

**UNIVERSITY FOR DEVELOPMENT STUDIES
FACULTY OF SUSTAINABLE DEVELOPMENT STUDIES**

**ASSESSING THE IMPLEMENTATION OF COMMUNITY-LED TOTAL
SANITATION PROGRAMME IN THE TAMALE METROPOLIS, GHANA**

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(UDS/MDE/0005/22)**



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EDUCATION STUDIES**

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DECLARATION

Student

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

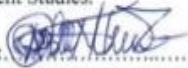
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ABSTRACT

This study assessed the implementation of the Community-Led Total Sanitation (CLTS) programme in the Tamale Metropolis, Ghana, with a focus on its extent, impact, challenges, and strategies for sustainability. Employing a mixed-method research design, data were gathered from 120 questionnaire items, and 12 key informant interviews involving community members, local leaders, facilitators, and policy stakeholders. Purposive sampling and stratified sampling techniques were used. Quantitative data was analysed using descriptive statistical techniques complemented with chi-square and simple cross-tabulation while the qualitative data was analysed using thematic analysis. The findings revealed that while some communities achieved Open Defecation Free (ODF) status, inconsistent monitoring, socio-cultural resistance, and limited funding undermined the programme's full impact. It also found that CLTS influenced sanitation behaviours positively, leading to increased hand-washing and latrine construction. However, economic constraints and lack of enforcement contributed to reversions in sanitation practices. The study further identified key challenges such as inadequate technical support, cultural resistance, and poor coordination among stakeholders. The study concluded that even though CLTS has been successful in sanitation and hygiene promotion in the Tamale Metropolis, there are some areas that require change for gaining long-term sustainability. The study recommended increased community engagement, capacity building, stricter policy enforcement, and enhanced collaboration between government and NGOs. The findings have important policy implications as they provide evidence to guide the design of inclusive sanitation strategies, strengthen community ownership, and inform policymakers on integrating financial support mechanisms and continuous monitoring into CLTS programmes to enhance long-term sustainability.



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DEDICATION

I dedicate this work to my lovely husband, Mr. Imoro Abdul Karim, and family.



TABLE OF CONTENTS

DECLARATION	I
ABSTRACT.....	II
ACKNOWLEDGEMENT	III
DEDICATION.....	IV
TABLE OF CONTENTS.....	V
LIST OF TABLES.....	IX
LIST OF FIGURES	X
LIST OF ABBREVIATIONS.....	XI
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	2
1.3 Objectives of the Study	3
1.3.1 General Objective	3
1.3.2 Specific Objectives	3
1.4 Research Questions	4
1.5 Significance and Justification of the Study	4
1.6 Scope of the Study.....	6
1.7 Limitations of the Study.....	6
1.8 Organisation of the Study.....	7
CHAPTER TWO	9
LITERATURE REVIEW	9
2.0 Introduction	9
2.1 Conceptual Review	10
2.1.1 Community-Led Total Sanitation (CLTS)	10





2.1.1.1 Description of Community-Led Total Sanitation	10
2.1.1.2 Core Principles of CLTS	11
2.1.2 Sanitation Behaviour and Hygiene Practices.....	12
2.1.3 Implementation Challenges	14
2.2 Theoretical Review	15
2.2.1 Behaviour Change Theory (Theory of Planned Behaviour).....	16
2.2.2 Social Capital Theory	17
2.2.3 The Integration of theories	19
2.3 Empirical Review	19
2.3.1 Extent of CLTS Implementation	19
2.3.2 Impact of CLTS on Sanitation Behaviours and Practices	23
2.3.3 Challenges in CLTS Implementation	26
2.3.4 Strategies for Effectiveness and Sustainability of CLTS Programmes ..	30
2.4 Summary of Literature Gaps	32
2.5 Conceptual Framework	34
2.5.1 Interactions Between Components	36
2.6 Summary of the Chapter	38
CHAPTER THREE	40
METHODOLOGY	40
1.0 Introduction	40
3.1 Study Area.....	40
3.2 Research Philosophy and Approach.....	42
3.3 Study Design	43
3.4 Study Population	45
3.5 Sampling Procedure	47



3.6 Sample Size Determination	50
3.7 Data Collection Instruments.....	53
3.7.1 Pre-Testing of Instruments	55
3.7.2 Validity and Reliability of Instruments	56
3.8 Data Collection Methods.....	56
3.8.1 Response Rate.....	59
3.9 Data Source	59
3.10 Data Analysis	60
3.11 Ethical Considerations.....	61
3.12 Chapter Summary.....	63
CHAPTER FOUR.....	65
RESULTS AND DISCUSSIONS	65
4.0 Introduction	65
4.1 Demographic of Respondents	66
4.1.1 Gender of Respondents.....	66
4.1.2 Distribution of Respondents by Age	68
4.1.3 Education Level of Respondents	70
4.1.4 Respondents' Occupation.....	72
4.1.5 Household Size of Respondents	74
4.2 Extent to which CLTS has been implemented in the Tamale Metropolis	76
4.3 Impact of the CLTS programme on Sanitation Behaviours and Practices.....	86
4.4 Challenges Associated With the Implementation of the CLTS Programme...	96
CHAPTER FIVE	101
SUMMARY, CONCLUSION AND RECOMMENDATION	101
5.0 Introduction	101

5.1 Summary of Key Findings	101
5.1.1 Extent of CLTS Implementation in the Tamale Metropolis.....	101
5.1.2 Impact of CLTS on Sanitation behaviour and Practices.....	102
5.1.3 Challenges in the Implementation of CLTS	102
5.2 Conclusion.....	102
5.3 Recommendations	103
5.5 Suggestions for Future Research.....	104
REFERENCES	104
APPENDIX.....	108



LIST OF TABLES

Table 4.1 Household Size of Respondents.....	74
Table 4.2 Extent of CLTS Implementation in the Tamale Metropolis	76
Table 4.2.1 Cross-tabulation of Educational Level and Awareness	84
Table 4.3 Impact of CLTS Programme on Sanitation Practices	86
Table 4.4 Challenges Associated With CLTS Implementation	96



LIST OF FIGURES

Figure 2.1 Visual Representation of the Conceptual Framework	37
Figure 3.1 Map of Tamale Metropolis	42
Figure 4.1 Gender of Respondents	68
Figure 4.2 Age of Respondents	70
Figure 4.3 Educational Level of Respondents	71
Figure 4.4 Occupation of Respondents	74



LIST OF ABBREVIATIONS

CLTS – Community-Led Total Sanitation

ODF – Open Defecation Free

WASH – Water, Sanitation, and Hygiene

NGOs – Non-Governmental Organizations

SDG – Sustainable Development Goal

WHO – World Health Organization

UNICEF – United Nations International Children’s Emergency Fund

GSS – Ghana Statistical Service

KIIs – Key Informant Interviews

SPSS – Statistical Package for the Social Sciences



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Community-led total sanitation (CLTS) is a new method of encouraging sanitation and hygiene through behaviour change, with a specific focus on the elimination of open defecation (Kar & Chambers, 2016). At the global level, poor sanitation is a significant public health crisis, leading to diarrhoea and cholera, among other conditions, which have a higher impact on low- and middle-income nations (WHO & UNICEF, 2021). Poor sanitation also incurs a significant cost to the economy, with nations losing large amounts of their GDP in healthcare costs and lost output, as revealed by Hutton and Varughese (2016). Sanitation is a critical development need in Ghana, with 21% of the population enjoying only improved sanitation facilities, as of 2020 (Ghana Statistical Service [GSS], 2021). In response, the Government of Ghana embraced the CLTS strategy in 2010 as part of its overall endeavor towards the achievement of the Sustainable Development Goal 6 (SDG 6) with a vision to ensuring access to safe and equitable sanitation for everyone by the year 2030 (Ministry of Sanitation and Water Resources, 2020).

The Tamale Metropolis, being among the urbanised in Ghana, is desperately in need of sanitation due to high growth rates, urbanisation, and poor infrastructure. In a study by Abdulai, Haruna and Salifu (2022), it was revealed that open defecation, solid waste management, and poor sanitation practices were still prevalent despite the introduction of CLTS programmes. Besides, cultural issues and income inequality render these issues even harder, and the utilisation of context-dependent interventions becomes a must in order to enhance sanitation. With the peculiar socio-cultural and



economic attributes of the Tamale Metropolis, the evaluation of such programmes is needed in terms of effectiveness, as well as suggestions on how they can be improved where necessary. Not only does the evaluation indicate success, but also the barriers in the way of accomplishing sustainable sanitation in the area.

1.2 Statement of the Problem

Despite the adoption of Community-Led Total Sanitation (CLTS) in Ghana since 2010 as part of efforts to achieve Sustainable Development Goal 6 (SDG 6), urban sanitation challenges remain persistent, especially in metropolitan areas such as Tamale. Open defecation continues to be prevalent in certain communities within the Metropolis, contributing to outbreaks of diarrhoeal and cholera diseases and undermining environmental sustainability (UNICEF Ghana, 2021; WHO, 2022). Several studies (e.g., Abdulai, Haruna & Salifu, 2022; Abubakari et al., 2023) have reported challenges such as weak monitoring, inadequate funding, cultural resistance, and limited institutional support, which undermine the sustainability of CLTS interventions. However, these studies have mostly focused on rural and peri-urban communities, leaving urban contexts like Tamale Metropolis underexplored, despite their unique socio-economic and cultural complexities.

A knowledge gap therefore exists regarding how CLTS performs in dense, multi-ethnic urban environments where sanitation behaviours are influenced by high population mobility, infrastructural deficits, and weak community cohesion. In addition, most existing studies in Ghana have employed cross-sectional descriptive designs, which provide limited insights into how behavioural and institutional factors interact to shape CLTS outcomes. This presents a methodological gap, which this



study addresses through the use of an explanatory sequential mixed-method design that combines statistical trends with in-depth qualitative insights.

Furthermore, while the CLTS strategy has been promoted as a low-cost, participatory approach to ending open defecation, little research has examined its effectiveness in the Tamale Metropolis, where rapid urbanisation and cultural diversity pose unique challenges to implementation. This creates a contextual gap in sanitation research in Ghana. It is against this background that this study seeks to critically assess the implementation of the CLTS programme in the Tamale Metropolis by examining its extent, its impact on sanitation behaviours and practices, and the challenges that hinder its effectiveness.

1.3 Objectives of the Study

The study objectives are categorised into two (2) namely; general objective and specific objectives as elaborated in the following subheadings.

1.3.1 General Objective

The study aims to assess the implementation of the Community-Led Sanitation programme in the Tamale Metropolis.

1.3.2 Specific Objectives

Specifically, the study seeks:

- i. To evaluate the extent to which CLTS has been implemented in the Tamale Metropolis;



- ii. To assess the impact of the CLTS programme on sanitation behaviours and practices in the Tamale Metropolis;
- iii. To identify the challenges associated with the implementation of the CLTS programme; and

1.4 Research Questions

The study is guided by the following research questions:

- i. What is the extent of CLTS implementation in the Tamale Metropolis?
- ii. How has the CLTS programme influenced sanitation behaviours and practices in the Tamale Metropolis?
- iii. What are the major challenges confronting the successful implementation of the CLTS programme?

1.5 Significance and Justification of the Study

This study is significant because it provides empirical evidence on the implementation of the Community-Led Total Sanitation (CLTS) programme within the Tamale Metropolis, an area characterised by rapid urbanisation, increasing population density, and diverse socio-cultural practices. Poor sanitation remains a pressing development challenge in Ghana, with only 21% of the population having access to improved sanitation facilities as of 2020 (GSS, 2021). In urban centres such as Tamale, open defecation and poor waste management continue to undermine public health and environmental sustainability (Abdulai, Haruna & Salifu, 2022). Assessing CLTS in this context is therefore critical for informing urban sanitation policy and practice.





At the policy level, the findings will provide valuable input to policymakers, development partners, and local government authorities in designing and implementing more context-sensitive sanitation interventions. By highlighting the successes and shortcomings of CLTS in the Tamale Metropolis, the study directly contributes to Ghana's efforts to achieve Sustainable Development Goal 6 (SDG 6), which seeks to ensure access to adequate and equitable sanitation for all by 2030 (Ministry of Sanitation and Water Resources, 2020; WHO & UNICEF, 2021).

At the practical level, the study offers actionable insights to NGOs, community leaders, and development practitioners engaged in Water, Sanitation and Hygiene (WASH) interventions. Previous research has emphasised that community participation and local leadership are essential for sustaining open defecation-free (ODF) status (Anthonj et al., 2020; Mohammed et al., 2021). By identifying the barriers and opportunities within the Tamale Metropolis, the study bridges the policy–practice gap and provides evidence-based recommendations for enhancing programme effectiveness.

At the academic level, the study fills three critical research gaps. First, it addresses a knowledge gap by extending the literature on CLTS from rural-focused studies (Venkataramanan et al., 2018; Tsegaye et al., 2020) to an urban context. Second, it addresses a contextual gap by focusing on the Tamale Metropolis, where socio-cultural norms, income disparities, and infrastructural constraints shape sanitation behaviours differently from rural communities (Abubakari et al., 2023). Third, it addresses a methodological gap by adopting an explanatory sequential mixed-method

design, which allows for a deeper understanding of both the patterns and drivers of CLTS outcomes.

In sum, this research is justified not only because it contributes to improved sanitation outcomes in the Tamale Metropolis but also because it enhances Ghana's ability to design sustainable sanitation interventions, thereby contributing to the global WASH discourse and to international development goals.

1.6 Scope of the Study

The research is conducted in the Tamale Metropolis, urban and peri-urban to reflect on various socio-economic and cultural realities that shape sanitation behaviour. The period of study ensured a recent and timely reflection of the programme's impact as well as challenges.

Geographically, the research is confined to the Tamale Metropolis, which is taken as a case study in understanding the dynamics of urban sanitation in Ghana. Thematically, the research is confined to challenges with the implementation of CLTS, behaviour change, and maintaining sanitation habits. The research is not extended to rural settings in general, which could have various contextual determinants shaping sanitation outcomes. Additionally, the study primarily deals with programme beneficiaries' and actors' perceptions, as opposed to developing a comparative study of other sanitation programmes.

1.7 Limitations of the Study

Although the research was seeking to conduct an in-depth review of the implementation of CLTS, it was limited in accessing some communities due to



operation constraints. Also, the use of self-reported information from the respondents might have brought bias since the participants might have given socially desirable responses or forgot events. These biases might have influenced the reliability of the findings; however, triangulation using several data sources was ensured for verification of the data gathered.

Time and resource constraints was also present, which restricted the depth and scope of data gathering. The huge logistics of accessing diverse communities, as well as the cost factor, posed important hindrances. To overcome these, the research utilised the mixed-methods approach that combines qualitative and quantitative methodologies to offer balanced and comprehensive analysis. An efficient analytical framework was also used to ensure the credibility and trustworthiness of the research results.

In spite of these constraints, the research was structured to yield significant results. Triangulation and strict analysis increased the validity of the findings. Through the use of measures like purposive sampling and follow-up interviews for clarification purposes, the research counteracted the issues of self-reported data as well as logistical limitations. In the end, these controls made the findings holistic, credible, and applicable to sanitation improvement programmes in the Tamale Metropolis.

1.8 Organisation of the Study

The research consists of five (5) chapters. Chapter one is the study introduction, its background, objective, and relevance. Chapter two is the discussion of literature regarding CLTS and sanitation policy at the global, national, and local levels. Chapter three addresses the research methodology, which comprises the study design, data



collection approach, and analysis technique. Chapter four shows the findings and outcomes of the study. Chapter five presents the findings and implications, and for the Tamale Metropolis in specific. It also concludes the research by way of summarising important findings, providing practice and policy suggestions, and recommending future research directions.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Sanitation is one key driver of health, socio-economic development, and environmental sustainability. Sanitation is still a big issue in the world today, especially in low- and middle-income countries (WHO, 2022). The Community-Led Total Sanitation (CLTS) has been internationally recognized for its innovative method for the eradication of open defecation and promotion of sustainable sanitation behaviour. Created by Kamal Kar in Bangladesh in the early 2000s, CLTS was then implemented in several other countries, such as Ghana, to try to solve sanitation gaps and make change at a community level (Kar & Chambers, 2016). Even as the application of CLTS has been mostly in rural regions, its application in urban regions has seen rising interest given the distinct challenges of high density, infrastructural limitation, and socio-cultural sophistication. In Ghana, sanitation remains a chronic issue with urban metropolises such as the Tamale Metropolis facing growing populations and grappling with entrenched open defecation (UNICEF Ghana, 2021).

This chapter critically examines the academic literature that informs the study. It covers the definitions of key concepts, theoretical models, empirical evidence, and the conceptual framework informing the study. From global, African, and Ghanaian perspectives, the chapter aims to provide a holistic context for evaluating the implementation of the CLTS programme within the Tamale Metropolis.



