) and (X^2=15.204, P=0.019) respectively. With respect to gender, males' knowledge on CLTS was higher than that of females. This phenomenon could be ascribed to their passive involvement in community engagements including CLTS activities probably as results of their domestic workloads. Again, in the context of the study environment, activities of such nature are usually seen as the sole responsibility of males. This could also account for low female's knowledge on the subject.

Females are not able to cooperate with long standing health education when their kids are crying of hunger, they will have to leave the on-going education to cater for the child. Also, males are stronger than females to carry out the most important part of latrine construction (digging and covering the pit). Example a female household head/widow will find it difficult to dig a latrine or might be able to dig but it will not be deep to last for a longer time. This is true as it agrees with findings of a study which found that latrine ownership becomes higher as both genders obtain higher odds of improving sanitation facilities [AOR=2.73, 95% CI (1.59, 4.67)] (Afework et al., 2022).

The study found that the larger the household size, the higher the number of members in the working category hence are able to collaborate in all kinds of CLTS activities whether in the form of labour force or financial support since they always want to construct durable and high-quality latrines. One of the key informant interviews also made it known that, in bigger

households, cleaning of latrines becomes a challenge when one cleans and the other does not or do not clean it well. This contradicts a study in Hattimuda, where family size has no statistically significant relation with toilet use (Afework et al., 2022).

5.5 Uptake of CLTS among community members

On the uptake level of CLTS in the study communities, seven (7) questions were considered. The researcher scored from 5-7 as high uptake, 0-4 were scored as low uptake with only 3 household heads scoring less than or equal to four (4). Majority (99.11%) of household heads scored between 4-6 marks i.e., high uptake of CLTS. The majority of household heads indicated that they owned latrines and the few households with their latrines full or collapsed also indicated they used nearby household latrines. Also, most of the households with their latrines being full were found digging/either constructing new ones. Respondents also indicated that they either use neighbours/public latrines when they travel to other communities/towns. Most of the respondents further indicated that they dig and burry in the bush when they are in their various farms or working in the bush which is acceptable by the CLTS guidelines.

The study also found that households ensured hand washing after using the latrine with either soap or ash. This agrees with the study conducted in Kenya by Joseph et al., (2020) which found that, households which had latrines, 87.5% had handwashing facilities with running water, while for those households which did not have pit latrines, 70.1% had handwashing facilities with running water (Joseph et al., 2020).

5.6 Association between uptake of CLTS and Participants' Characteristics

With regards to cross tabulation between uptake of CLTS and respondents' characteristics, no statistically significant association was shown between community name, gender, size of households, religion of household heads, marital status of household heads, educational status and ethnic group of household heads, while only age of household heads showed statistically

significant association with the uptake of CLTS (X^2=11.732, P=0.039). The study found that age group less than or equal to 20 years showed high uptake 100.0% of CLTS. The reason for this is that, these categories of age range are energetic and always feel shy to expose their nakedness to the opposite sex. Also, age range 41-50 and 51-60 years showed high uptake (100.0%) of CLTS due to the roles the paly in their communities. That is, due to their financial stability and their roles as family/household heads, they are able to purchase items/ materials necessary for the construction of latrines and per their age range, they are always careful not to violate rules or disgrace themselves in front of their children and relatives. The age range 60+ years showed a low uptake (11.1%) of CLTS. This could be attributed to their inability to reconstruct new latrines when old ones become full or collapse. Another reason is that they do not have the energy/strength to work for money or construct latrines. The findings of this study disagrees with a study by Budhathoki et al., (2017) who found no correlation between the age of the household head and latrine use in their study.

5.7 Health systems factors associated with CLTS uptake

The introduction of the CLTS intervention in the Sagnarigu municipality in 2014 has helped to improve sanitation and hygiene in the municipality. The presence of fully operational community committees such as voluntary health committee, natural leaders, 'ataya' groups, women's groups, assembly persons and chiefs in the study areas were cited as a major factor in the upscaling of the CLTS intervention and consequently its acceptance. The continuous monitoring of household sanitary facilities by natural leaders, meeting on dialogue days for education on WASH and organizing general cleaning exercises twice every month have helped to improve sanitation in the municipality.

The study also found that the passing of laws by the community members and the various chiefs to sanction people who defecate openly and to hand over individuals who persists to the law court has also helped in improving sanitation. In one of the FGD sessions, it was revealed that

the women's group through their monthly ("susu") contribution helped to purchase some digging tools to support the men in the construction.

Also, the celebration of world toilet day on every 19th November in the municipality to award improved sanitation and hygiene communities, educating community members on the importance of improved sanitation and the effects of poor sanitation practises have played a major role. The key informant interviews also revealed that the formation of the Municipal Inter-agency Coordinating Committee on Sanitation (MICCS) by donor partners and the municipal assembly has helped to bring all stakeholders in the municipality together to help look at sanitation issues (progress, challenges and solutions) confronting it every month.

The Global Communities northern regional director also indicated that they have produced a durable, but low-cost latrine design known as "Digni-loo" in collaboration with "Duraplast Ghana" while the APDO also indicated they had the circular lining model and square hallow latrine designs, which are both internationally recognized. These latrine designs are for rural communities to construct durable but low-cost latrines hence long lasting. Donor partners further indicated that they have a national forum on CLTS stock taking of which sanitation related NGOs meet nationally to discuss challenges, progress, solutions and lessons among themselves (donor partners) in Ghana. The study also found out that ODF communities have been able to get support such as school buildings, water, improved nutrition and others from donor partners.

5.8 Socio-economic factors and uptake of CLTS

The study focused on occupation as an economic factor that could influence the uptake of CLTS. In comparing those who were unemployed and students, the majority of those who were employed had latrines and had low rates of sharing latrines with other households or practicing OD. This is because individuals who were working were assumed to have the financial means

to construct their own sanitation structures or to pay the public toilet fee for those who lived in cities/when they travel. Likewise, an occupation like farming endangers individuals due to the practise of open defecation in their various farms due to the distance from home to use their latrines. Meanwhile, the binary analysis found no association between participants' occupation and uptake of CLTS (X^2=2.815, P=0.589). This finding agrees with a similar study conducted in Kenya, which found no association between occupation of respondents and uptake of CLTS (X^2=2.404, P=0.493) (Joseph et al., 2020). According to Osumanu et al., (2019) excreta disposal is often not a higher priority for low-income groups. People with low socioeconomic position are more likely to practise open defecation, because they will prioritize another issue that is more important than building latrines (Osumanu et al., 2019).

5.9 Association between household heads characteristics and conditions of latrines

Latrine condition were classified as either good or poor condition base on twenty (21) items. Household latrines which scored less than 14 marks were classified as latrine with poor condition and latrines which scored 15 and above were classified as latrines with good condition.

The study found that the study communities had laid down rules and regulations that help communities to maintain their latrines conditions. Also, community members collaborate to buy items such as cement in groups when they cannot afford it individually. This agrees with a study by Hirai et al.,(2018) which showed statistically significant association between respondents districts and improve sanitation outcome. On the category of size of households, 16.6% of members within the range of 11-20 members had poor latrine conditions while household size <=10 members with 88.8% showed good condition of latrines. The Chi-square test showed statistically significant association between household size and latrine condition (X^2=14.922, P=0.002). These findings disagrees with the report of a study conducted Hirae in

which no association was found between household size and improved sanitation outcome (Hirai et al., 2018)

5.10 Determinants of CLTS uptake

Compared to low level of knowledge, household heads with moderate level of CLTS knowledge were 0.3 times less likely to uptake CLTS. This contradicts a study which found that Households in villages with health facilities were 2.37 times more likely to have latrines than those in villages without health facilities (AOR=2.37, 95% CI 2.14, 2.64) (Zeleke et al., 2019).

Compared with household with <=10 members, households with 11-20 members were 0.6 times less likely to uptake CLTS. This contradicts the findings from a study which found that households with more than six members were 1.06 times more likely to use improved sanitation facilities than those with less than six members, but this was not statistically significant (Akpakli et al., 2018).

Also, married household heads when compared with single and widow household heads showed 2.9 and 6.2 times respectively less likely for singles and widows to uptake CLTS. This is in contrast to a study that found that household heads who were single or married were 1.42 times more likely to use improved sanitation facilities than those who were divorced/separated, cohabiting, or widowed were 22, 24, or 35% less likely to do so (Akpakli et al., 2018).

5.11 CLTS sustainability

On the issue of sustainability, respondents when asked how long they have been owning their latrines, majority (55.0%) of the respondents indicated that they have owned latrines between 3 years and 5 years while only 4.1% indicated that they had a latrine before the implementation of the CLTS intervention in their communities. This shows the effects of the CLTS intervention on implemented communities within the last 5 years. This is similar to a study conducted in

Congo with majority of the latrines had been built within the last three years of the sanitation intervention (Cha et al., 2017).

The study further found out that majority (72.8%) of the respondents were very happy with their latrines due to its several advantages such as ensuring privacy, good health, convenience/comfortability and many others to them, but majority (74.6%) further indicated that they would prefer a concrete squatting plate latrine if there was help in other to avoid frequent collapse. This finding contrasts slightly with that of a study carried out in Indonesia and Bangladesh, which found that 82.4% of households with private improved latrines were satisfied with where they defecated, compared to 70.2% of households who shared an improved facility with two other households and only 68.3% of households with improved facilities shared by two or more households (Nelson et al., 2014).

More than half (69.8%) of the respondents further elaborated that their preferred latrines would cost about GH₵600.00 - GH₵1000.00 to construct. Also, respondents when asked how much they would be prepared to pay/offer to construct their preferred latrine, 46.4% of respondents indicated that they can only afford GHC100.00 or less while 21.9% indicated they could not pay. This result was quite expected considering the economic hardship (poverty levels) in the country with rural population being the most affected. Poor communities as those sampled for this study may not be able to afford expensive latrines though they may have preference for decent toilet facilities.

A good number of the respondents revealing that, they will wait or seek help from an NGO indicates how poverty is so prevalent in the municipality (study communities). Depending only on an NGO or an external support will be a barrier to achieving open defecation free status or even sustaining gains made in the fight against open defecation. This results are in line with the report of a study conducted in Timor-Leste which states that majority (61.3%) of

community members had the perception that the government should pay for improved facilities rather than individuals (Clarke et al., 2021).

To corroborate the current study findings in the preceding paragraph, it was observed that majority of latrines in the research communities were unimproved, that is, their floors and slabs were composed of low-durable indigenous materials, a phenomenon that poses threats to the sustainability of these latrines.