2.1 Conceptual Review

2.1.1 Community-Led Total Sanitation (CLTS)

Community-Led Total Sanitation (CLTS) is a radical strategy towards the mobilisation of communities for stopping open defecation. CLTS is concerned with triggering community-level behaviour change with the major focus on the community as a key driver for change (Kar & Chambers, 2016). CLTS works by highlighting changes in behaviour that is dependent, rather than providing subsidies on sanitation equipment, promoting people's sense of belonging and responsibility to act at the community level.

2.1.1.1 Description of Community-Led Total Sanitation

Participatory, community-based is a strategy in the WASH field whereby CLTS invites the community, especially rural communities, to take ownership of their sanitation issue and attempt to solve it through themselves. The strategy avoids depending on funds or infrastructure from other regions but emphasizes self-help, mobilisation of the community, and behaviour change.

Sanitation interventions prior to CLTS were traditionally executed by government departments, philanthropists, and non-governmental organisations (NGOs). They were targeting the development of infrastructure, i.e., latrines within private homes. This model of infrastructure, where most often the subsidy was provided, did not create behaviour change in the long term. Although all these made arrangements sound good, people still engaged in poor sanitation habits like urinating and open defecation (Venkataramanan et al., 2018).





Lower community ownership was why supply-led sanitation interventions failed. Individuals lost motivation to solve sanitation problems on their own because they had grown accustomed to subsidising it. One of the participatory models that was a response to this finding was the Participatory Hygiene and Sanitation Transformation (PHST) model, which was education- and community-led but led to mass behavioural change (WHO & UNICEF, 2020).

In response to the declining subsidy-based programmes, Kamal Kar launched CLTS in Bangladesh in 1999. CLTS was different from the conventional approach by forgoing subsidies and mobilising whole communities to acknowledge poor sanitation as a community problem. CLTS sought to stop open defecation and improve hygiene practice by challenging communities to unite and organise new, self-initiated solutions (Kar, 2008). CLTS employs a participatory method called "triggering" to trigger the experience of shame and disgust towards the state of sanitation in the community. The trainers, who may come from NGOs or the government, explain the dangers of open defecation and use normative and cultural cues to trigger response. The members of the community are motivated towards adopting sustainable sanitation through this process, so that they feel committed and empowered.

2.1.1.2 Core Principles of CLTS

The core principles of CLTS include the following:

- **Collective Action:** Sanitation is viewed as a community issue, with a focus on collective behaviour change as opposed to individual action.
- **Behavioural Motivation:** Emotional drives like shame and pride are the focal points of driving change.

- **No Subsidies:** CLTS eschews direct latrine provision, instead promoting self-help and community-managed practices.
- **Post-Implementation Support:** Regular monitoring and follow-up lie at the center of maintaining Open Defecation-Free (ODF) status.

CLTS has been scaled up as a best practice in WASH programmes in over 70 countries. Its behaviour change emphasis has placed it at the core of open defecation reduction in most of the world, proving it scalable and sustainable. For example, Kenya, Ethiopia, and India have recorded considerable sanitation coverage following CLTS interventions (Venkataramanan et al., 2018). Although CLTS has succeeded, it is also challenged by relapse to open defecation, resistance to culture, and the economic cost of latrine construction in poor communities. In addition, excessive dependence on shame as an incentive has attracted ethical concerns in terms of psychological effects on vulnerable groups (Hutton & Varughese, 2016).

In Ghana, CLTS has been brought into national policy on sanitation for solving long-existing sanitation problems. However, areas like the Tamale Metropolis present specific problems, including dense populations, reduced infrastructure, and socio-economic diversities. Modified approaches need to be created that would help shift the CLTS approach to accommodate these urban realities, with due considerations to inclusion and efficiency (Abdul et al., 2024).

2.1.2 Sanitation Behaviour and Hygiene Practices

Sanitation habits are the customs and actions taken by and among people and communities to promote hygiene, avoid disease, and facilitate effective waste disposal. Sanitation habits, from the use of latrines to hand-washing with soap, are central to determining health outcomes and environmental resilience. Sanitation habits, in



public health, represent the key to interrupting the cycle of disease transmission, especially in low- and middle-income countries where sanitation coverage is low (WHO, 2018).

Latrine use is one of the most fundamental features of improved sanitation practice. Open defecation, one of the major sources of environmental contamination and water-borne infection, reduces where individuals use and have access to latrines. Access to useable latrines has been attributed to reducing cholera, diarrhoea, and other disease conditions associated with unhygienic sanitation (Hutton & Varughese, 2016). In order to be an Open Defecation-Free (ODF) society, CLTS interventions foster collective behaviour change where the entire community decides to use latrines every day. One of the most cost-effective and effective methods of preventing the transmission of infectious diseases is hand washing with soap. Frequent hand washing considerably lowers the incidence of respiratory infections and diarrhoeal illnesses, especially after bowel movements and before meals. Despite its effectiveness, adherence to proper hand-washing practices remains low in many regions, with only 28% of households in low-income countries having access to basic hand-washing facilities (UNICEF & WHO, 2020). The correct disposal of human and solid wastes matters as much as to ensure a place is clean and hygienic. Unseemly disposal methods, like open dumping and burning, contribute to contamination in the environment and are a dire health hazard. CLTS encourages communities to embrace safe disposal practices, such as composting, waste segregation, and recycling as an integral part of holistic sanitation planning. CLTS applies participatory approaches to facilitate sanitation behaviour change.



CLTS encourages the sense of responsibility and ownership through engaging the community in the identification of the sanitation problems and collectively arriving at solutions. The strategy focuses on eliminating the causes of unsanitary behaviour at the source through behaviour change instead of infrastructure supply. Trigger sessions, one of the defining characteristics of CLTS, cause one to feel either ashamed or proud and thus pressure people to stop open defecation and embrace better practices (Kar & Chambers, 2016).

2.1.3 Implementation Challenges

Successful implementation of Community-Led Total Sanitation (CLTS) interventions is usually hindered by various logistical, cultural, economic, and institutional challenges. In spite of CLTS programme being an effective strategy in driving the community towards an elimination of open defecation and sanitation behaviour improvement, such challenges posed serious sustainability threats in terms of its long-term impacts (Jenkins et al., 2020). Effective logistics coordination by trained facilitators, robust monitoring systems, and follow-ups are required for the success of a CLTS programme. But in most places, such logistical elements do not exist or are poorly planned. For example, lack of surveillance results in a return to open defecation, while poorly trained facilitators reduce the quality of triggering sessions. In rural settings, mobility to far-flung communities is also a logistical constraint, limiting the size and reach of CLTS programmes (Crocker et al., 2017). Social norm and convention are also often strong barriers to practice adoption of improved sanitation. Open defecation may be a deeply ingrained social norm in some groups and thus hard to change behaviour. Resistance may be caused sometimes by misperceptions of sanitation improvement cost and benefit, or distrust of the intentions of external facilitators. Such cultural barriers require culturally focused



strategies and engagement of local influencers and leaders (Venkataramanan et al., 2018). While CLTS focuses on unsubsidised, community-controlled technologies, the expense of constructing a latrine or other sanitation units remains a significant obstacle for poor families. Moreover, the restrictive nature of available credit or microfinance is further making it cumbersome, particularly within rural and marginalised environments. Constraint in funding further inhibits capacity of local government and NGOs in offering CLTS programmes as needed (Hutton & Varughese, 2016). Policy guidance, inter-agency collaborations, as well as fund machinery, provided by institutional support are necessary in order for CLTS to have a chance of success. Institutional deficiencies are common in the majority of nations and limit the scale-out of sanitation programmes. Diverse roles by governments, lack of planning budgets, and weak political commitment are common barriers. For example, a lack of adequate harmonization of sanitation with other education or health programmes can decrease the overall impact of CLTS interventions (Jenkins et al., 2020). The biggest hindrance to scale-out of CLTS is probably the sustainability of the ODF status. Without monitoring and tracking, communities tend to fall back into old practices if there are no long-term support or motivation. It was proven through literature that effective monitoring systems are vital in tracking development and identifying signs of relapse early (Crocker et al., 2017).

2.2 Theoretical Review

Behaviour Change Theory and Social Capital Theory form the basis for this study, which are learning mechanisms conceptual frameworks for applying and achieving Community-Led Total Sanitation (CLTS) success. Both theories describe how individual behaviour and collective action ensure that sanitation benefits at the community level are maintained.



2.2.1 Behaviour Change Theory (Theory of Planned Behaviour)

Behaviour Change Theory vindicates the CLTS strategy by analysing how the social and psychological determinants construct sanitation behaviour. The most relevant model under the theory is Ajzen's Theory of Planned Behaviour (Ajzen, 1991), which has confidence that the individual's behaviour is facilitated by three main pillars: attitudes toward the behaviour, subjective norms, and perceived behavioural control.

- **Attitudes:** Either positive or negative appreciation of a particular behaviour by the person. Through sensitization campaigns during CLTS, attitudes regarding the use of latrines or open defecation are shaped showing the health risk of unsafe sanitation and the value of improved behaviour.
- **Subjective Norms:** The social pressure to enact or not enact a behaviour. CLTS utilizes community mobilisation to establish norms that shame open defecation and encourage collective acceptance of the use of latrines.
- **Perceived behavioural Control:** The degree to which a person believes that they can enact the behaviour. This is set based on the presence of resources (e.g., materials to build latrines) and self-efficacy. These are treated in CLTS by facilitators who give technical advice and create an aura of empowerment among the members of the community.

Participatory methods like triggering and community mapping are central elements of CLTS that are consistent with the Theory of Planned behaviour. In the process, community members map out locations of open defecation contamination and imagine the effect on public health, thereby altering their attitude and subjective norms. Triggering also increases perceived behavioural control by showing that sanitation can be improved within the ability of the community even without a subsidy. Empirical evidence attests to the validity of this theory in CLTS. Tsegaye et



al. (2020) in Ethiopia proved that the better the awareness of open defecation health risks among communities, the more they were likely to adopt the use of latrines. In India, Patel et al. (2020) stated that change in subjective norm, as a result of effective leadership at the community level, was significant in reducing open defecation. In Ghana, Mohammed et al. (2021) reported that awareness-raising campaigns improved sanitation attitudes in Northern Ghana, yet economic hardship reduced perceived behavioural control.

TPB is relevant to the study as it directly underpins Objective Two of this study, which assesses the impact of CLTS on sanitation behaviours and practices in the Tamale Metropolis. It helps explain how shifts in attitudes, social norms, and perceived control translate into adoption and sustainability of sanitation behaviours in urban Ghanaian contexts.

2.2.2 Social Capital Theory

Social Capital Theory emphasizes networks, common norms, and trust as the facilitators for creating collective action potential and achieving collective objectives (Putnam, 2000). Social Capital Theory is most applicable in CLTS, where the collective action among individuals in the community is the key in avoidance of open defecation and sustainment of better sanitation practice. CLTS builds on three types of social capital:

- **Bonding Social Capital:** Close personal relationships within a social network that create trust and cooperation. In CLTS, this is expressed as mutual responsibility for sanitation practice and ODF status. Neighbors will watch over each other and apply norms to latrine use.



- **Social Capital Bridge:** Interactions amongst various social communities or groups making it possible for the sharing of ideas and means. For instance, in Ghana, partnerships between community and local governments have been used as a key resource mobilizing factor for implementation of CLTS (Abubakari et al., 2023).
- **Social Capital Linkages:** Links among communities and external stakeholders, i.e., government ministries or NGOs, through which resources and technical assistance are made available. Linkages are an essential part of scaling up CLTS and of addressing challenges of resource scarcity and infrastructural deficiencies.

CLTS focus on collective action also aligns with Social Capital Theory. By promoting collaboration and self-respect, CLTS turns sanitation into a shared objective rather than an individual responsibility. This is secured through participatory mechanisms that accommodate free speech along with collective accountability. For instance, a study by Mohammed et al. (2021) demonstrated that socially more-better-connected Northern Ghana villages performed better in sustaining ODF status than socially less-better-connected villages. The Social Capital Theory also explained why community mobilisation was being led by local opinion leaders and traditional leaders. Abdulai et al. (2022) found that in Tamale Metropolis, the participation of traditional leaders guaranteed that the population trusted the CLTS process more and had better compliance and engagement.

The Social Capital Theory supports Objective Three of this study, which identifies challenges in CLTS implementation. It shows how weak trust, fragmented social structures, or fragile institutional linkages may constrain CLTS effectiveness in urban contexts such as Tamale.



2.2.3 The Integration of theories

Individually, Theory of Planned Behaviour (TPB) explains why individuals change sanitation behaviour, while the Social Capital Theory (SCT) explains how communities and institutions support or hinder these changes. Integrated, they provide a comprehensive framework for analysing CLTS implementation in the Tamale Metropolis.

- TPB informs the study's analysis of household-level sanitation behaviours.
- SCT highlights the role of leadership, trust, and institutional collaboration in sustaining community-wide sanitation outcomes.

Together, they allow the study to capture both micro-level behavioural drivers and macro-level social enablers or constraints, aligning directly with the study's objectives.

2.3 Empirical Review

This section reviews empirical studies related to the three objectives of the study: (i) to examine the extent of CLTS implementation, (ii) to assess the impact of CLTS on sanitation behaviours and practices, and (iii) to identify challenges of CLTS implementation.

2.3.1 Extent of CLTS Implementation

Globally, CLTS application has been revolutionary in combating open defecation and enhancing sanitation results, especially in rural areas. CLTS is rooted in the approach of community mobilisation, where individuals are mobilised to come together in appreciation of the negative impacts of open defecation on public health and their environment. Chambers and Kar (2020) are of the opinion that the strategy has been





successful in making communities adopt the use of better sanitation without depending upon external subsidy to construct structures. The strategy is founded on behaviour change rather than facility availability since disgust and shame at open defecation motivating the communities to construct and use latrines. In towns, nonetheless, population density, urbanization, and socio-cultural diversity soften the effect of CLTS. Place does matter as per Bangladesh research. Ahmed et al. (2019) reported that though CLTS was achieving incredible success in rural towns in halting open defecation, towns had low success because of competing infrastructure needs, in-formal settlements, and poor sanitation policy implementation. The research advised CLTS strategy adjustment in a bid to shun challenges that are inherent in urban environments, including insufficient space for the building of latrines and poor solid waste disposal infrastructure. Other challenges notwithstanding, foreign research needs continuous post-implementation monitoring. Venkataramanan et al. (2018) also established a benchmark where, although introduction early on was seen to result in open defecation declines, unless reinforcement and support of changed behaviour are provided at follow-up, communities fall back to customary behaviour. This calls for incorporating long-term support and monitoring elements into CLTS programs for effective implementation towards sustainability.

CLTS has also been piloted in a few African countries, i.e., Ethiopia, Kenya, and Uganda. Tiwari et al. (2021) cited that CLTS has realized enhanced latrine coverage and usage in Ethiopia. Despite such effectiveness, lack of sufficient funds and deeply embedded culture are barriers towards the achievement of universal sanitation. Secondly, the effectiveness of CLTS has been mixed, suggesting inconsistency in governance across locations, socio-economic status, and participation of the



community. A Nigerian study by Iheanacho et al. (2021) revealed how government initiatives over decades, community mobilisation, and strict monitoring mechanisms were instrumental in making certain areas Open Defecation Free (ODF). Local governments where coordination between traditional rulers and civil society organisations existed fared better than where coordination did not exist. However, nations of weak governance frameworks, poverty, and socio-economic disparity failed to arrive there. Similarly, in Kenya, Kamara et al. (2019) also discovered that CLTS approach significantly transformed rural sanitation behaviour but was hampered by logistics and culture in peri-urban and urban areas. The study concluded that peri-urban and urban areas with slums and weak infrastructure required specific interventions where CLTS principles were incorporated into broader urban sanitation planning programmes. Subsidized latrine construction and effective waste management systems, combined with CLTS interventions, were found to function in averting urban sanitation problems. Taken together, African studies highlighted that while CLTS can rapidly increase sanitation coverage, its sustainability is contingent on community mobilisation, socio-economic conditions, and supportive institutional frameworks.

CLTS was introduced in Ghana under the national sanitation strategy to reach Sustainable Development Goal (SDG) 6 of universal access to sanitation and hygiene for all by 2030. CLTS has promise, but where it has been applied in Ghana, outcomes have been inconsistent. Abdulai et al. (2022), in a study in the Tamale Metropolis, defined a set of main challenges to implementation as poor follow-up, insufficient funds, and low community participation. The study identified that rural communities embraced the programme with immense interest but that urban communities opposed it due to socio-economic reasons, low community cohesion, and competing agendas.