The study findings further revealed that pungent smell emanating from latrines was one of the challenges in the communities, however, there were no cases of collapsing latrines due to rains, termite infestation, and strong winds. This is similar to the study conducted in Zimbabwe by Whaley & Webster, (2011), which reported that 50% of the first latrines had been damaged by termites, wind, or livestock, and there was a considerable aversion to rebuilding with indigenous materials. The study also revealed that, community members were using thatch as a super structural material for their latrines. In this case when there is a heavy downpour accompanied by winds, the thatch is easily blown off. This is similar to a study conducted in Ghana and Ethiopia which found that, many households had latrines fall into disrepair or collapse the year after they were installed. Even though most people are committed to continuous latrine usage, frequent latrine collapse in communities is a discouraging factor and can force people to return to open (Crocker et al., 2017).

CHAPTER SIX

CONCLUSION AND RECOMENDATION

6.1 Introduction

This chapter discusses the study conclusions and recommendations for future research. The purpose of the conclusion is to call attention to the research findings and recommendations so that the Municipal Assembly, other agencies, and stakeholders concerned with latrine coverage can design and execute policies to help improve sanitation in the municipality and beyond.

6.2 Conclusions

The study found that, the CLTS intervention has made significant progress in the study area towards achieving open defecation-free status since its inception in 2014. The study found that, twelve artisans have been trained in the study communities who help community members to construct durable but low-cost latrines. Also, the study found knowledge on CLTS to be high as majority of respondents knew the steps involved in the implementation of CLTS more especially the pre-triggering and scaling up stages. Also, the study communities knew the essence of latrine usage and hand washing with soap under running water after using their latrines. Natural leaders still go round their communities to assess the performance of the intervention and sometimes consult the municipal environmental officers and donor partners for advice and support when the need arises.

Also, the uptake level of CLTS in the study communities was found to be very high (99.1%) hence more than 5000 latrines have been constructed since the introduction of the intervention and averagely 50,416 individuals in the Sagnarigu municipality use latrines and hand washing facilities in rural and peri-urban communities. In addition, members also adequately manage or dispose domestic waste water which help to prevent the breeding of mosquitoes and spread of other diseases such as cholera. Individuals from study communities make good use of their

latrines up to expectation and in situations such as collapsed or filled up latrines, members share neighbours' latrines and wash their hands with soap after using their latrines.

The study also found that nearly all latrines in the study communities were constructed as a result of the CLTS intervention. This implies that community members have never owned latrines before and are currently very happy with their latrines due to the several advantages associated with latrines, such as privacy, good health, convenience/comfortability and many others. Some of the community members indicated that their preference for concrete squatting plate latrine in order to avoid frequent collapse. Members of the study communities are responsive to the CLTS concept by constructing and taking good care of latrines (conducting minor repairs). This has resulted in the sustainability of the CLTS concept in the study community as there has not been a single case of relapse into OD.

6.3 Challenges

1. The peri-urban nature of Sagnarigu Municipality makes it difficult to implement CLTS, because community members want to build good quality latrines and this slows down activities or the CLTS processes.
2. The changing or transfer of the assembly staff also slows down activities. A programme would start with one staff and all of a sudden s/he would be transferred and the next person will not be interested or may not have knowledge on CLTS. Hence, time is always spent on teaching or convincing new leaders.

6.4 Recommendations

1. CLTS process should be intensive and well carried out to help community members understand the concept and its aim not just latrine construction.
2. Donor partners should also make sure they come with sustainability plan and support should be spread out to not less than five years.

3. Continuous visit/monitoring of ODF communities by the municipal assembly staff for at least five years after declaring communities ODF and donor partners withdrawing their services.

6.5 Recommendations for further Research

A comparable study should be conducted to look at ODF communities and OD communities to consider the factors influencing the uptake and sustainability of CLTS.

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APPENDIX I

LETTER OF INTRODUCTION

SAGNARIGU MUNICIPAL ASSEMBLY

P. O Box ER 161 Sagnarigu Northern Region
Email:info@sagnariguassemblygh.com
GPS: NS-111-2009
Tel: 0372099966

Republic of Ghana

Our Ref: CB.3.84/354/012/39
Your Ref: .....

Date: 23rd February, 2022.

RE: LETTER OF INTRODUCTION

The Sagnarigu Municipal Assembly has acknowledged receipt of your letter requesting for ce to MrDonkor Adoesom Isaac, an MPhil student from your department.

We wish to inform you that approval has been given for data collection in 4 of our Open Defecation Free communities namely; Boakurugu, Batanyili, Kukpehi and Kpinjinga.

We are also assuring to provide any other Assistance he may require to complete his academic exercise.

Thank you.

For: MUNICI AL CHIEF EXECUTIVE

(ALHASSAN IBRAHIM)

MUNICIPAL ENV. HEALTH OFFICER

THE DEAN
DEPARTMENT OF SOCIAL AND BEAVIORAL CHANGE OF SCHOOL OF PUBLIC HEALTH UNIVERSITY OF DEVELOPMENT STUDIES
TAMALE, NR cc; DONKOR ADOESOM ISAAC

APPENDIX II

ETHICAL APPROVAL

COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

our Ref: CHRPE/AP/145/22 22nd April, 2022

Mr. Donkor Adoesom Isaac

Department of Social and Behavioural Change

University for Development Studies

TAMALE

Dear Sir,

LETTER OF APPROVAL

Protocol Title: "Determinants ofCommunity-Led Total Sanitation (CLTS) Uptake and Sustainability in the Sagnarigu Municipality.„

Proposed Site: Sagnarigu Municipality (Boakurugu, Kukpehi, BatanyiL' and Kpinjinga).