This resistance was also fueled by the migratory nature of urban residents, which made mobilisation of communities over time challenging. Amoah et al. (2020) also confirmed that the programme has resulted in enhanced sanitation practices in certain communities. Implementation challenges like available resources constraint, poor community participation, and monitoring gaps continue to haunt the interventions, especially in urban settings like the Tamale Metropolis. Furthermore, Ghanaian cultural diversity has also posed some challenges to the implementation of CLTS. Abubakari et al. (2023) also suggested the application of local systems of governance and culturally relevant media in order to increase CLTS uptake in multiculturally diverse contexts. The traditional norms and the normal culture patterns normally conflicted with the tenets of CLTS in Northern Ghana, and programme staff were compelled to step in to be accepted and assured to the leaders of the community. This partnership was likely to include the use of the CLTS method in a way that would be in line with existing practices and traditions, a matter of principle in developing community ownership of sanitation. External funding and partnership have also been instrumental to Ghana's CLTS. Most of the programmes have depended significantly on external funding from NGOs and foreign donors. Although this support has enabled early implementation, reliance on external financing has been an issue for the long-term viability of CLTS interventions. Mohammed et al. (2021) further included that it is vital to become financially independent by gaining government budget support and contributions from the community in order to ensure long-term maintenance of CLTS impacts.

Generally, the scale of CLTS coverage varies extensively across global, African, and Ghanaian contexts, depending on governance structures, socio-cultural realities, and

resource availability. Even though the strategy has been identified with high potential in community mobilisation and sanitation outcome improvement, it has low effectiveness in urban areas unless adapted to cope with the specific problems of such areas. The experiences of successful implementations underscore the need for monitoring in the longer term, mobilisation at the community level, and the incorporation of culturally modified and context-specific interventions to enhance the effectiveness of CLTS programmes.

Synthetically, from the global, African, and Ghanaian evidence, it is clear that CLTS has achieved widespread adoption and contributed significantly to reductions in open defecation. However, there are recurring concerns around sustainability, quality of latrines, relapse, and the unique challenges of urban environments. In Ghana, most studies focus on rural contexts, with relatively limited research on metropolitan areas such as Tamale. Moreover, many studies rely on cross-sectional surveys, which provide snapshots of CLTS outcomes but fail to capture the dynamics of change over time.

2.3.2 Impact of CLTS on Sanitation Behaviours and Practices

The influence of Community-Led Total Sanitation (CLTS) on sanitation behaviour and practice is clearly explained in international literature, as it can help develop community-led interventions for solving sanitation issues. With large-scale mobilization, CLTS aims at generating a responsibility and urgency in the minds of people to steer clear of open defecation, construct latrines, and practice sanitary behaviour. According to Venkataramanan et al. (2018), CLTS intervention has consistently shown to reduce the practice of open defecation as well as the latrine



ownership levels among the poor of low- and middle-income nations. The research noted, though, that maintenance of the outcome largely relies on sustained community mobilization and regular reinforcement of behaviour change.

Data from everywhere on the planet show that CLTS has a strong short-term impact on sanitation behaviour. Patel et al. (2020) in rural India reported widespread decreases in open defecation during the initial two years following the initiation of CLTS through a longitudinal study. The gains were credited to the programme having the ability to cause emotional responses, including shame and pride that prompted households to improve towards improved sanitation behaviour. The study, however, also illustrated that, without continued follow-up and support interventions, gains would most likely be lost in the longer term. This means that long-term interventions need to be incorporated into CLTS programmes so that the behaviour change is maintained.

Adding health education to CLTS has also heightened its effects on sanitation behaviours. The study in Nepal included an improvement in, by high levels, people's knowledge regarding the health risks of open defecation by incorporating the sessions of hygiene education in CLTS programmes, thereby translating into frequent use of the latrines and higher handwashing practice (Thapa et al., 2021). This substantiates the argument that implementing educational interventions and behavioural approaches will heighten the efficiency of CLTS interventions.

In Africa, CLTS interventions have been associated with paradigmatic shifts in sanitation practice and health status. Tsegaye et al. (2020) noted that in Ethiopia, communities which implemented CLTS saw a decrease in open defecation and the





attendant increase in hygiene behaviour. Community ownership was the concern of the research in the upkeep of such outcomes since whenever there were improvements in sanitation identified as a win-win by communities, they were likely to uphold the reforms. Also in Uganda, Mutungi et al. (2020) demonstrated that embedding health education in CLTS programmes resulted in significant reductions of waterborne diseases such as cholera and typhoid. The research highlighted the synergistic benefit of integrating CLTS with additional water, sanitation, and hygiene (WASH) interventions in reinforcing community uptake of safe sanitation practice even further. The authors acknowledged, however, that uneven access to sanitation facilities presented an obstacle to global uptake of safe practices, as they noted that there was a need for site-specific infrastructure building as a support to behavioural change.

In Ghana, CLTS produced strong, but not lasting, impacts on sanitation behaviour and practice. Mohammed et al. (2021) reported that for Northern Ghana, CLTS interventions had strong impacts on community sanitation behaviour, such as higher latrine use and open defecation rate decreases. These advantages were most likely offset by financial constraints, for example, poor household incapacity to construct or maintain latrines. The study referenced that long-term behaviour change initiatives require more than mobilization at the community level, which incorporates extrinsic incentives such as economic incentive and convenient access to low-cost sanitation facilities. Similarly, Osei and Amankwah (2022), studying Upper East Ghana, found that communities with strong leadership achieved more sustainable CLTS outcomes compared to those with weaker institutions. Also, economic and infrastructural barriers remain key determinants of sanitation behaviours. Appiah and Tuffour (2022) reported that households in peri-urban Accra were willing to abandon open defecation

but lacked financial resources and space for latrine construction, resulting in high dependence on shared facilities. Likewise, Anaman and Owusu (2020) argued that inadequate institutional coordination between district assemblies and communities undermines the sustainability of CLTS, as enforcement of sanitation regulations is inconsistent. Studies also linked behavioural impacts to public health outcomes. Akpakli et al. (2021) found that CLTS interventions in Central Region Ghana significantly reduced diarrhoeal incidence and improved child health indicators. Yeboah et al. (2023) emphasised that cultural perceptions such as taboos about sharing toilets between in-laws continue to influence adoption patterns, showing that behaviour change extends beyond economic factors. National-level reports also supported these findings. Ghana Statistical Service (2021) estimated that CLTS contributed to a 14% increase in improved sanitation access between 2010 and 2020, though urban coverage lagged behind rural. UNICEF Ghana (2022) similarly reported that many declared ODF communities relapse due to inadequate monitoring and follow-up.

In synthesis, these studies confirmed that while CLTS shifts sanitation behaviours in Ghana, its effectiveness is mediated by socio-economic disparities, cultural norms, and institutional enforcement. Importantly, evidence in Tamale Metropolis remains limited compared to other regions, highlighting a contextual knowledge gap that this study addresses.

2.3.3 Challenges in CLTS Implementation

Community-Led Total Sanitation (CLTS) interventions, although relatively new in the majority of settings, are faced by a number of challenges that undermine their





effectiveness and sustainability. One of the most widely documented challenges of CLTS globally is the sustainability of outcomes. Crocker et al. (2017) in Bangladesh and Indonesia found that while CLTS achieved significant initial reductions in open defecation, relapse occurred within two to three years, particularly among households that constructed makeshift latrines. Similarly, Cameron et al. (2019), analysing India's large-scale sanitation programme, observed that toilet ownership increased rapidly, but consistent usage lagged behind due to poor construction quality and weak behavioural reinforcement. The overcoming of the challenges is crucial to the effectiveness and sustainability of CLTS interventions. Scaling-up CLTS is generally hindered by resource capacity limitations in resources and weak institutions across the world. Cavill et al. (2020) also listed constrained budgets as among the primary barriers to successful implementation of CLTS, especially in low- and middle-income countries. Another challenge concerns equity and exclusion. Hueso and Bell (2020) argued that CLTS's strict "no subsidy" model risks marginalising the poorest households, who often lack the financial and material resources to build durable toilets. Routray et al. (2019) further showed that wealthier households benefit disproportionately, while poorer households relapse into open defecation. Furthermore, poor institutional arrangements exacerbate these issues. In the majority of countries, CLTS programme implementation is proceeding in loosely established stakeholders' obligations and roles and disjointed policy settings. As an illustration, Thapa et al. (2021) explained that NGO, local government, and community leaders' coordination at the local level was lacking in Nepal due to which non-systematic programme implementation occurred. The research showed that as success was being built up early in the elimination of open defecation, the lack of proper monitoring

mechanisms and accountability pathways resulted in waning programme success in the long term.

In Africa, socio-economic diversity and logistical limitations account for the difficulty of scaling out CLTS. Chunga et al. (2021) also elucidated that capacity building of facilitators and poor financing were central in weakening programme effectiveness in Zambia. Tidwell et al. (2019), studying CLTS in Kenya, found that although latrine coverage increased, poor-quality facilities collapsed during rainy seasons, forcing households back to open defecation. Similarly, Tumwebaze and Niwagaba (2019) in Uganda reported that inadequate technical guidance left many households building temporary latrines that quickly became unusable. Besides, cultural taboos and beliefs regarding sanitation practices have a greater influence elsewhere on the African continent in other settings. In rural Uganda, Mutungi et al. (2020) indicated that there were communities that were in open defecation camps considering it as harmless and normal and thus mobilisation for collective action towards sanitation was harder. Such resistances were transitory by culture-specific strategies, e.g., with the inclusion of traditional authorities and local mythology to behaviour change messages. All the societies, especially the rural and urban fringe societies, lack materials and resources to be used in constructing latrines.

Institutional and policy gaps persist as well. Simiyu et al. (2020) noted that local governments in peri-urban Kenya lacked the resources to enforce sanitation by-laws, while Kemausuor and Adu (2021) pointed out that many African countries still treat sanitation as a donor-driven agenda rather than embedding it in national policy priorities.



In Ghana, CLTS challenges are multi-layered. Antwi and Addai (2019), studying Ashanti Region, observed that poverty remains a key constraint, as many households cannot afford to construct or maintain toilets without some form of support. Similarly, Appiah and Tuffour (2022) reported that in Accra's peri-urban settlements, space constraints and the high cost of materials forced households to rely on shared or public toilets, undermining CLTS's household ownership model.

Cultural norms present additional barriers. Dzorgbo et al. (2021) highlighted that in Southern Ghana, beliefs about latrine use (e.g., taboos surrounding sharing with in-laws) limited adoption even after communities were declared ODF. Yeboah et al. (2023) further observed that some rural households considered open defecation "healthier" or more convenient than using confined latrines.

Institutional weaknesses and enforcement gaps are another major constraint. Nyarko and Osei (2022) found that district assemblies lacked the capacity to enforce sanitation by-laws consistently, while Anaman and Owusu (2020) argued that weak inter-agency coordination led to fragmented interventions. UNICEF Ghana (2022) similarly reported that some ODF declarations were premature, with communities relapsing due to lack of follow-up and technical support.

From a health perspective, Akpakli et al. (2021) demonstrated that while diarrhoeal rates dropped temporarily after CLTS adoption in parts of Central Region, the absence of ongoing support caused a resurgence of waterborne diseases within three years.



In the perspective of synthesis and gap, the reviewed evidence highlighted recurring challenges across scales:

1. Globally, relapse and equity issues dominate.
2. In Africa, poor latrine quality, weak facilitation, and fragile social cohesion undermine outcomes.
3. In Ghana, poverty, cultural norms, and institutional weakness emerge as persistent barriers.

Yet, most Ghanaian and African studies remain cross-sectional, offering snapshots but not capturing how challenges evolve over time. Moreover, there is limited focus on urban and peri-urban contexts like Tamale, where population density, poverty, and weak enforcement intersect uniquely. Therefore, there is a need for longitudinal and mixed-methods research to better understand the evolving nature of CLTS challenges in Ghana's metropolitan areas, which differ significantly from rural contexts where most research has been concentrated.

2.3.4 Strategies to Enhance Effectiveness and Sustainability of CLTS Programmes

Sustainability of CLTS interventions relies on a mix of institutional support and action at the community level. Chambers and Kar (2020) encouraged increased follow-ups, incentives, and capacity building so that economic incentives are made available to sustain ODF status. New financing arrangements, e.g., micro-loans to build latrines, globally have been effective in encouraging adoption as well as sustainability of CLTS programmes. In Indonesia, CLTS programs were combined with micro-financing programs and produced massive rises in latrine ownership and long-term reductions in open defecation (Winata et al., 2019).



In Africa, also integrating CLTS into broader water, sanitation, and hygiene (WASH) programs has also been promising. Simiyu et al. (2020) indicated that mobile monitoring systems in Kenya improved monitoring of CLTS outcomes, allowing for timely interventions and more resource allocation. The study also indicated the need to involve local governments and traditional authorities to sustain community mobilisation.

In Ghana, multiple strategies have been documented to improve CLTS outcomes. Antwi and Addai (2019) argued that integrating technical assistance, such as providing households with affordable latrine designs, increases adoption and durability. Nyarko and Osei (2022) found that stronger collaboration between district assemblies and community leaders enhanced enforcement of sanitation by-laws, helping sustain ODF gains. Community mobilisation and leadership are also critical. Dzorgbo et al. (2021) showed that CLTS programmes in Southern Ghana were more effective when chiefs and religious leaders championed sanitation campaigns, reinforcing behavioural norms. Boateng and Tia-Adjei (2023) highlighted that leveraging social networks, particularly through women's groups, strengthened peer pressure against open defecation. Economic support mechanisms are another strategy. Kumi and Armah (2020) recommend targeted subsidies or microfinance schemes to enable low-income households to construct toilets, while UNICEF Ghana (2022) reports that incorporating livelihood-based incentives (e.g., linking sanitation to community development projects) improves compliance. Finally, stronger monitoring and verification systems are needed. Anaman and Owusu (2020) argued that district



assemblies should adopt digital monitoring tools to track ODF status, while MSWR (2023) stressed that ongoing follow-up visits are crucial for preventing relapse.

2.4 Summary of Literature Gaps

The review of literature has revealed several important knowledge gaps that justify the present study:

1. Conceptual Gaps

- i. Although the principles of CLTS are well documented globally (Venkataramanan et al., 2018; Sara & Graham, 2021), fewer studies have interrogated how these principles are adapted in rapidly urbanising contexts such as Tamale Metropolis, where population density, land tenure, and sanitation infrastructure differ markedly from rural areas.
- ii. Existing studies often treat sanitation as a purely technical issue, overlooking the complex interplay between culture, social norms, and institutional enforcement that determines CLTS outcomes.

2. Theoretical Gaps

- i. Behaviour change theory (Ajzen, 1991; Thapa et al., 2021) and social capital theory (Putnam, 2000; Boateng & Tia-Adjei, 2023) have been applied separately to sanitation research, but few studies have combined these perspectives to examine how social networks, cultural norms, and behavioural intentions interact in sustaining ODF status.
- ii. This creates an opportunity for the present study to adopt a more integrated theoretical lens, linking behavioural change processes with community-level social structures.



3. Empirical Gaps

- i. At the global level, much of the evidence is concentrated in South Asia (Crocker et al., 2017; Cameron et al., 2019), with relatively fewer large-scale empirical studies from Sub-Saharan Africa.
- ii. Within Africa, the majority of CLTS research is cross-sectional (Tidwell et al., 2019; Tumwebaze & Niwagaba, 2019), providing snapshots but not capturing how outcomes evolve over time. Longitudinal and mixed-methods studies remain scarce.
- iii. In Ghana, while CLTS has been widely studied (Antwi & Addai, 2019; Dzorgbo et al., 2021; Nyarko & Osei, 2022), most research focuses on rural communities. Evidence from metropolitan settings such as Tamale, where urbanisation, poverty, and weak enforcement intersect, is limited.
- iv. Furthermore, studies often emphasise extent and impact of CLTS (Mohammed et al., 2021; Abdulai et al., 2022) but pay less attention to strategies for long-term sustainability, especially in low-income urban households.

4. Methodological Gaps

- i. Many previous Ghanaian studies relied heavily on descriptive designs (Appiah & Tuffour, 2022; Yeboah et al., 2023), which provide insights into sanitation adoption but fall short of explaining causal relationships between CLTS implementation, social factors, and sanitation behaviours.
- ii. Few studies explicitly justify their methodological approaches. For example, there is limited evidence of studies adopting explanatory sequential mixed-methods designs, which combine quantitative breadth with qualitative depth to capture both outcomes and underlying processes.



Overall, drawing from these observations, the present study was designed to:

1. Fill the contextual gap by focusing on Tamale Metropolis, a rapidly urbanising setting under-represented in existing literature.
2. Address the theoretical gap by applying both behaviour change and social capital theories to sanitation research in Ghana.
3. Bridge the empirical gap by examining not only the extent and impact of CLTS but also its implementation challenges and strategies.
4. Respond to the methodological gap by adopting an explanatory sequential design, which combines quantitative and qualitative methods to provide a deeper understanding of CLTS implementation and sustainability.

2.5 Conceptual Framework

Conceptual framework of this study provides a structured approach wherein application, impact, and challenges of the Community-Led Total Sanitation (CLTS) programme can be evaluated. It integrates theory, empirical findings, and research-specific objectives to propose intervention for the enhanced efficacy and sustainability of the programme. This framework is a reference to understand the dynamic interaction between the extent of CLTS implementation, its effect on sanitation behaviour, and determinants of failure. The conceptual framework consists of three pillars:

- **Intensity of CLTS Implementation:** This dimension examines the depth and degree of CLTS implementation within a community or region. It encompasses the intensity of mobilisation of the community, quality of participatory approaches like triggering, breadth of facilitator training, and sufficiency of resources provided to the programme. The intensity of implementation is a



critical driver of programme results because strong and well-funded implementation would lead to better results. As rooted in behaviour Change Theory, this section discusses how participatory activities reorient perceived control of behaviour, attitudes, and norms to start bringing about behaviour change. Empirical studies like Abdulai et al. (2022) conducted in Ghana are evidence that slow implementation with clear follow-up and community participation brings more sustained changes.

- **Sanitation behaviours Impact:** The second module discusses CLTS's impact on shifting sanitation habits and practice. Declines involved here are open defecation, improved latrine construction and use, improved hygienic practice, and more community participation in improving sanitation. The impact depends on community participation, resource availability, and socio-cultural beliefs. The application of the Behaviour Change Theory in this section illustrates how attitude, subjective norm, and perceived behavioural control are the drivers of group and individual hygiene behaviour. Social Capital Theory also shows how network, norms, and shared trust generate collective action and hence introduce and sustain better practice. For instance, Mohammed et al. (2021) demonstrated that social groups with positive social relations and leadership organization enhanced compliance with enhanced sanitation practice.
- **CLTS Implementation Challenges:** This element reflects the challenges that constitute an obstacle to the effective implementation and sustainability of CLTS programmes. Lack of adequate funding, lack of appropriate infrastructure, socio-cultural resistance, and inadequate institutional arrangements are some of the challenges. Chunga et al. (2021), for example, quoted that logistical issues and cultural taboos will most likely be a frustration to the realization of CLTS



programmes in Africa. Through empirical research evidence and application of Social Capital Theory, this dimension highlights the significance of context-specific responses to addressing these issues. For instance, the establishment of collaborations with local government units and NGOs can aid mobilisation of infrastructure and resources and culturally tailored interventions can stifle resistance to behaviour change.

2.5.1 Interactions Between Components

The conceptual framework presumes that the intensity of CLTS implementation directly influences the effect of CLTS on behaviour and sanitation practice. Strong and complete implementation creates a context that supports behaviour change, which in turn leads to take-up by the community and long-term sanitation change. Conversely, implementation gaps like weak facilitator training or lack of follow-up diminish the ability of the programme to yield weak or short-term impacts. The model further contends that implementation problems are disrupting the coverage of CLTS interventions and impact relationship. For example, limited resources or socio-cultural resistance can reduce the coverage of implementation, and thus its impact. Also, infrastructural deficiencies can hamper converting better behaviour into measurable outcomes, i.e., more latrine usage.



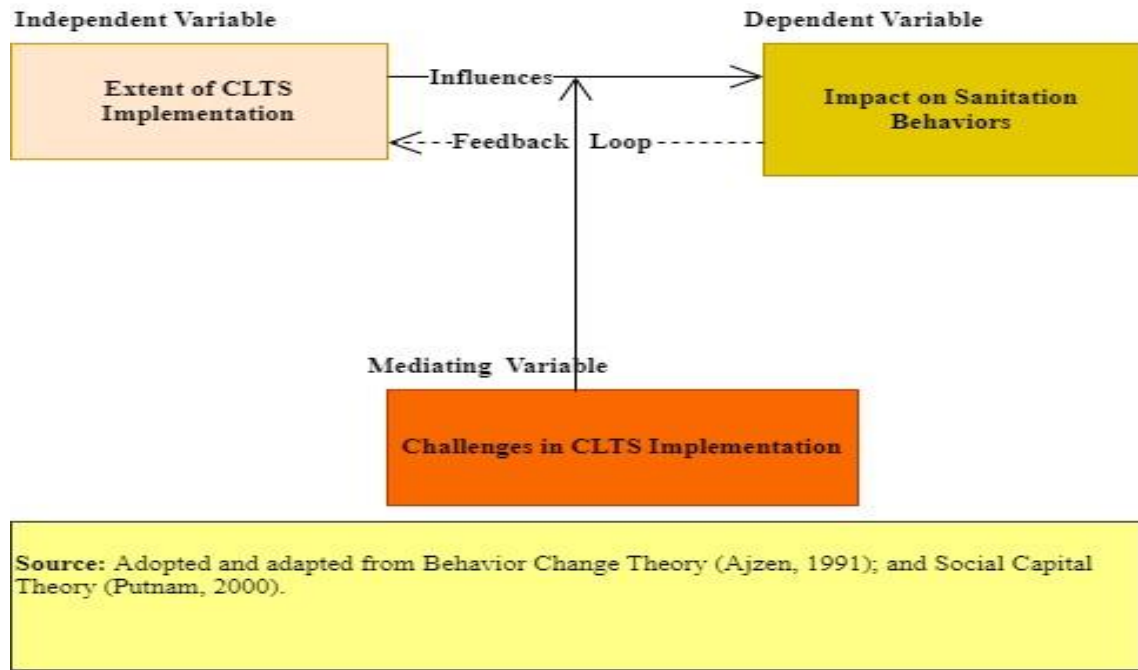


Figure 2.1 Visual Representation of the Conceptual Framework

Explanation of the Conceptual Framework Diagram:

Conceptual framework displays three primary variables and how they impact each other for CLTS implementation. *Independent variable* is *Extent of CLTS Implementation*, with a direct relation to *Impact on Sanitation behaviours* (*dependent variable*) through a one-way 'influences' relation. Moderation is performed through *Challenges in CLTS Implementation* as the *mediating variable* that splinters the process and affects implementation and consequences. The model incorporates a Feedback Loop mechanism whose effects of change in sanitation behaviour provide feedback information to guide and adjust implementation strategies, a continuous cycle of improvement. The cycle is such that implementation of CLTS is not linear but a cyclical process through which effects can cause a change in implementation strategies.



2.6 Summary of the Chapter

This chapter reviewed relevant literature on community-led total sanitation (CLTS) with emphasis on its concepts, theoretical foundations, empirical evidence, knowledge gaps, and framework for the study. The conceptual review discussed the principles of CLTS, sanitation behaviours, hygiene practices, and the institutional and socio-cultural contexts in which implementation occurs. The review further highlighted the relevance of behaviour change theory and social capital theory, which underpin the study by explaining how individual decisions and community networks influence the adoption and sustainability of sanitation practices.

The empirical review examined evidence from global, African, and Ghanaian contexts under four thematic areas: the extent of CLTS implementation, its impact on sanitation behaviours and practices, challenges encountered, and strategies for enhancing sustainability. While global and African studies provide insights into both successes and persistent barriers, Ghanaian evidence shows that although CLTS has recorded notable achievements, challenges such as poverty, cultural norms, weak institutional enforcement, and relapse into open defecation persist. Strategies highlighted include technical support, leadership mobilisation, targeted subsidies, and stronger monitoring frameworks.

The review identified key gaps in the existing body of knowledge. These include limited focus on metropolitan settings such as Tamale, inadequate integration of behavioural and social theories in sanitation studies, over-reliance on descriptive methodologies, and insufficient longitudinal or mixed-methods research. The present study therefore seeks to fill these gaps by adopting an explanatory sequential design



to explore the extent, impact, challenges, and sustainability strategies of CLTS in Tamale Metropolis.

The next chapter (Chapter Three) presents the research methodology, including research design, population, sampling procedures, data collection methods, and data analysis strategies used to address the research objectives.



CHAPTER THREE

METHODOLOGY

1.0 Introduction

This chapter outlines the methodology employed in this research. The information discussed here includes research approach, research design, study area, study population, sampling procedure, sample size, instruments for data collection, source of data, data analysis, and ethical issues. The approach adopted was guided by the nature of the research problem, the objectives, and the need to combine both quantitative and qualitative evidence to provide a more comprehensive understanding of Community-Led Total Sanitation (CLTS) implementation in the Tamale Metropolis.

3.1 Study Area

Geographically, the research was carried out in the Tamale Metropolis of northern Ghana. Tamale is the administrative capital of Ghana's Northern Region and one of the fast-growing urban centers of West Africa. The Ghana Statistical Service in 2021 indicated that Tamale is the economic nerve of Northern Ghana due to it being centrally located and with the population composition of different ethnic, economic, and cultural statuses. Tamale city comprises urban and peri-urban settlements with mixed residential, institutional, and commercial areas.

Urbanisation of Tamale has brought with it extensive advantages such as enhanced economic activity and infrastructure development. It is, however, subject to limits, particularly pertaining to public sanitation and health. Research by Agyei-Mensah and



Songsore (2017) revealed that urbanisation is the source of stress on sanitation in Ghana, which brings about environmental and health complications. In Tamale, it is with an acute population clustering of the CBD, where commerce creates massive wastage and put pressure on existing sanitation facilities.

Tamale Metropolis is made up of multi-ethnic communities like the Dagomba, Gonja, and Mamprusi, among others. They are all member parts of the socio-cultural diversity of the region, as can be exemplified through language, tradition, and economic activity. Agricultural activity, commerce, and services form the key economic activities with CBD standing as the key business district. They also have informal settlements because they could lack sanitary facilities. This infrastructural shortage has health implications, point out Owusu and Afutu-Kotey (2019), who advise context-sensitive sanitation policy in an attempt to reverse urban challenges in Ghana.

Particular focus on Tamale Metropolis was particularly crucial in assessing the success of the Community-Led Total Sanitation (CLTS) programme. The success of the programme relies on grassroots-level participation and socialization of sanitation intervention to balance with the socio-economic and cultural setting of the area. The city dynamism of urban life, cultural diversity, and economic activity within the city presents a unique environment for evaluation of the use and implementation of the CLTS programme. Moreover, the area's fast development renders it a good case study representative of studies on sanitation challenges and opportunities in other similar urban areas in Ghana. Below is a visual representation of Tamale Metropolitan Area on a Map.



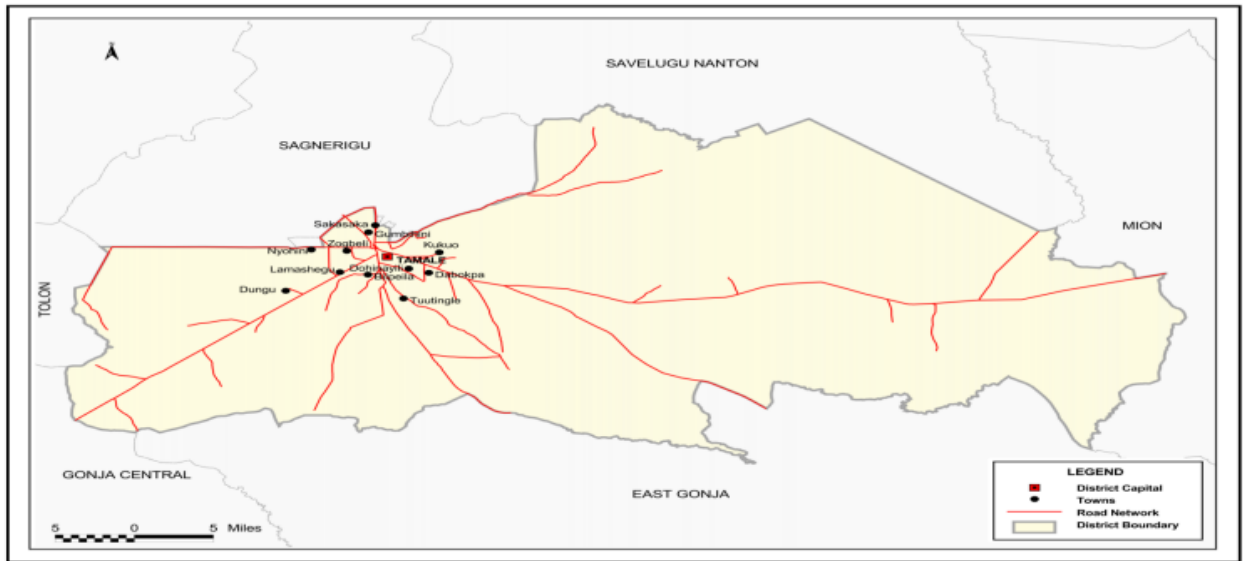


Figure 3.1 Map of Tamale Metropolis

Source: Adopted (*Ghana Statistical Service 2010; Population and Housing Census, 2020*).

3.2 Research Philosophy and Approach

The philosophical foundation of this study is pragmatism, which underpins the use of mixed-methods research. Pragmatism emphasises the practical application of research, focusing on approaches that provide the most useful answers to the research problem rather than adhering strictly to either positivist (quantitative) or interpretivist (qualitative) paradigms (Creswell, 2014; Saunders et al., 2019). Pragmatism was considered most appropriate because the study sought not only to quantify the extent, impact, and challenges of CLTS implementation, but also to explore the perceptions, experiences, and strategies of stakeholders that cannot be adequately captured through quantitative methods alone. This aligns with Bryman (2016), who asserted that pragmatic researchers are guided by the research questions and adopt whichever methods are most effective in providing insights. The adoption of pragmatism in the study helped the researcher to integrate the strengths of quantitative and qualitative



approaches. Quantitative data provided measurable evidence on CLTS implementation and outcomes, while qualitative data enriched this with in-depth insights from community leaders, facilitators, and stakeholders. Thus, the pragmatic philosophy ensured that the study's methodology remained flexible, problem-centred, and outcome-oriented, which is critical for applied research in public health and sanitation.

3.3 Study Design

The study adopted an explanatory sequential mixed-methods design, which involves two distinct phases: a quantitative phase followed by a qualitative phase. In the first phase, quantitative data were collected and analysed to measure the extent of CLTS implementation, its impact on sanitation behaviours, and the challenges faced. The second phase involved qualitative data collection through interviews, which served to explain, expand, and validate the quantitative findings. This design provides deeper insights into the complex social and behavioural processes underlying sanitation interventions (Creswell & Plano Clark, 2018).

The choice of this design was guided by the research objectives. Objectives one, two, and three required quantifiable evidence on the extent of CLTS implementation, its impacts, and challenges, which could best be captured through structured surveys and descriptive statistics. Objectives four and five required a more nuanced understanding of community perceptions and strategies, which necessitated qualitative insights from stakeholders, community leaders, and facilitators. Thus, the explanatory sequential design ensured complementarity between the two strands of data and enabled triangulation of findings.



A longitudinal design, which involves repeated observations of the same variables over a prolonged period, was considered but deemed impractical for this study. While such a design could provide insights into before-and-after changes in sanitation behaviours, it requires several years of data collection and substantial resources. Given the time and resource constraints of this research, a longitudinal approach was not feasible. However, to compensate for this limitation, the study employed triangulation by integrating survey data with rich qualitative evidence, thereby enhancing the reliability and depth of the findings (Patton, 2015; Bryman, 2016).

This approach is consistent with Creswell (2014), who argued that explanatory sequential mixed-methods designs are particularly useful when a researcher seeks to first quantify a phenomenon and then gain deeper explanations of the results. It also aligns with the pragmatic philosophy underpinning the study, which emphasises methodological flexibility and problem-driven inquiry.

One of the biggest advantages of explanatory sequential design is flexibility and responsiveness. Findings from the quantitative phase guides the development of qualitative measures, and therefore the latter is developed to fill some gaps or answer specific questions. This reciprocal relationship maximized consistency and generalisability of the study. Generally, the explanatory sequential design was more desirable due to its capacity to rigorously integrate qualitative and quantitative data to address the research purposes to the fullest. It is a demonstration of best practices in mixed-methods studies and is a good foundation for assessing implementation and impacts of the CLTS programme in the Tamale Metropolis.



3.4 Study Population

The study population of the implementation of the CLTS programme in the Tamale Metropolis consisted of four primary groups of participants: the community, local leaders, facilitators, and key stakeholders such as a number of government officials and some members of non-governmental organizations (NGOs). The study population of this research has been estimated to be 1,000 people who were recruited from both urban and peri-urban communities in the Tamale Metropolis. Specific groups that were focused on were Choggu, Sakasaka, and Aboabo (urban) and Kukuo and Nyohini (peri-urban). These were targeted because they reported high levels of participation in the Community-Led Total Sanitation (CLTS) programme and socio-economic variation, which provided a representative population of the Tamale Metropolis. These estimates are based on community census data released by Tamale Metropolitan Assembly and existing research on sanitation interventions in the area (Tamale Metropolitan Assembly Report, 2023).