Sponsor: Principal Investigator.

Your submission to the Committee on Human Research, Publications, and Ethics on the above-named protocol refer.

The Committee reviewed the following documents:

e A notification letter of 23rd February, 2022 from the Sagnarigu Municipal Assembly (study site) indicating approval for the conduct of the study at the Municipality. • A Completed CHRPE Application Form.

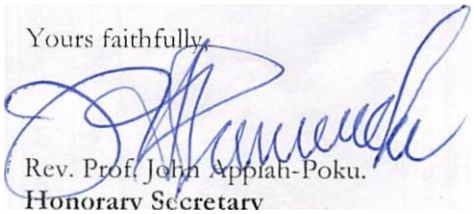
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire and Interview Guide.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 22nd April, 2022 to 21st April, 2023 renewable thereafter. The Cornmittee may, however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of thc project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you for your application.



FOR: CHAIRMAN

Room 7, Block L, School of Medicine and Dentistry, KNUST, University Post Office, Kumasi, Ghana
Tel: +233 (0) 3220 63248 Mobile: +233 (0) 20 5453785 Emaii: chrpe.knust.kath@gmail.com/chrpe@knust.edu.gh

APPENDIX III

PLAGIARISM REPORT

DETERMINANTS OF COMMUNITY-LED TOTAL SANITATION UPTAKE AND SUSTAINABILITY IN THE SAGNARIGU MUNICIPALITY

ORIGINALITY REPORT

16%	13%	5%	4%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

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APPENDIX IV

QUESTIONAIRE

UNIVERSITY FOR DEVELOPMENT STUDIES

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF BEHAVORIAL AND SOCIAL CHANGE

MPHIL COMMUNITY HEALTH AND DEVELOPMENT

THESIS TOPIC: DETERMINANTS OF COMMUNITY-LED TOTAL SANITATION UPTAKE AND SUSTAINABILITY IN THE SAGNARIGU MUNICIPALITY

INFORM CONSENT

My name is **Donkor Adoesom Isaac,** a student from the Department of Public Health, University for Development Studies conducting research on the above-mentioned topic. This research is part of the requirements of the University for the fulfillment of the award of MPhil. Community Health and Development. This questionnaire may take about 15-25 minutes or less to complete. I hope that you will participate in this study since your views are helpful and important. Be assured that, information gathered will be confidential and you will remain anonymous. No name or identifier will be used in any publication or reports from this study. Do you agree to participate in this interview?

Yes [___] **No [_____]**

Thank you for your time and expertise

Household Identification

This section is to be completed for each household visited

1. Community Name……

2. Household Number/GPS address……

3. Date of interview ……/……. /2022

A. Socio-demographic Information

1.1. Gender?	1. Male [ ]
	2. Female [ ]
1.2. What is your age?	
What is your religion?	A. Islamic
	B. Christianity
	C. Traditional
	D. Other (specify)……..
1.3. What is your marital status	A. Single [ ]
	B. Married [ ]
	C. Divorced [ ]
	D. Widow [ ]
1.4. What is your educational status?	A. Basic 1 -JHS 3 [ ]
	B. Tertiary [ ]
	C. S.H.S/Vocational [ ]
	D. Postgraduate [ ]

E. No Former Education [ ]

Which ethnic group do belong to? Ans……..

1.5. What do you do for a living

(occupation)?

1.6. What is the size of the household (How many members live here)? Ans [ ]

Knowledge with regards to CLTS

Q2.1	Have you heard about the CLTS program?	A. Yes B. No
Q2.2	If yes, for Q2.1, what is the source of information about CLTS program?	A. Local health Staff B. During formal training C. Local NGO D. Political Leaders E. Community Volunteer F. Environmental Health Staff/ Sanitary Inspector

		G. If any other, please Specify;……
Q2.3	The CLTS program as being implemented has helped ensured ……?	A. Social harmony [ ] B. Conflict [ ] C. Other (specify)……..
Q2.4	Do you know the steps involved in the CLTS implementation?	A. Yes B. No
Q2.5	If yes, for Q2.4, does the following phase apply?	A. Pre- triggering Yes [ ] No [ ] B. Triggering Yes [ ] No [ ] C. Post-triggering Yes [ ] No [ ] D. Scaling up and going beyond CLTS Yes [ ] No [ ]
Q2.6	Were you involved in the processes of the CLTS as a community?	A. Yes [ ] B. No [ ]
Q2.7	Has the community appointed health motivators (natural Leaders) to mobilize the community to maintain household and environmental sanitation and to construct latrines and ensure that they are properly used?	A. Yes [ ] B. No [ ]
Q2.8	Has there been any training on the CLTS program in the community?	A. Yes [ ] B. No [ ]
Q2.9	If yes, for Q2.8 what are those training programs related to?	A. Construction of hygienic latrines [ ] B. Management training related to CLTS [ ] C. Gender participation on CLTS [ ]