Specifically, the study population included:

Community Members – households and individuals residing in CLTS-targeted communities within the Metropolis. They were central to the study because they represent the primary beneficiaries of the programme and are directly responsible for adopting sanitation and hygiene practices.

Community Leaders – including chiefs, assembly members, and opinion leaders who play critical roles in mobilising residents, enforcing local sanitation bylaws, and sustaining behavioural change.



CLTS Facilitators – individuals trained to lead and monitor CLTS triggering processes at the community level. They are important because they provide first-hand insights into the successes and challenges of programme implementation.

Stakeholders from Government and Non-Governmental Organisations (NGOs) – particularly officials from the Environmental Health and Sanitation Department of the Tamale Metropolitan Assembly, as well as representatives of NGOs supporting sanitation interventions. These groups provided technical and institutional perspectives on CLTS implementation.

Rationale for this community selection was that, the selection of the urban communities such as Choggu, Sakasaka, and Aboabo and peri-urban areas like Kukuo and Nyohini allowed the study to capture a broad spectrum of experiences with the CLTS programme. Urban societies would be anticipated to have comparatively better access to traditional sanitation facilities, while peri-urban societies would be likely to depend on decentralized or informal systems. This aligns with the views of O'Reilly et al. (2010), who advocated for the employment of varied geographic and socio-economic contexts in the analysis of the issues and performance of sanitation programmes holistically. Therefore, involving such stakeholders in the study made it a factor not only to quantify the programme's local-level performance but also to investigate the wider institutional and policy matters that would affect its sustainability. From government officials, it was learned about how sanitation policy is being enforced and if any gap exists between policy intention and practice. Again, NGO delegates provided data for issues encountered along the way while providing



aid in the programme, such as finances, transportation, or resistance at a cultural-based level.

3.5 Sample Size Determination

The study population was estimated at 1,000 individuals across the selected communities. To determine an appropriate sample size, Cochran's (1977) formula for sample size determination was applied, followed by a finite population correction.

$$n_0 = \frac{Z^2 P(1-P)}{e^2}$$

where Z is the z-score corresponding to the desired confidence level (1.96 for 95%), p is the estimated population proportion (0.5 used to maximise variability), and e is the margin of error. Using 95% confidence and allowing a margin of error of 7.85%, the initial sample size was:

$$n_0 = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.0785)^2} = 156$$

Applying the finite population correction for N = 1,000;

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}} = n = \frac{156}{1 + (\frac{156 - 1}{1000})} = 135$$

Thus, a sample size of 135 respondents was considered appropriate. Although Krejcie and Morgan's (1970) table suggested 278 respondents for a 5% margin of error, practical considerations such as resource and time constraints necessitated the acceptance of a slightly larger margin of error (7.85%), which still provides statistically valid results for an exploratory mixed-methods study.

In practice, 135 questionnaires were administered, and 120 were retrieved, giving an 88.9% response rate. With 120 responses, the realised margin of error is



approximately 8.4% at the 95% confidence level, which remains acceptable for the study's objectives.

Although smaller than the optimal sample size, the selection of 135 respondents was warranted by recent academic research which suggested the utility of small sample sizes in generating valid and reliable results under some conditions, especially when in-depth qualitative analysis is required.

Resource and logistical limitations constitute the first reason for the selection of the sample size. It has been argued in literature that resource limitations, for instance, of finance and time, may force the use of smaller sample sizes. Taherdoost (2016) observes that larger sample sizes are more precise, yet smaller samples are also useful, particularly where the population is fairly homogeneous or where sophisticated sampling procedures are used to make the sample as representative as possible.

Aside its homogeneity in population, in instances where the population is very homogeneous, relatively small sample sizes are able to capture significant trends and patterns. As argued by Etikan and Bala (2017), in instances where there is little variation in a population, smaller sample sizes can also provide acceptable reliability. Given that the target communities are very similar socio-economically and culturally, it was adequate to use a sample of 135 to represent the opinions of the population. Outside of this is the exploratory focus of the research, small sample sizes are permissible in exploratory studies as the aim is to determine tendencies, relationships, and general results and not absolute generalisations. Under mixed-methods research, as Creswell and Creswell (2021) argue, one may combine quantitative results from small samples with qualitative results to obtain strong outcomes. The same goes for



the methodology of this present research, where quantitative data is supported by qualitative methods. Additionally, proportional stratified sampling is used in research to enhance the representativeness of the sample despite a small sample size. Guetterman (2015) explained that through the use of stratified sampling, all population subgroups are represented proportionally and hence making the sampling less biased and enhancing validity of findings through the use of small samples.

Moreover, there have been more recent evidence favoring smaller sample sizes in community- and social-research-based research. Kumar and Kumar (2019) ascertained that a sample size as small as 100–150 is sufficient to yield valid results when paired with robust sampling strategies in research on sanitation. Furthermore, Palinkas et al. (2015) demonstrated that in mixed-methods, samples at smaller sizes are acceptable when they are information-rich and are purposefully sampled so that they are representative of the population. Saunders et al. (2018) also added that sample size is mostly determined by praxis, especially in community intervention research, and effective methodological methods can counteract small sample size.

The mixed-method design of the study therefore provides validity to the findings through the triangulation of quantitative data with qualitative data from key informants. Creswell and Plano Clark (2017) postulated that data triangulation by employing multiple sources would enhance the validity of results in a study despite small sample sizes.

3.6 Sampling Procedure

A multi-stage sampling strategy was employed to select participants for both the quantitative and qualitative phases of the study. This combination of purposive and stratified sampling ensured that the sample was representative of the study population while also capturing in-depth insights from key stakeholders (Creswell & Plano Clark, 2017; Patton, 2015).

Stage 1: Selection of Communities

In the first stage, purposive sampling was used to select five communities in which the Community-Led Total Sanitation (CLTS) programme had been implemented. This technique was appropriate because the research focused on assessing CLTS, and only communities that had experienced its implementation were relevant. Purposive sampling is particularly suitable when researchers seek to study information-rich cases (Etikan et al., 2016). The selected communities included Choggu, Sakasaka, Aboabo (urban communities), and Kukuo and Nyohini (peri-urban communities). These were chosen because they provided diversity in socio-economic contexts and levels of sanitation intervention, thereby allowing for comparison across different settings within the Metropolis. After the five communities had been identified, the next stage focused on the selection of individual community members within these communities for the household survey.

Stage 2: Selection of Community Members

Within the selected communities, proportional stratified random sampling was applied to select 95 community members for the quantitative survey. The population was first stratified according to gender (male/female), age categories (18–25, 26–35, 36–45,



46+), and socio-economic status (low, middle, high) to ensure fair representation of different subgroups. After stratification, lists of households were obtained from community registers and validated with the assistance of local leaders. Each household was assigned a unique number, and simple random sampling was conducted using the lottery method, where numbers were drawn at random until the required sample was achieved. This procedure ensured that every eligible participant within each stratum had an equal chance of selection, thereby reducing bias and enhancing representativeness. The final distribution of the 95 respondents across the five communities was proportional to their approximate household sizes, which allowed the study to capture variations across communities while maintaining demographic balance. Stratified random sampling is widely recognised for reducing sampling error and enhancing the generalisability of results by ensuring that key subgroups are proportionately represented (Guetterman, 2015).

Stage 3: Selection of Leaders, Facilitators, and Institutional Stakeholders

Purposive sampling was used for other categories of participants such as community leaders, facilitators, and government/NGO stakeholders. Specifically, 10 Community Leaders (assembly members, opinion leaders) were selected based on their active involvement in CLTS activities; 10 CLTS Facilitators were selected because of their direct role in mobilising communities and monitoring programme progress; 20 Government and NGO stakeholders were selected from institutions such as the Environmental Health and Sanitation Department of the Tamale Metropolitan Assembly and partner NGOs that supported CLTS interventions. These, together with the community members constituted the 135 targeted quantitative sample size, and from which the targeted qualitative sample was drawn.



It is worth noting that, out of the 135 questionnaires administered, 120 were successfully retrieved, and used for the quantitative data analysis.

These participants were deliberately chosen because of their strategic roles and experiential knowledge, which were necessary to address the research objectives. Purposive sampling in this context provided access to expert insights and ensured that the perspectives of key actors were not omitted, and this aligns with Palinkas et al., (2015).

Stage 4: Selection for Qualitative Interviews

For the qualitative phase, a purposive sample of 15 respondents were targeted from the leaders, facilitators, and institutional stakeholders. This target included 5 community leaders, 5 facilitators, and 5 government/NGO representatives, all of which constituted the sample size. However, only 12 out of the 15 targeted interviewees participated in the interviews. These interviewees were from within the 135 respondents targeted for the study. These individuals were selected because they possessed rich, experience-based information necessary to deepen understanding of the quantitative results.

The combined use of proportional stratified sampling (for community members) and purposive sampling (for leaders, facilitators, and institutional stakeholders) ensured methodological rigour. Stratified sampling enhanced representativeness and generalisability of the quantitative data, while purposive sampling yielded in-depth qualitative insights from participants directly engaged in CLTS implementation. This



triangulated approach strengthened the reliability and validity of the study's findings (Creswell & Plano Clark, 2017).

3.7 Data Collection Instruments

Data collection tools are specially developed tools employed to aid right and appropriate information from study respondents based on study objectives. They were also known as critical tools by Taherdoost (2016) to acquire reliability, validity, and data quality. Structured questionnaire and semi-structured interview schedule were employed in the present study. They were chosen according to the mixed-method research of the study in such a manner that quantitative along with qualitative data would be collected. For quantitative data, the questionnaire with the prepared questions was divided into five main sections, which are Section A, B, C, and D. Each of these sections addressed a different facet of the research objectives for proper collection of data:

Section A, was demographics. The section captured background information of the respondents including age, gender, educational level, and occupation. The data provided background information on understanding the participants enabling analysis of patterns and trends.

Section B addressed the extent of implementation of CLTS. The section assessed the coverage of implementation of the Community-Led Total Sanitation (CLTS) programme. Attitudes to questions assessing respondents' attitudes toward programme coverage, participation, and stakeholder engagement were measured on a 5-point Likert scale that scored respondents from Strongly Disagree (1) to Strongly Agree (5).



Section C, dealt with impact on sanitation behaviours and practices. The questions in this section asked for the impact of the CLTS programme on sanitation behaviour and practices such as hygiene improvement, utilization of latrines, and practice of waste management. Even here, 5-point Likert scale was utilized to measure changes observed or perceived by respondents.

Section D addressed issues of difficulties faced with CLTS installation. The section defined and analysed challenges which were faced during the installation of the CLTS programme. Open-ended and closed-ended questions provided opportunities for participants to elaborate on obstacles they perceive or face, from resources to social and cultural barriers.

The systematic questionnaire had closed-ended questions as well as Likert-scale questions for measuring different parameters of implementation of the Community-Led Total Sanitation (CLTS) programme, change in the behaviour for sanitation, as well as hindrances in the implementation of the same. Offline and online were utilized in face-to-face interactions for the completion of the questionnaire. Internet mode was applied to permanent internet connectivity respondents, while face-to-face mode was applied for rural respondents or those with lower technology access. This is concurred by Dillman et al. (2014), who were convinced that applying both online and face-to-face data collection enhances the response rate as well as participation.

Conversely, the semi-structured technique was employed in order to procure qualitative information about particular individuals along with the chief informants such as programme implementers and community leaders. The completeness of



inquiring from people and experts regarding the CLTS programme was achieved through such procedure. The semi-structured interview guide was used with open-ended questions to investigate the participant's opinions, experiences, and perceptions about the CLTS programme. It was used in face-to-face as well as in online interviews (where possible), based on participants' availability and choice. Patton (2015) also reported the value of using semi-structured interviews to obtain rich qualitative descriptions that enhance quantitative data, particularly when examining complex phenomena.

Application of the tools was as per the need of a mixed-methods study since questionnaires yield quantifiable data and semi-structured interviews with key informants offered in-depth probing. Two-mode administration is broad and optimizes response rate, according to Creswell and Plano Clark (2017). Instrument design involved pre-testing to guarantee clarity, cultural sensitivity, and validity, as per the guidelines of Bryman (2016).

3.7.1 Pre-Testing of Instruments

Both the questionnaire and interview guide were pre-tested in a CLTS-implemented community outside the study area (Sagnarigu) but with similar socio-economic characteristics. A total of 11 respondents (7 community members and 4 stakeholders) participated in the pilot study. The pre-test served multiple purposes namely: To ensure clarity and appropriateness of the questions; To identify ambiguous wording and adjust response categories and; To assess the average time required for completion. Feedback from the pilot test led to refinement of certain items,



particularly rephrasing technical terms into simpler language and reducing redundancy in Likert-scale items.

3.7.2 Validity and Reliability of Instruments

To ensure validity, the instruments were reviewed by academic experts in sanitation research and practitioners in CLTS implementation. Content validity was strengthened by aligning items with the study objectives and existing literature on sanitation behaviour and programme evaluation (Venkataramanan et al., 2018; Abubakari et al., 2023). Construct validity was achieved by designing items that measured multiple aspects of sanitation behaviour, such as toilet usage, handwashing, and waste disposal.

Reliability of the questionnaire was tested using Cronbach's alpha on the pilot data, with coefficients above the recommended threshold of 0.70 for most scales (Nunnally, 1978), indicating internal consistency. In the case of the interview guide, reliability was ensured through clear thematic structuring and consistent probing techniques across participants.

3.8 Data Collection Methods

Data collection methods describe systematic approaches of collecting data from the respondents according to the research objectives. These methods provide consistency, accuracy, and reliability in data collection (Bryman, 2016). For this research, a mixed-mode was utilised in that both online and face-to-face modes.



The survey was conducted both online (e.g., Google Forms) and in person. Online interviews targeted respondents with regular access to the internet, while direct administration was for participants in regions where internet access was poor. The researcher maintained consistency and culture sensitivity during in-person interaction. The mixed-mode approach ensures inclusivity and maximises response rates, as supported by Dillman et al. (2014).

The quantitative data collection process took four weeks, providing ample time for follow-ups and ensuring that the required sample size of 135 respondents was achieved.

The qualitative data collection was organised into the following themes:

For experiences with CLTS implementation, participants described their involvement in and observations of the programme's implementation.

On perceived impacts, questions focused on the perceived changes in sanitation practices and behaviours due to the CLTS programme.

On the challenges faced, participants identified barriers to effective implementation and sustainability.

Finally, on suggestions for improvement, open-ended prompts encouraged participants to propose strategies for enhancing the programme.

The interviews were conducted face-to-face and online (where possible), using equipment like Zoom and Microsoft Teams. The face-to-face interviews made the research inclusive by gathering participants or interviewees with limited access to technology. The duration of each interview session varied from 30 to 60 minutes, and the same was audio-recorded after securing the consent of participants. Field notes were also secured to capture the non-verbal data and contextual information.



Archibald et al. (2019) highlighted the merits of the combination of virtual and face-to-face interviewing in qualitative research, particularly for geographically dispersed participants.

Data collection in the qualitative study took three weeks, which was adequate time for in-depth interviews, transcription, and follow-up.

Systematic data collection research plan and method guarantees correspondence of research objectives, quality, and reliability of the data. The 5-point Likert scale used in the quantitative section is appropriate to measure attitude and perception and maintains the breadth and depth balance (Joshi et al., 2015). The semi-structured interview guide allows questioning into participants' experience and perception to depth as proposed by Creswell and Creswell (2018).

The mixed-mode approach, which brought together online and offline face-to-face methods, was justified because it provides for inclusivity, acknowledges varying participant needs, and enhances response rates (Dillman et al., 2014). The four-week quantitative and three-week qualitative data plan schedule also facilitated completeness and conformity of study plans. It is thus important to implement standard procedures and have guidelines to guide data collection with a view to maximising consistency and reliability across modes and instruments. The setting of protocols serves to reduce variability and ensure that the same procedures are used by all data collectors, thus improving the quality of collected data (Eskwad, 2023).



3.8.1 Response Rate

Out of the 135 questionnaires administered, 120 were successfully retrieved, representing an 89% response rate. For the qualitative component, 12 out of the 15 targeted interviewees participated in the interviews. These interviewees were from within the 135 respondents targeted for the study. These formed the basis for subsequent data analysis.

High retrieval and participation rates were attributed to effective community entry, follow-up visits, and the willingness of participants to share their experiences with the CLTS programme.

3.9 Data Source

Both primary and secondary data sources were employed by the study to capture a general understanding of how the Community-Led Total Sanitation programme is being implemented.

Primary data was gathered directly from the respondents via surveys and Semi-structured interviews or Key Informant Interviews (KIIs). The approaches enabled the gathering of first-hand information regarding the coverage of CLTS implementation, its effect on sanitation practice, problems that accompany it, and suggested solutions to enhance it. Utilisation of primary data enabled documentation of actual-time data, specific to the offered research goals.

Secondary data were obtained through official reports, policy briefs, and peer-reviewed articles. This afforded the study a theoretical and contextual framework, supplementing the primary data obtained. Secondary data also provided an overview



of the implementation and effectiveness of the CLTS programme at a wider scale, leveraging existing knowledge and evidence. As Bowen (2009) suggests, secondary data are significant in research because it assists in validating primary data findings and strengthening the overall analysis of the study.

3.10 Data Analysis

The data collected was systematically analysed using quantitative and qualitative approaches to derive meaningful insights. Quantitative data was analysed using descriptive statistical techniques. The descriptive statistics was on the demographic data, sanitation behaviours, and practices was summarised through measures such as frequencies, percentages, means, and standard deviations. However, the researcher employed chi-square as a rigorous approach to do a simple cross tabulation between educational level and awareness of CLTS implementation within the Tamale Metropolis. Also, ranking method approach was used to ranked the challenges based on their means and standard deviations. Such data gave an accurate outline of respondent profiles and marked out trends in data. Statistical Package for the Social Sciences (SPSS) and Excel were used in data cleansing, entry, and analysis. SPSS is extremely strong and conventional statistical analysis software used to guarantee accuracy and efficiency in handling massive data (Field, 2018).

Qualitative data collected through semi-structured interviews, such as feedback from key informants, were thematically analyzed through Braun and Clarke's (2019) description. The method is useful in the identification of patterns and themes in the responses, giving rich details on how the programme is applied. Coding and response categorization were thus conducted to give the data in thematic meaning that was appropriate for the study's objectives. The NVivo software was utilized for the easy



organization and analysis of qualitative data to attempt a systematic and rigorous procedure. Triangulation was also applied in merging qualitative and quantitative data findings so that the validity of the research could be guaranteed (Fusch, Fusch, & Ness, 2018). In this way, through the incorporation of quantitative as well as qualitative analysis, the research was able to provide an overall picture about the implementation, contribution, problem, and area of improvement for CLTS programme.

3.11 Ethical Considerations

Ethics are given first priority in the study so that there is professional and ethical standard, and rights and welfare of all participants are ensured. Prior to collecting data, permission to carry out the study was acquired from the respective institutional review board. Ethics approval on application made sure that the study was conforming to standards to ethics and against national and international research quality standard standards. Consent from all the participants was taken. They all engaged in an informed process in which each of them was given a complete information sheet to concern the nature of the study, contribution, the type of data they would be contributing to us, and the use that would be made of their information. People were provided enough time to study the information and raise any question before deciding to participate. There was a consent form which served to put into writing their decision to be included in the study.

Voluntary engagement in the research was guaranteed. The participants were notified that they are entitled to withdraw from the research at any moment while in the course of the research without stating the cause and without consequences. Such a practice



ensured that the principle of autonomy, under which persons had total freedom regarding their involvement in the research, was upheld.

Anonymity and confidentiality were stringently upheld at all stages of the research process. The responses were never tied to personally identifiable data, and participants were provided with individual codes for protecting their identities. The data was reported in aggregate format for purposes of anonymity. All these practices adhered to the ethical guidelines of the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and behavioural Research, 1979).

Furthermore, all the information was safely archived by encrypted computer systems and the physical safeguard of paper documents. The information was limited to the research team and was utilized only for scholarly work. Data were safely stored or destroyed after the study, adhering to institutional and legal protocols.

Lastly, the research was intended to minimize harm to the participants. This involved ensuring that survey and interview tools had questions that were respectful, sensitive to culture, and not invasive. In case a participant felt uncomfortable or distressed, assistance was offered immediately and the right to withdraw from the study was utilised. Therefore, by following these ethical issues, the research prioritized the highest possible level of concern for the participants' welfare, rights, and dignity, thereby creating the perception of integrity and trustworthiness in the research.



3.12 Chapter Summary

This chapter has presented the methodological framework employed in investigating the implementation of the Community-Led Total Sanitation (CLTS) programme in the Tamale Metropolis. The chapter began with an introduction of the study area, highlighting Tamale's socio-economic, demographic, and sanitation context, which makes it an appropriate setting for examining sanitation interventions.

The study was underpinned by the pragmatic research philosophy, which allowed for methodological flexibility and the integration of both quantitative and qualitative approaches. In line with this philosophy, the study adopted an explanatory sequential mixed-methods design, where quantitative data were first collected and analysed, followed by qualitative data to explain and validate the survey results.

The study population comprised community members, local leaders, CLTS facilitators, and institutional stakeholders, estimated at 1,000 individuals across selected urban and peri-urban communities. A multi-stage sampling procedure was applied. Proportional stratified random sampling was used to select community members, while purposive sampling was employed for leaders, facilitators, and stakeholders. This yielded a target sample size of 135 respondents, justified using Krejcie and Morgan's (1970) sample size table and supported by methodological literature that permits smaller yet information-rich samples in exploratory mixed-methods research.

Data collection employed structured questionnaires for the quantitative strand and semi-structured interview guides for the qualitative strand. Instruments were pre-



tested for clarity and reliability, with Cronbach's alpha confirming internal consistency of scales. Validity was ensured through expert reviews and alignment with study objectives. A mixed-mode data collection strategy—online and face-to-face, was used to increase inclusivity and participation. Ultimately, 120 questionnaires were retrieved and 12 interviews conducted, resulting in a final valid sample of 132 participants for analysis.

Quantitative data were analysed using descriptive statistics with SPSS, while qualitative data were subjected to thematic analysis using Braun and Clarke's (2019) framework, supported by NVivo software. Triangulation was applied to integrate findings from both strands, thereby enhancing validity and reliability.

Finally, the chapter addressed ethical considerations, including informed consent, voluntary participation, anonymity, confidentiality, and safe data storage. These measures ensured that the rights and welfare of participants were protected throughout the research process, in line with national and international ethical guidelines.

Overall, this chapter has detailed the methodological procedures that guided the research, from philosophy and design through sampling, instrumentation, data collection, analysis, and ethics. The next chapter presents the results and discussion of the findings derived from the data.





CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the results and discussion of the study titled “*Assessing the implementation of the Community-Led Total Sanitation programme in the Tamale Metropolis.*” The analysis is structured according to the study’s objectives. Thus, the findings are organized and discussed in line with the study's objectives, which included evaluating the extent to which CLTS has been implemented in the Tamale Metropolis, assessing the impact of the CLTS programme on sanitation behaviours and practices in the Tamale Metropolis, identifying the challenges associated with the implementation of the CLTS programme, and proposing strategies to enhance the effectiveness and sustainability of the CLTS programme. The findings are based on analysis of primary data gathered through questionnaires and interviews with the respondents supplemented with secondary data when required. The findings are brought together with literature to offer an interpretative and in-depth analysis of the data, extracting trends, patterns, and implications for the roll-out of CLTS programmes.

The chapter starts off with the presentation of respondents' demographic data, which is the foundation for context and diversity of the workforce understanding. Then, each of the research objectives is addressed sequentially, through findings in tables, figures, and descriptive descriptions, to then be followed by critical examination of implications for organizational practice and policy.

4.1 Demographic of Respondents

Demographic information forms the foundation for understanding the workforce composition within the Tamale Metropolis and its implications for CLTS programme implementation and sustainability. This data provides insights into key characteristics such as gender, age, educational background, occupation, and household size, all of which influence awareness, CLTS implementation needs, preferences, and responses to CLTS practices.

4.1.1 Gender of Respondents

The gender breakup of the respondents to the study is given by graph 4.1. It reflects that females formed the majority by 58.33%, with males forming 41.67%. This clearly shows that women were more dynamically involved in the study, depicting a fair representation of women's views on issues of sanitation within the community.

The female predominance might be due to the fact that in most Ghanaian societies and homes, women play the focal role in sanitation and hygiene practices. Research has indicated that women are tasked with managing garbage at home, maintaining latrines, and educating children in sanitation practices (UNICEF, 2023; WHO, 2022). Their



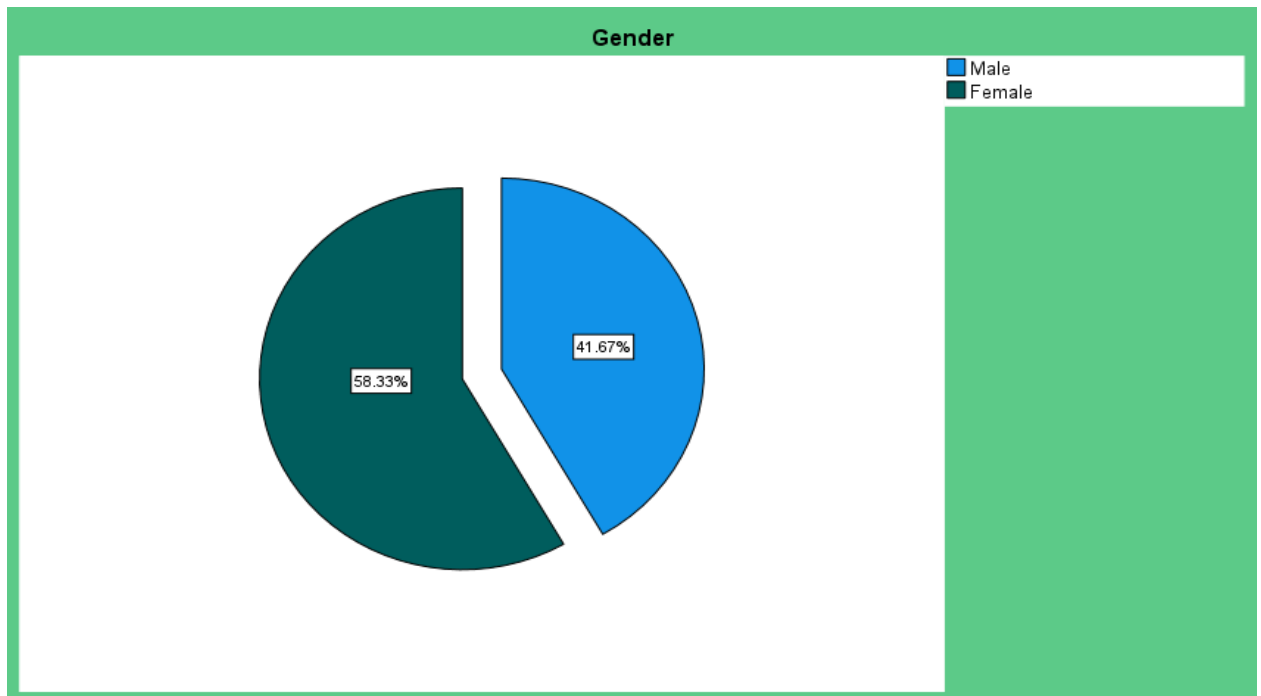
increasing involvement in sanitation schemes also testifies to results of previous research to identify women as agents of change in community-based health and sanitation interventions (Jenkins & Scott, 2021).

The increased involvement of women in the study indicates that sanitation programmes, especially in Tamale Metropolis, might have to incorporate gender-sensitive strategies if they are to be more effective. CLTS programmes with women at leadership positions, at decision-making, and at training workshops are likely to be more effective since women stand a better chance of changing household and community sanitation practices (Chambers & Myers, 2020).

Even though the proportion of male respondents was less, their 41.67% share also reflects high participation in sanitation matters. Engaging men in sanitation activities is important because male household heads and community leaders make financial and infrastructural decisions about sanitation facilities. Efforts to enhance male engagement in CLTS activities, including focused awareness campaigns and engaging traditional leaders, would also promote community-level adoption of improved sanitation practices (Kar, 2019).

In general, the research involved both men and women respondents, but as there was a slight imbalance (there were more women than men), the findings could more accurately represent women's attitudes towards sanitation practices and challenges.





Source: Field Survey Data, 2025

Figure 4.1 Gender of Respondents

4.1.2 Distribution of Respondents by Age

Knowledge of the respondents' distribution by age is crucial in analysis of the experiences and perceptions that the respondents bring to the study. Figure 4.2 shows the respondents' distribution by age shown in separate categories. It indicated respondents ranging between 25 and below (14.2%), 26-35 years (42.5%), 36-45 years (34.2%), and 46 and above (9.1%). The distribution was crucial in showing an insight of the population's demographic makeup and how it affects the result of the research.

The highest percentage of the respondents fall in the 26-35 years age bracket and account for 42.5% of the sample. This would mean that respondents in this age bracket are most actively involved in the study sector. As this age bracket normally comprises individuals who are most likely to be at their working and raising family

stage, they would be most likely to be directly involved with issues related to the study. Their participation suggests that they are interested in matters related to the study, possibly because they are responsible for managing households, businesses, or community activities.

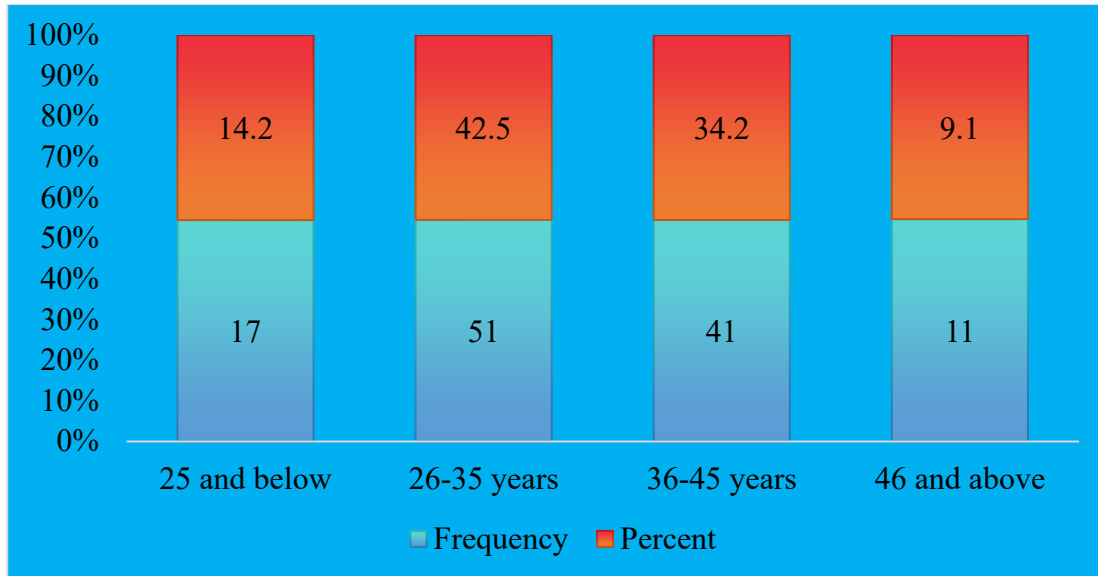
The second largest group, representing 36.2% of the sample, is between 36 and 45 years of age. This too is a worth segment because people in this age bracket are likely to have ample life experience and participate actively in decision-making in their homes, workplaces, or their immediate communities. What they say is precious feedback that can be capitalized on the research theme.

The representation of the sample among respondents aged 25 and below was at 14.2%, very low. The low representation in the sample at this age might suggest that respondents were less engaged with the topic of the research. Maybe the respondents at this youthful age were not yet actively playing critical roles within the areas of the research. Maybe they were not exposed much to undertake such studies. This indicates the necessity for specific awareness and education campaigns to encourage them to take part in such studies in the future.

Likewise, the 46 and above segment is the least represented, with a mere 9.1% of the respondents. This is due to a number of factors, including reduced participation in research activities due to age constraints or perceiving the study to be irrelevant to their everyday life. The low response of this group is also perhaps an indication that older individuals are less impacted by the study subject or have impediments to respond, e.g., restrictions on access to or filling out questionnaires.

The findings of figure 4.2 thus emphasised the need for age-differentiated research participation approaches.





Source: Field Survey Data, 2025

Figure 4.2 Age of Respondents

4.1.3 Education Level of Respondents

Figure 4.3 shows the education level of the respondents. The outcome was that 62.50% of the respondents have achieved secondary education, and 15.83% of them have tertiary education. On the other hand, 15.00% of the respondents lack formal education, and 6.67% have achieved primary education.

Educational composition of the respondents has a great impact on the implementation and effectiveness of the CLTS programme in the Tamale Metropolis. The frequency of respondents with secondary education and more is high (62.50%), indicating a relatively educated population that will readily understand and adopt good sanitation behaviours once fully educated. Such literacy can facilitate information flow on sanitation and hygiene, thereby promoting a more effective community-led intervention.