		D. Kitchen gardening [ ]
		E. Improved cooking stove use [ ]
		F. All of the above [ ]
		G. Other (Specify)……..
Q2.10	Do poor families have proportionate and active role in implementation of CLTS activities?	A. Yes [ ] B. No [ ]
Q2.11	Do women have proportionate and active role in implementation of CLTS activities?	A. Yes [ ] B. No [ ]
Q2.12	If yes, for Q2.11, are they from?	A. Rich families [ ] B. Poor families [ ] C. Educated families [ ] D. all are equally participate [ ]
Q2.13	Do you feel that all community members benefited equally from CLTS programme?	A. Yes [ ] B. No [ ]
Q2.14	Are there adequate technological options for the construction of cheap latrine to suit the economic conditions of poor and landless households?	A. Yes [ ] B. No [ ]
Q2.15	Has there been any support for poor people?	A. Yes [ ] B. No [ ]
Q2.16	If yes, for Q2.15 in what form was it?	A. Material Support [ ] B. Financial Support [ ] C. Technical Support [ ] D. All of the above [ ] E. Others (specify)……

Q2.17	e a system assessment by the community with regards to achieving the goals of CLTS	A. Yes [ ] B. No [ ]

B. Latrine Ownership and Use

Q 3.1	Do you own a latrine?	A. Yes [ ] B. No [ ]
Q3.2	Does everyone use it all the time?	A. Yes [ ] B. No [ ] Sometimes [ ]
Q3.3	Where do adults defecate while at home?	A. Bush/Open place [ ] B. Water body [ ] C. Our Latrine [ ] D. Neighbour's Latrine [ ] E. Public Latrine[ ] F. Other (specify)……
Q 3.4	Where do adult members of this household usually go to defecate when away from home?	A. Bush [ ] B. Water body [ ] C. Public latrine [ ] D. Other(specify)……
Q3.5	Where do children defecate while at home?	A. In the bush/an Open [ ] B. In a water body [ ] C. In our own latrine [ ] D. In a neighbour's latrine [ ] E. In a public latrine [ ] F. Other (specify) …….
Q3.6	Where do children in this household usually go to defecate when away from home?	A. Bush [ ] B. Water body [ ] C. Public latrine [ ] D. Other (specify)……
Q3.7	Which material do you usually use as Anal cleansing material after defecation?	A. Water [ ] B. Leaves/ Stick [ ] C. Papers [ ] D. Tissue Paper [ ] E. Fiber [ ] F. Other (specify) …….
Q3.8	Do members of this household wash their hands after using the toilet?	A. Always [ ] B. Sometimes [ ] C. Not at all [ ]
3.9	What detergents do you use to wash your hands after using the toilet	A. Soap [ ] B. Ash [ ] C. No Soap [ ] D. Water only [ ] E. Other (specify) ……..

Q3.10	How often do you or a member of your family clean the latrine?	A. Daily [ ] B. Once a week [ ] C. 2-3 times a week [ ] D. Once in a while [ ]

Q3.11	Do you share your latrine with other families/neighbors?	A. Yes B. No
Q3.12	How many families/households do you share the latrine with?	A. a household [ ] B. 1-3 households [ ] C. above households [ ] D. Never [ ]
Q3.13	In the past 1 year, have you defecated in the open	A. Yes [ ] B. No [ ]
Q3.14	Where in the open did you defecate?	A. Along the river (water body) [ ] B. In the forest/bushes [ ] C. In the open ground [ ] D. Other (specify) ……..
Q3.15	When was the last time you defecated in the open	A. Today [ ] B. Yesterday [ ] C. Within this week [ ] D. Last month [ ] E. Some months ago [ ] 6- Forgotten [ ]
Q3.16	Why do you prefer defecating in the open?	Ans; ……

C. Perceptions regarding latrine ownership and use

Q4.1	To you, what are the advantages of owning your own latrine?	A. Good hygiene/cleanliness [ ] B. Good Health [ ] C. Privacy [ ] D. Comfortable/Convenience [ ] E. Safety [ ] F. Prestige [ ] G. Specify ……..
Q4.2	Why did you decide to have a latrine?	A. Good hygiene/cleanliness [ ] B. Good Health [ ] C. Privacy [ ] D. Comfortable/Convenience [ ] E. Safety [ ] F. Prestige [ ] G. Specify [ ]
Q4.3	What is your opinion on people who have their own toilets?	A. They are clean [ ] B. They are rich [ ] C. They are educated [ ] D. They shun those who do not have toilets [ ] E. They feel sorry for those who do not own toilet [ ]

Q4.4	What is your opinion on people who still defecate in the open?	A. They are dirty [ ] B. They are poor [ ] C. They cause disturbance by using our latrine [ ] D. They are uneducated [ ] E. They do it because they are customized to it [ ] F. Nothing wrong with them [ ]
Q4.5	How satisfied are you with your current habit in defecation?	A. Very dissatisfied [ ] B. Dissatisfied [ ] C. Neither satisfied nor dissatisfied [ ] D. Satisfied [ ] E. Very satisfied [ ]

D. Economic Factors

Q4.6	How far is the defecation site?	A. Less than100 meters [ ] B. Between 100-200 meters [ ] C. Between 200-500 meters [ ] D. Above 500metres [ ]
Q4.7	How long does it take for one to and from the defecation site?	A. Less than 30 minutes [ ] B. Between 30 minutes and 1 hr [ ] C. More than one hour [ ]
Q4.8	Are there members of the family who have had diarrhea in the last two (2) weeks?	A. Yes [ ] B. No [ ]
Q4.9	If yes to the above question; approximately how many members?	Indicate the number of family members here [ ]
Q4.10	If yes in the above question; approximately how many times	A. Once [ ] B. Twice [ ] C. Thrice [ ] D. Four and more [ ]
Q4.11	How many were hospitalized as a result of diarrhea	Indicate the number hospitalized here [ ]

Q4.12	How much was spent on hospitalization on each member	A. Less than GHC100.00 [ ] B. Between G HC100.00 and GHC500.00 [ ] C. Between GHC500.00 and GHC1000 [ ] D. More than GHC1000.00 [ ]
Q4.13	Are there cultural beliefs and practises that have hindered you from constructing a latrine	A. Yes [ ] B. No [ ]
Q4.14	If 'Yes' to above; please highlight them	Ans;……

H. CLTS sustainability

Q5.1 How long have you had a latrine?	A. 1yr [ ] B. 2yrs [ ] C. 3yrs-5yrs [ ] D. 6yrs- 10yrs [ ]
Q5.2 Did you have one before the project?	A. Yes [ ] B. No [ ]

Q5.3 Who built the toilet?	A. Landlord [ ] B. Family [ ]
Q5.4. How much did it cost you?	A. Less than GHC50 [ ] B. GHC 100 [ ] C. 200-500 GHC [ ] D. 600 -1000 GHC [ ] E. No cost involved [ ]
Q5.5 Does everyone use it all the time?	A. Yes [ ] B. No [ ]

Q5.6 How happy are you with your latrine?	A. Very happy [ ] B. Reasonably happy [ ] C. Unhappy [ ]
Q5.7 What sort of latrine would you prefer?	A. Bush materials [ ] B. Concrete squatting plate [ ] C. Pour flush [ ]
Q5.8 How much do you think your preferred latrine would cost?	A. No cost involved [ ] B. Less than GHC50 [ ] C. GHC 100 [ ] D. 200-500 GHC [ ] E. 600 -1000 GHC [ ]
Q5.9 How much would you be prepared to pay?	A. Less than GHC50 [ ] B. GHC 100 [ ] C. 200-500 GHC [ ] D. 600 -1000 GHC [ ] E. No cost involved [ ]
Q5.10 How could you get this amount of money?	A. Wait for harvest, [ ] B. Get a loan [ ] C. Wait for Government [ ] D. Help from an NGO [ ]
Q5.11 How would you get your preferred latrine?	
Q5.12 Where would you get materials/ services?	
Q5.13 What problems have you had with your latrine?	A. Smell [ ] B. Collapse due to wind, rain, termites, [ ] C. Invite snakes [ ]
Q5.14 What repairs/ replacement /upgrading have you done?	A. Roofing [ ] B. Door/gate [ ] C. Plastering/cementing [ ] D. Painting [ ]
Q5.15 Do you know any households that have gone back to OD?	A. Yes [ ] B. No [ ]
Q5.16 What is good about having a latrine?	A. Pride [ ] B. Safety and Security [ ]

	C. Health [ ]

THANKYOU

CHECKLIST

LATRINE VISIT

1. Latrine type	Dry Pit - logs/sawn timber /rocks/ concrete/ scrap metal Pour Flush/Plastic/ Concrete/Ceramic Slab Condition: good /medium /poor / cracked
2. Cleanliness	Good/medium/poor Anal cleansing materials: water/paper/maize cobs or sticks Washing materials: yes/ no/ Ash/ Soap
3. Hygienic	Fly proof – Yes/No Lid- Yes/No
4. Use	Well Used-Yes/No Recently used – Yes/No Evidence of OD: Yes/No
5. Depth of pit	1m/2m/3m Lined /unlined
6. Direct/offset	Direct/offset Vent pipe: Yes/No
7. How full?	Low/medium/full

8. Superstructure	Materials: Wood/ bamboo/ rocks/ woven palm/ tin/mud/thatch Quality of construction: – good/medium/poor
9. Location	Connected to house / < 10m / 10-20m / >20m

FGD Guide for CHV's

1. Identification information:

Community Name……..

Date…….

Moderator Name……

Notetaker……...

A. Preliminaries/Sociodemographic

1. Introductions and consenting process

2. Setting of the stage.

3. Take biographic information: age, education, marital status, religion.

B. CHVs Roles and responsibilities

4. What are your duties and responsibilities?

5. How often do you visit each household in a month.

6. Are there dialogue days organized in the community?

7. Is there any dialogue day done on sanitation and hygiene?

8. Do most of community members attend the dialogue days? (If no, probe for reasons for poor

attendance).

9. Who are the majority of participants? (Probe for reasons)

Knowledge of household heads with regards to CLTS

10. Have you heard about the CLTS program?

11.What do you know about the CLTS implementation?

12. What are the steps involved in the CLTS implementation?

13. What are the roles for the natural leaders been appointed?

14. Has there been any training in CLTS program for the capacity building of the community?

15. Do women have proportionate and active role in implementation of CLTS activities?

16. Are there adequate technological options for the construction of cheap latrines to suit the economic conditions of poor and landless households?