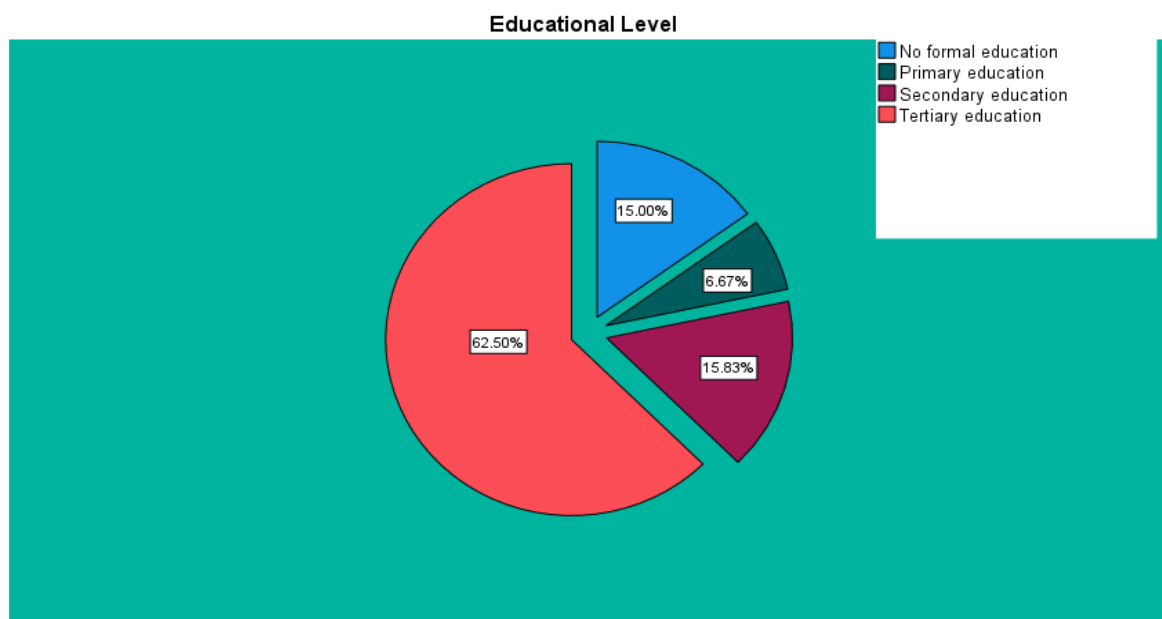
However, the fact that there are respondents who have no education (15.00%) and primary education (6.67%) only underscores possible difficulties in achieving mass



coverage of CLTS principles. The less educated will likely not have access to sanitation practice information or be unable to understand health-related messages and hence struggle to change behaviour. This implies that sanitation education needs to include visual, verbal, and practical presentation and not text information alone.

In addition, availability of the tertiary-educated respondents (15.83%) could suggest a probable potential for knowledge transfer and sanitation advocacy leadership. Educated people can be key influence agents in their communities, evoking behaviour change and facilitating good sanitation practice.

It may thus, be asserted that the research highlights the requirement of a multi-dimensional intervention to implement CLTS in an attempt to ensure education interventions are suitable for both educated and less educated groups.



Source: Field Survey Data, 2025

Figure 4.3 Educational Level of Respondents



4.1.4 Respondents' Occupation

The survey aimed to identify the occupational pattern of respondents to determine their possible contribution towards the implementation and sustainability of the Community-Led Total Sanitation (CLTS) programme in the Tamale Metropolis. As shown in figure 4.4, the results indicated that most of the respondents (37.5%) are civil servants, followed by social workers (16.7%), students (15.8%), private workers (15.8%), farmers (8.4%), and unemployed people (5.8%). This ratio is important because it says a great deal regarding the impact of employment status on access to sanitation facilities, affordability, and readiness to engage in community-managed sanitation activities.

Being a large percentage of the respondents employed as civil servants shows a relatively sound economic background, which could impact their capacity to invest in sanitation facilities at home. Civil servants usually enjoy stable salaries and thus are better placed to fund the construction and maintenance of better toilets and other sanitary facilities. Secondly, the majority of civil servants work in institutions with good sanitation facilities, and thus are less reliant on communal or public toilets. This can lead to complacency in making an effort for better sanitation at the community level unless they are faced with particular issues.

The population in the study represented by the presence of social workers (16.7%) is worth noting in light of the function of this professional in mobilisation of people and behaviour change activities in communities. Social workers traditionally act as government departmental and community interfaces and are therefore key agents toward ensuring sanitation programmes are successful. They in the CLTS programme would unlock the potential for awareness creation, informing the populace on good hygiene practices, and mobilizing community members for action in the community.





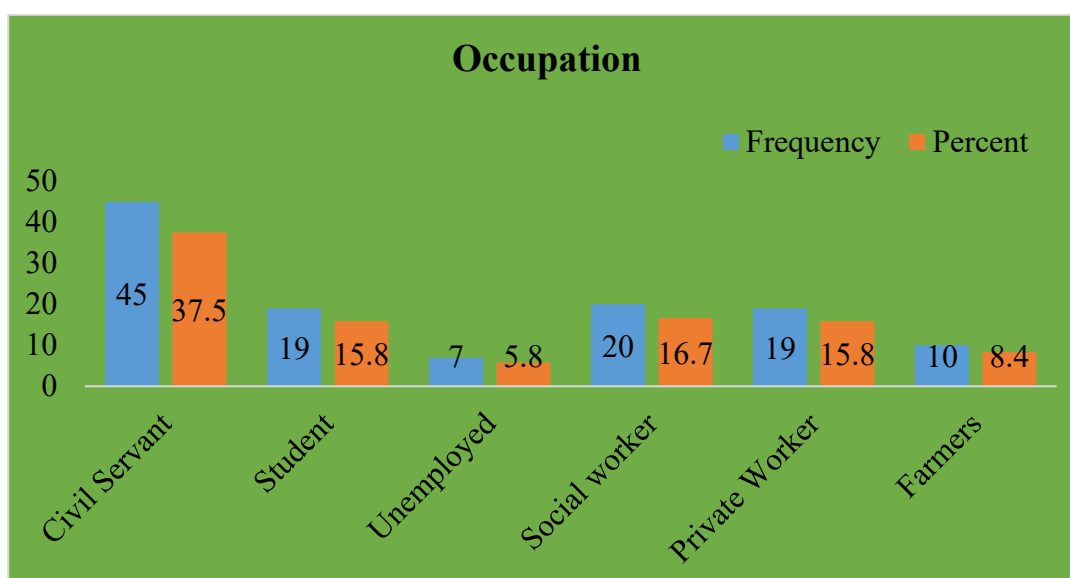
Students, who form 15.8% of the total respondents, form a population which can be exposed to different levels of sanitation awareness schemes. Schools have sanitation facilities but of different standards and accessibility within schools. Sanitation conditions in schools can be detrimental to the health and study performance of students. Additionally, since students are often financially dependent on guardians or institutions, their ability to contribute to improved household sanitation practices is limited. However, education and awareness campaigns targeting students can have long-term impacts, as they will likely carry these lessons with them into adulthood.

Private workers, who also made up 15.8% of the participants, comprised employees in small businesses, trade, and other informal businesses. They are important since the working places might not necessarily have appropriate sanitation facilities. Private workers in informal environments would mostly have issues when it comes to cleanliness in workplaces compared to civil servants. They can play an important role in participating in community sanitation activities since they can communicate the significance of better sanitation in marketplace locations, business operations, and public spaces.

Farmers, representing 8.4% of the respondents, possess special sanitation issues because of the nature of their work. Most farmers spend much time in the fields and the rural areas where there are no sanitation facilities. Open defecation is prevalent in farm communities, which creates public health concerns such as the transmission of waterborne diseases. Meeting sanitation requirements among farmers needs specific interventions, including the establishment of low-cost latrines in rural farm villages and hygiene awareness on the significance of proper hygiene practices.

Finally, the 5.8% of the respondents unemployed are a section that can hardly afford sanitation facilities. Unemployment is normally coupled with economic

marginalization, and thus it is challenging for such individuals to make investments in home toilets or hygiene facilities. Thus, this segment will be more likely to utilize public sanitation facilities or open defecation in case these facilities are non-existent or of poor quality. Thus, policy interventions that offer subsidies for sanitation infrastructure or work opportunities associated with sanitation projects would be effective in overcoming these impediments.



Source: Field Survey Data, 2025

Figure 4.4 Occupation of Respondents

4.1.5 Household Size of Respondents

It is crucial to identify the size of respondents' households in estimating the demand for sanitation facilities, demand on accessible resources, and the complexity of undertaking community-led sanitation programmes.

Table 4.1 Household Size of Respondents

Household Size		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 household	20	16.7	16.7	16.7
	6-10 household	58	48.3	48.3	65.0
	11-15 household	29	24.2	24.2	89.2
	16 and above	13	10.8	10.8	100.0

Total	120	100.0	100.0	
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Source: Field Survey Data, 2025

Table 4.1 shows the distribution of respondents by household size, and it is true that a higher percentage of households (48.3%) are 6 to 10 persons. This is then followed by households of 11 to 15 persons (24.2%), 1 to 5 persons (16.7%), and lastly, households of 16 or more persons (10.8%). All these consequences are of great importance to sanitation infrastructure, resource planning, and public health interventions.

The fact that the proportion of medium-to-large family sizes (6-10 members and 11-15 members) is high indicates that many families reside in extended family households, a common practice in most Ghanaian societies. Large family sizes place greater demands on toilet sanitation facilities available, especially in homes utilizing common or public toilets. Toilet sanitation facility overcrowding may result in insanitary conditions, with an increase in the risk of disease transmission. Also, in situations where one family has one toilet, its maintenance and cleanliness become a problem, reducing the overall impact of sanitation interventions.

1-5 member families, which accounted for 16.7% of the sample, are also likely to have better sanitation management. Small families are less likely to experience overcrowding in their toilets, and this increases the likelihood of good hygiene conditions. Such household sizes can even have more flexibility in setting up better sanitation facilities like the building of private toilets were compared to extended families where cost and space limitations might be the constraining factor. But where such homes are situated in rented buildings, their freedom to install personal sanitation facilities can still be restricted by landlords' regulations.



The 10.8% residing in homes with 16 or more family members form a group at high risk of facing sanitation difficulties. Their overcrowding in the houses can translate into inaccessibility of suitable toilet facilities, and therefore open defecation or the utilization of filthy alternatives becomes likely. Large family size will reflect multiple generation family residence patterns, to which special measures must be in place to assure proper sanitation facility availability for every member, especially children and old persons. Besides, water availability and drainage among such families will be under strain, and the community level must be intervened so as to coordinate sanitation properly.

4.2 Extent to which CLTS has been implemented in the Tamale Metropolis

Community-Led Total Sanitation (CLTS) is an initiative by the community to avoid open defecation and improve sanitation through community action. Awareness, participation, and sustainable behaviour change depend to a large extent on the success of the CLTS programme. Table 4.2 indicates the awareness level, sources of information, participation in CLTS activities, and attendance rate of Tamale Metropolis. The findings provided valuable insights into the extent of implementation and the challenges that may hinder the success of CLTS interventions. This section seeks to achieve the first objective of the study on the extent to which CLTS has been implemented in the Tamale Metropolis. As a result, respondents were asked to indicate their levels of agreement or disagreement to or rate the following statements as presented in the table below.

Table 4.2 Extent to which CLTS has been implemented in the Tamale Metropolis

Are you aware of the CLTS programme in your community			
Frequency	Percent	Valid	Cumulative Percent



			Percent	
Valid	Yes	73	60.8	60.8
	No	47	39.2	39.2
	Total	120	100	100

If yes, how did you first learn about the CLTS programme

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Community meetings	68	56.7	56.7	56.7
	Local Leaders	10	8.3	8.3	65
	Neighbours	20	16.7	16.7	81.7
	Media (radio, TV)	22	18.3	18.3	100
	Total	120	100	100	

Have you participated in any CLTS activities (e.g., community meetings, sanitation workshops)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	91	75.8	75.8	75.8
	No	29	24.2	24.2	100
	Total	120	100	100	

If yes, how frequently do you attend these activities

	Frequency	Percent	Valid	Cumulative Percent
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				Percent	
Valid	Always	14	11.7	11.7	11.7
	Often	11	9.2	9.2	20.8
	Sometimes	61	50.8	50.8	71.7
	Rarely	18	15	15	86.7
	Never	16	13.3	13.3	100
	Total	120	100	100	

Source: Field Survey Data, 2025

Under awareness of CLTS programme, the information showed that 60.8% of the respondents are aware of the CLTS programme in their community and 39.2% are not aware. The implication is that although the majority of the population has been reached, a high percentage is not aware of the programme. Awareness is a fair judgment of the effect of CLTS interventions since evidence has shown that education on sanitation schemes affects take-up (Sigler et al., 2015). The high level of awareness attests to the efforts of NGOs and local government in spreading CLTS, yet the fact that 39.2% of the respondents do not know testifies that more work has to be done. According to Venkataramanan et al. (2018), the challenge in applying CLTS is raising awareness to the entire community, and even more so, the marginalized group. Insufficiency of awareness among some of the respondents in this study points towards possible constraints like ineffectiveness of outreach efforts, literacy, and socio-cultural perceptions towards sanitation. It can be argued, given the results, that sensitization efforts need to be intensified by using culturally adapted communication channels so as to maximize programme coverage.

In the case of information sources on CLTS, the results indicated that out of all those who were aware of the CLTS programme, 56.7% first learned of it from community



meetings, 16.7% from their neighbors, 18.3% from radio/TV (media), and 8.3% from local leaders. This distribution placed great emphasis on interpersonal interaction as the impetus for information delivery. This is confirmed by the study by Gertler et al. (2015) that showed community participation by way of community meetings as an effective way of informing the public, creating shared responsibility, and making sanitation easy to understand.

However, the relatively low local leadership influence (8.3%) does indicate some cause for concern in their role in sanitation advocacy. The literature indicates that leaders at the community level have a central role in advocating for behavioural sanitation change (Cavill et al., 2015). The relatively low influence from them in the present context could then be a call for greater political and traditional leader engagement in the CLTS process to accrue credibility and trust within the programme. Media role (18.3%) also comes in, given its broader coverage, particularly in peri-urban and urban settings. Tiwari et al. (2017) studied and confirmed that radio and TV campaigns have been effective in reflecting sanitation programme expansion in some developing nations. The moderate use of media in the Tamale Metropolis indicates that the combination of mass communication with grassroots measures will further increase awareness.

The question on respondents ever having participated in CLTS activities, the results revealed that 75.8% of the respondents ever took part in CLTS activities, while 24.2% never took part. Such a high percentage of participation is a good sign of the involvement of the community in sanitation schemes. Involvement in community-based sanitation schemes has been shown to enhance the prospect of long-term



behaviour change (Zuin et al., 2019). The finding indicates that the majority of the respondents are engaged in sanitation work, which is crucial for the success of the CLTS programme.

But 24.2% of the respondents that never engaged in CLTS activities is worrying from an inclusiveness point of view. Reports also suggest that most instances of non-participation stem from reasons such as lack of interest, having insufficient time, or disbelief about the intervention being effective (Kar & Chambers, 2008). This implies that programme implementers must use innovative methods of motivating participation, like rewarding presence and adapting activities to accommodate various timetables.

Finally, with regard to the frequency of involvement in CLTS activities, out of individuals involved in CLTS activities, 50.8% "sometimes," 15% "rarely," 13.3% "never," whereas only 11.7% "always" and 9.2% "often" involve. These results reflect that though participatory rates are comparatively high, the frequency is irregular. These studies have held that sustainability in sanitation interventions will be based on continuous community engagement and enforcement of hygiene information (Bongartz et al., 2016).

The finding that a majority of the respondents only participated on a sporadic basis suggests possible inhibitions that include conflicting priorities, logistics, or motivation. Bartram et al. (2012) state that ongoing participation in sanitation activities demands ongoing reinforcement through constant follow-ups, refresher workshops, and incorporating sanitation issues into routine community activities.

The findings thus, identified achievement and weakness in the implementation of CLTS in the Tamale Metropolis. Whereas awareness and uptake are fairly high,



disparity in participation and inequality in outreach activities call for the need for more participatory and targeted approaches.

Alternatively, thematic analysis was conducted using the data obtained from interviews to obtain more information concerning implementation levels, challenges, and sustainability of the Community-Led Total Sanitation (CLTS) programme within the Tamale Metropolis.

The Tamale Metropolis CLTS project was launched as a grassroots effort towards ending open defecation and enhancing sanitation practice. While there have been attempts to promote sanitation awareness and action at the household level, the percentage of complete implementation of CLTS remains a cause for concern. The programme's success is not solely reliant on initial awareness and participation but also on the long-term adoption and acceptance in the life of the community.

On awareness and implementation coverage of CLTS, the interviewed respondents agreed that sanitation awareness within the Tamale Metropolis has enhanced over the years. A sanitation worker remarked:

"People are getting more sensitized. There is no community where all the inhabitants are completely unaware of good sanitation. But there are still gaps."