17. Is there a system of assessment by the community in regard to achieving the goals of CLTS?

C. Latrine Ownership and Use

18. Does every household in the village you serve own a latrine?

19. If no, what percentage of households do you think have latrines?

20. If no, what do you think are the reasons for not owning a latrine?

21. Are there any benefits of owning your own latrine? (Please list some of them)

22. What are some of the problems associated with people defecating on the open

grounds?

D. Socio-Cultural Factors

23. Are there cultural barriers hindering one from owning and/ or using a latrine?

24. If yes, please mention some of them.

25. What do you think can be done to overcome these barriers?

E. Economic Factors

26. Are there people in your community who do not own a latrine because they lack funds to

construct one?

27. What role has the community played to assist them?

28. In your own opinion, is it possible to own a latrine without any assistance from outside?

29. For those not owning latrines, how far (in meters) is the defecation site from the household.

30. Approximately, how long (in minutes) can one take back and forth the defecation site?

31. Are there members in your village who have been hospitalized because of diarrhea related illness?

24. If yes, how much do you think one can spend on medication? (Do medical cost calculation)

25. Are there people who have died from diarrhea related cases in your community?

26. If yes, how much do you think will be the cost of burying the dead in your community?

F. Health Systems Factors

27. Is there any role the ministry of health has played in ensuring that people in your

community do not defecate in the open?

28. If yes, what are some of the roles?

29. Are there partners in your area supporting improvement of sanitation situation in your

community?

30. Please mention some of the partners?

31. What are some of the sanitation activities do they undertake?

G. Sustainability of CLTS

32. What do you think about CLTS and its effectiveness?

33. What do you think its strengths and weaknesses are?

34. How sustainable do you think CLTS has been?

35. What do you know about levels of slippage back to open defecation?

36. Where is it working best and worst?

37. What do you think could be done to improve sustainability?

38. What reports/studies on sustainability are you aware of?

39. Who else do you advise me to talk to?

40. What other information do you have for me?

Thank you for your cooperation and time

KEY INFORMANT INTERVIEW GUIDE FOR CHIEFS AND ASSEMBLY PERSONS

1. Identification information:

Assembly Persons Name……

Representing Community Name: …….

Date…….

*My name is Donkor Adoesom Isaac, a final year MPhil Community Health and Development student of the University for Development studies. I am undertaking a study on the topic '**Determinants of CLTS uptake and sustainability in the Sagnarigu municipality'**. The purpose of this interview is to ask a few questions on your experience in this field as well as recommendations on how to improve on latrine uptake through CLTS. All the information given will remain confidential. The interview will last about 30 minutes.*

Designation of the officer ……..

1. Which year was the CLTS intervention implemented in the community?

2. What are/were your duties and responsibilities in the implementation of this program?

3. Are there dialogue days organized in the community?

4. Is there any dialogue day done on sanitation and hygiene?

5. Do most of community members attend the dialogue days? (If no, probe for reasons for

poor

attendance).

6. Who are the majority of participants? (Probe for reasons)

Knowledge of chiefs'/assembly persons with regards to CLTS

7. What are the roles for the natural leaders been appointed?

8. Has there been any training in CLTS program for the capacity building of the community?

9. Do women have proportionated and active role in implementation of CLTS activities?

10. Are there adequate technological options for the construction of cheap latrines to suit the economic conditions of poor and landless households?

11. How do you assess the performance of the community with regards to achieving the goals of CLTS?

C. Latrine Ownership and Use

12. Does every household in the village you serve own a latrine?

13. If no, what percentage of households do you think have latrines?

14. If no, what do you think are the reasons for not owning a latrine?

15. Are there any benefits of owning your own latrine? (Please list some of them)

16. What are some of the problems associated with people defecating on the open grounds?

D. Socio-Cultural Factors

17. Are there cultural barriers hindering one from owning and/ or using a latrine?

18. If yes, please mention some of them.

19. What do you think can be done to overcome these barriers?

20. Did the community members make bye-laws restricting their open nature of defecating?

21. If yes, please name the bye-laws and the sanctions involved

E. Economic Factors

22. Are there people in your community who do not own a latrine because they lack funds to construct one?

23. What role has the community played to assist them?

24. In your own opinion, is it possible to own a latrine without any assistance from outside?

25. For those not owning latrines, how far (in meters) is the defecation site from the household.

26. Approximately, how long (in minutes) can one take back and forth the defecation site?

27. Are there members in your village who have been hospitalized because of diarrhea related illness?

28. If yes, how much do you think one can spend on medication? (Do medical cost calculation)

29. Are there people who have died from diarrhea related cases in your community?

30. If yes, how much do you think will be the cost of burying the dead in your community?

F. Health Systems Factors

31. Is there any role the ministry of health has played in ensuring that people in your community do not defecate in the open?

32. If yes, what are some of the roles?

33. Are there partners in your area supporting improvement of sanitation situation in your community?

34. Please mention some of the partners?

36. What are some of the sanitation activities do they undertake?

G. Sustainability of CLTS

37. What do you think about CLTS and its effectiveness?

38. What do you think are the strengths and weaknesses of the CLTS concept?

39. How sustainable do you think CLTS has been?

40. What do you know about levels of slippage back to open defecation?

41. Where is it working best and where is worst?

42. What do you think could be done to improve sustainability?

43. What reports/studies on sustainability are you aware of?

44. Who else do you advise me to talk to?

45. What other information do you have for me?

Thank you for your cooperation and time

KEY INFORMANT INTERVIEW GUIDE FOR (WASH Coordinators, WASH M&E Officers)

My name is Donkor Adoesom Isaac, a final year MPhil Community Health and Development student of the University for Development studies. I am undertaking a study on the topic '***Determinants of CLTS uptake and sustainability in the Sagnarigu municipality'***. The purpose of this interview is to ask a few questions on your experience in this field as well as recommendations on how to improve on latrine uptake through CLTS. All the information given will remain confidential. The interview will last about 30 minutes.

Designation of the officer …….

Part A: Knowledge on CLTS

1. How would you describe the knowledge level of ODF communities in the Sagnarigu municipality on CLTS?

2. How was the training on CLTS carried out in the communities (were they taught as a community or you selected few individuals to train)

3. How often do you go for monitoring (follow up)

Part B: Latrine Ownership and Use

1. How would you describe the general defecation habits of these communities?

2. What are your observations about latrine use in these communities?

3. What is the general level of latrine use in these communities?

5. Are there people in these communities who do not have latrines? What could be the main reasons for not having latrines?

6. Are there groups of people in these communities who have latrines but do not use them? What do you think are some of the reasons?

7. What are the general characteristics of people who own and use latrines in these communities?

8. What are the general characteristics of people who do not own or use latrines in these communities?

9. Do you think people in these communities have the capacity necessary to construct latrine facilities?

Part C: Health Systems Contribution to ODF

1. What are some of the WASH activities in the Country that target latrine usage/coverage?

3. When was the CLTS program introduced in the Municipality?

4. Who supports implementation of CLTS activities in the Country?

5. Are there partners who support implementation of CLTS activities in the municipality (community)? Can you mention some of them and their capacity?

6. How adequate were the resources planned for the CLTS activities?

7. Were the Planned outcomes attained with the provided recourses and were they timely released?

8. Are there benefits/impacts realized by the program since its inception?

9. How many villages have been declared ODF since the introduction of CLTS?

10. What were the major challenges that you encountered in implementing the activities?

11. What would you consider some viable solutions to such challenges?

12. Who are the main people who promote CLTS activities in this community and in what

way?

13. What would you consider as the major lessons that learned and how did you use such lessons in management decision-making process? Please elaborate?

14. What mechanisms were put in place for tracking and documenting any lessons that were learnt in the course of program implementation?

Part D: Sustainability of CLTS

1. In what ways can CLTS be sustainable, especially durability and acceptability of local materials. Case study in Sagnarigu municipal.

2. What do you think about CLTS and its effectiveness?

3. What do you think are the strengths and weaknesses of the concept?

4. How sustainable do you think CLTS has been?

5. What do you know about levels of slippage back to open defecation?

6. Where is it working best and worst?

7. What do you think could to be done to improve sustainability?

8. What reports/studies on sustainability are you aware of?

9. Who else do you advise me to talk to?

10. What other advice do you have for me**?**

KEY INFORMANT INTERVIEW GUIDE FOR DONOR PARTNERS

*My name is Donkor Adoesom Isaac, a final year MPhil Community Health and Development student of the University for Development studies. I am undertaking a study on the topic '**Determinants of CLTS uptake and sustainability in the Sagnarigu municipality'**. The purpose of this interview is to ask a few questions on your experience in this field as well as recommendations on how to improve on latrine uptake through CLTS. All the information given will remain confidential. The interview will last about 30 minutes. Designation of the officer ……..*

1. Which year did you start supporting/funding the Sagnarigu municipal assembly in implementing CLTS?

2. How many villages have been declared ODF since you started funding/supporting CLTS in the municipal?

3. How would you describe the knowledge level of ODF communities in the Sagnarigu municipality on CLTS?

4. How often do you monitor (follow up) on CLTS implementing communities?

5. How would you describe the general defecation habits of these communities?

6. What are some of the WASH activities in the Country that target latrine usage?

7. In what form/way do you support the municipal assembly (communities)

8. How frequent are the resources planned for the CLTS activities funded?

9. Are resources (funds) timely released?

10. Are there benefits/impacts that the program has realized since its inception?

11. What were the major challenges that you encountered in implementing the activities?

12. What would you consider some viable solutions to such challenges?

13. Who are the main people who promote CLTS activities in these communities and in what way?

14. What would you consider as the major lessons learned and how did you use such lessons in management decision-making process? Please elaborate?

15. What mechanisms were put in place for tracking and documenting any lessons that were learnt in the course of the program implementation?

16. In what ways can CLTS be sustainable especially durability and acceptability of local materials. Case study in Sagnarigu municipal.

17. What do you think about CLTS and its effectiveness?

18. What do you think the strengths and weaknesses are?

19. How sustainable do you think CLTS has been?

20. What do you know about levels of slippage back to open defecation?

21. Where is it working best and worst?

22. What do you think could to be done to improve sustainability?

23. What reports/studies on sustainability are you aware of?

24. Do you have a sustainable plan for CLTS intervention communities been supported?

25. What other advice do you have for me on CLTS?

Thank you very much for your time