This statement aligns with survey findings, which indicated that 60.8% of respondents were aware of CLTS, while 39.2% had never heard of it. While this implies that efforts at implementation have extended to a high proportion of the population, that the fact that almost 40% of them are not aware implies low coverage of CLTS campaigns.

In addition, some of the interviewees said that while initial sensitization was strong, subsequent efforts have declined. A sanitation company operator noted:



"When we were making entries into the market, we did door-to-door sensitization. But now that people know about sanitation, we rarely do it anymore."

This indicates that although CLTS awareness was actively promoted at the start, the momentum has slowed over time, reducing its impact on behaviour change. Sigler et al. (2020) reiterate that sanitation programmes must constantly be reinforced to keep progressing, as the likelihood exists that societies will lapse into traditional habits once effort levels decrease.

But knowledge doesn't necessarily lead to action. A sanitation official said:

*"Everybody knows about sanitation, but there are still
lack the motivation to relocate unless pressure from outside."*

This statement aligns with the argument of Giné-Garriga et al. (2020) that sanitation gain awareness is not enough to drive long-term behaviour change and thus constant community involvement is necessary to ensure sustained improvement.

Inadequate active participation of local leaders in CLTS implementation was of utmost concern. Although 56.7% of the respondents indicated to have heard about CLTS in community meetings, only 8.3% indicated having been informed about CLTS by local leaders. This indicates that opinion and traditional leaders were less active in the awareness generation process, perhaps driving the uptake of CLTS higher. Jenkins and Scott (2020) emphasised that strong leadership advocacy is crucial for the success of community-based sanitation initiatives, as traditional leaders have significant influence over local practices.

With regard to participation in CLTS activities, it is said that beyond awareness, the effectiveness of CLTS depends on active community participation. Interviewees



offered evasive answers when asked if CLTS had been accepted far and wide. One teacher mentioned a previous enthusiasm for sanitation activities:

"People were eager to go for sanitation meetings initially.

We even used to have sanitation clean-up days weekly. But later on, few people would go, and some resumed going to the bush."

This is consistent with survey results, which indicate that although 75.8% of the respondents had ever participated in CLTS activities, only 11.7% participated regularly and only 50.8% participated 'sometimes.' The suggestion that more than half of the community members participated occasionally indicates that CLTS work has never been properly sustained.

One health officer employed in NGO sanitation company (Golden Inspires Foundation-GIF) seconded this problem by saying that:

"Many people pulled up for CLTS when they believed it would do them a bit of good. But when they realized they would be digging out their own latrines, some lost the desire."

This brought about a misconception that sanitation programmes are accompanied by external finances, which has had an impact on CLTS adoption. Venkataramanan et al. (2018) pointed out that CLTS is based on a no-subsidy approach, whereby communities have to own their sanitation improvement. Where there is low understanding, community participation declines with the passage of time.

A common problem that was uncovered in interviews was uneven participation in CLTS activities. Some communities participate fully in clean-up activities, whereas others do not care. One resident of Sakasaka explained an orderly activity in their community:



"Every first Saturday of the month, we clean the whole area. The chief announces it in the mosque, and the turnout is good."

However, another interviewee noted that participation was skewed along gender lines:

"It's mostly women and young people who take part in clean-up exercises. The elderly men do not participate."

This is consistent with Kamal et al. (2021), who asserted that gender roles tend to restrict male engagement in sanitation as cleaning is deemed 'woman's work.' This was echoed by a sanitation specialist as follows:

"If a woman is not at home, the whole place remains dirty. Some men think it is beneath them to clean."

This points to a culture barrier that still hampers CLTS implementation. Thus, addressing such a mindset is vital to ensuring equal involvement of all members of the community.

Table 4.2.1: Cross-tabulation of Educational Level and Awareness of CLTS Programme in the Tamale Metropolis

Respondents were asked whether they were aware of the CLTS programme in their community, and their responses were cross-tabulated with their educational levels.

Educational Level	Not Aware		Total	Aware (%)
	Aware (Yes)	(No)		
No formal education	18 (100.0%)	0 (0.0%)	18	100.00
Primary education	8 (100.0%)	0 (0.0%)	8	100.00
Secondary education	19 (100.0%)	0 (0.0%)	19	100.00
Tertiary education	28 (37.3%)	47 (62.7%)	75	37.30
Total	73 (60.8%)	47 (39.2%)	120	60.80



Pearson's Chi-Square = 46.36, df = 3, p < 0.001.

Source: Field Survey Data, 2025

Table 4.2.1 indicated that 60.8% of respondents reported awareness of the CLTS programme in their community. Awareness levels were highest among respondents with no formal (100%), primary (100%), and secondary education (100%), but were considerably lower among those with tertiary education (37.3%). A chi-square test revealed a statistically significant association between educational level and awareness of CLTS ($\chi^2(3, N = 120) = 46.36, p < .001$), suggesting that awareness of the CLTS programme is significantly influenced by respondents' educational attainment.

The findings suggested that while the majority of respondents were aware of the CLTS programme, there is a disparity in awareness across educational levels. Interestingly, awareness was universal among those with no formal, primary, and secondary education, whereas respondents with tertiary education had relatively low awareness. This result could be attributed to the nature of CLTS implementation, which often targets grassroots communities through local engagement strategies such as community durbars, triggering sessions, and house-to-house sensitisation (Kar & Chambers, 2008). Individuals with higher education may have less exposure to these community-level interventions due to occupational or residential differences, as also observed by Venkataramanan et al. (2018).

The significant association between educational level and awareness aligns with studies by Abubakari et al. (2023) and Oduro-Kwarteng and Awuah (2014), which found that sanitation interventions in Ghana often achieve higher penetration among non-formally educated rural and peri-urban populations than among more educated urban residents. This pattern underscores the need for tailored communication



strategies that also target educated populations, who play influential roles in sustaining community-wide behavioural change.

Overall, the results indicate that the CLTS programme has achieved moderate community penetration (60.8%) but requires more inclusive outreach strategies to engage all socio-economic and educational groups in the Tamale Metropolis.

4.3 Impact of the CLTS programme on Sanitation Behaviours and Practices in the Tamale Metropolis

To achieve the second (2nd) objective of the study on impact of the CLTS programme on Sanitation Behaviours and Practices in the Tamale Metropolis, respondents were asked to indicate their levels of agreement or disagreement to or rate the following statements in Table 4.3 below. Community-Led Total Sanitation (CLTS) seeks to enhance hygiene and sanitation behaviour through promoting community-initiated programmes that promote households' practice and embrace of proper disposal of waste and hygiene practices. Evidence of CLTS effects on household sanitation facilities, latrine construction, hand-washing, sanitation change at the community level, and determinants of sanitation adoption is shown in Table 4.3. The analysis accounts for all the above factors in order to find insights into the effectiveness and problems of CLTS in the Tamale Metropolis.

Table 4.3 Impact of the CLTS Programme on Sanitation Behaviours and Practices in the Tamale Metropolis

What type of sanitation facility does your household primarily use





		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Open defecation	15	12.5	12.5	12.5
	Shared latrine	22	18.3	18.3	30.8
	Private latrine	83	69.2	69.2	100
	Total	120	100	100	

Since the introduction of the CLTS programme, have you constructed a latrine for your household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	90	75	75	75
	No	30	25	25	100
	Total	120	100	100	

How often do you wash your hands with soap after defecation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	30	25	25	25
	Often	57	47.5	47.5	72.5
	Sometimes	16	13.3	13.3	85.8
	Rarely	8	6.7	6.7	92.5
	Never	9	7.5	7.5	100

Total 120 100 100

Have you noticed a change in your community's sanitation practices since the CLTS programme began

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Significant improvement	89	74.2	74.2	74.2
	Some improvement	22	18.3	18.3	92.5
	No change	7	5.8	5.8	98.3
	Worsened	2	1.7	1.7	100
	Total	120	100	100	

In your opinion, what motivates households in your community to adopt improved sanitation practices (select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Health benefits	89	74.2	74.2	74.2
	Social acceptance	8	6.7	6.7	80.8
	Financial incentives	9	7.5	7.5	88.3
	Peer pressure	14	11.7	11.7	100



Total	120	100	100
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Source: Field Survey Data, 2025

Access to sanitation facilities is a measure of success baseline for CLTS because it reflects whether people are shifting from open defecation to some other cleaner practice. From the findings, it was observed that 12.5% of the population is still open defecating, 18.3% use community latrines, and 69.2% use private latrines.

The 69.2% high percentage of private latrine ownership is indicative that the majority of the families have been able to adjust to the CLTS teachings by building their own sanitation facilities. The transition is an indication of enhanced hygiene behaviour, reduced disease risks, and overall sanitation enhancement.

Nevertheless, the 12.5% of the households that still engage in open defecation is worrying because it indicates ongoing sanitation issues, especially among poor or marginalized households. Jenkins and Scott (2020) are of the opinion that societies with extreme poverty and limited access to building materials are bound to experience difficulties in moving from open defecation to the use of latrines. Other rural societies also have cultural beliefs against the use of latrines, considering open defecation as the norm (Giné-Garriga et al., 2020).

18.3% of the population utilizing shared latrines is also a sign of a problem. So, additional public sanitation facilities are necessary. Shared latrines, although preferable to open defecation, are hygienically insecure where not well maintained. Shared latrines were found in a study by Roma and Pugh (2021) to become congested, creating unhygienic latrines that deter users from frequent use. Therefore, even though the adoption of private latrines is loud, ongoing sensitization and education of the poor families to further mitigate open defecation and enhance sanitation in the common ones are paramount.



On latrine construction since CLTS implementation, the data further revealed that 75% of respondents constructed latrines after the introduction of the CLTS programme, while 25% did not. This demonstrates that CLTS has had a strong influence on sanitation infrastructure development.

However, the remaining 25% of the homes that did not build latrines may be limited by financial, social, or logistical barriers. Sigler et al. (2020) explain that there is indication that poor homes may lack the ability to raise funds for the materials applied during latrine construction, particularly when assistance is not in the form of finance. Moreover, cultural practice and reluctance to change behaviours may also restrain the adoption of latrines (Venkataramanan et al., 2018). Thus, conclusions may be made to denote sustained community mobilization, concentrated intervention amongst high-risk groups, and assisting CLTS principles with grass roots leadership mobilization.

Other than that, soap hand washing following stool passing is a low-level disease prevention hygiene practice. The findings indicated that 25% of the respondents washed their hands with soap on a regular basis, 47.5% "often," 13.3% "sometimes," 6.7% "rarely," and 7.5% never washed their hands.

The fact that over 70% of the respondents washed their hands "always" or "often" showed that CLTS has facilitated desired hand washing behaviour change. Hand cleanliness forms part of diarrhoea disease prevention, cholera epidemic prevention, and prevention of respiratory infections (Bartram et al., 2022).

Yet, the 13.3% who washed "sometimes" and the 14.2% who "rarely" or "never" washed their hands reflected a need for more behavioural reinforcement. Giné-Garriga et al. (2020) argued that hand-washing practices are often inconsistent in communities where water availability is unreliable or where soap is considered a luxury.



Overall, community-wide campaigns on the importance of hand-washing, affordable access to soap, and the construction of hand-washing stations near latrines are necessary to improve hand hygiene.

More importantly, assessing community-wide sanitation improvements helps determine whether CLTS has achieved its broader objective of creating cleaner environments. The findings showed that 74.2% of respondents reported "significant improvement," 18.3% noticed "some improvement," 5.8% saw "no change," and 1.7% felt that sanitation had worsened.

These results clearly established that CLTS has actually affected sanitation status because more than 90% of the interview participants reported improvement. Roma and Pugh (2021) and Venkataramanan et al. (2018) research found that interventions of CLTS, when taken effectively, indicate high reductions of open defecation, increased waste disposal, and cleaner neighborhood environments.

But the 5.8% of the respondents who observed no change and the 1.7% who observed conditions to worsen indicate that there may still be areas with sanitation issues. This may be a result of inadequate enforcement, poverty-driven constraints, or lack of proper public engagement. Sigler et al. (2020) noted that improvements in sanitation demand long-term dedication on the part of both the local government and citizens.

Interestingly, the reasons why households adopt improved sanitation practices must be determined to formulate effective interventions. The findings revealed that 74.2% of the respondents identified health gain, 6.7% identified social acceptability, 7.5% mentioned economic incentives, and 11.7% mentioned peer pressure.

Health benefits were the most powerful driver by far (74.2%), as would be expected, since CLTS sensitization is based on the association between sanitation and disease



avoidance. Bartram et al. (2022) verified that health threats of unhygienic sanitation, such as cholera, typhoid, and diarrhoea diseases, are behaviour change drivers.

However, money was cited by just 7.5% of the respondents as a motivation, supporting CLTS's non-subsidy ethos, where individuals are responsible for their own sanitation improvement. Jenkins and Scott (2020) asserted that although subsidies may accelerate toilet construction, sometimes they undermine long-term sustainability when outside assistance is withdrawn.

Peer pressure (11.7%) and social acceptance (6.7%) were also identified as drivers of the adoption of sanitation. This shows that social norms within a community influence behaviour change. Social influence in a community can facilitate the adoption of sanitation since individuals imitate practices accepted by most, according to Giné-Garriga et al. (2020).

Similarly, the qualitative interviews were informative about how the CLTS programme has impacted sanitation behaviour, hygiene practice, and community engagement. Interviewees' views reflect the success, challenges, and sustainability of CLTS in Tamale Metropolis. Thematic analysis of their comments is categorised under broad themes such as change in sanitation practice, latrine construction, hand-washing practice, motivation for better sanitation, and challenges that persisted.

First theme was changes in behaviour towards sanitation and reduction of open defecation. Among the most impressive effects of the CLTS programme has been open defecation reduction, and several of the interviewees cited a visible change in community sanitation. One sanitation worker stressed:

“Unlike before, when you would see feces in front of every house, the community is now very clean. Open defecation has stopped.”



This is supported by the outcome of the survey, where 69.2% reported on the utilization of private latrines and only 12.5% still practiced open defecation. The interviews provided evidence that indeed there has been behaviour change due to sensitization, with individuals building and willingly utilizing latrines.

However, some interviewees pointed out pockets of resistance to CLTS practices, particularly in indigenous communities. One community leader explained:

“Some indigenous communities are still the dirtiest. People grew up in these conditions, and it is hard to change old habits.”

This was seconded by Giné-Garriga et al. (2020), who opined that strongly entrenched cultural beliefs regarding sanitation are one of the biggest barriers to behaviour change. There may have been heightened awareness, but attitudinal change takes time and requires constant reinforcement.

In addition, poverty remains a barrier to latrine ownership, an informant reported:

“Other individuals would like to construct a toilet but lack funds to purchase the materials. So, they simply keep on visiting the bush.”

This is in agreement with Jenkins and Scott (2020), who discovered that economic constraints deter poor families from obtaining quality sanitation facilities despite realising their advantages.

The next theme was on latrine construction. Thus, domestic investment in sanitation infrastructure. A key component of CLTS is encouraging households to build their own latrines rather than relying on externally funded sanitation projects. Interviewees confirmed that many households have taken ownership of sanitation, with one stating:

“People now know that they must build their own latrines. The education has helped. But not everyone has done it.”



This is in accordance with the survey findings, in which 75% of the households built latrines after the introduction of CLTS. But 25% of the households have not yet built latrines, confirming the instances of unaffordability and unavailability of materials. Some of the participants mentioned the importance of community leaders in promoting latrine construction:

“The chief and the assembly members declared sanitation.

They told individuals to stop open defecation and build toilets. Some listened, others did not.”

A study conducted by Roma and Pugh (2021) emphasised that community-wide sanitation adoption relies heavily on the involvement of traditional leaders. Their influence can encourage compliance and create social pressure for improved hygiene practices.

More importantly, practices for hygiene behaviour change. Hand hygiene is a critical aspect of disease prevention and sanitation improvement. Interviewees provided mixed responses regarding hand-washing behaviour in the community. A sanitation worker noted:

“Sometimes they wash their hands, but sometimes not. They know that it is important, but they do not do it all the time.”

This is consistent with the survey results, where 25% of the sample “always” wash their hands, and 47.5% “often”. However, 7.5% “never” washed their hands, and 6.7% “rarely.”

Some interviewees attributed inconsistent hand-washing to water scarcity:

“If there is no water in your house, how can you wash your hands regularly?”



This is supported by Sigler et al. (2020), who found that access to water is a major determinant of sustained hygiene behaviour. Without reliable water sources, even households with good sanitation awareness struggle to maintain hygiene practices.

The other theme was perceived community sanitation improvements. Many interviewees reported significant improvements in community sanitation. One resident mentioned:

“We don’t see as much waste in the streets as before. People are more conscious about keeping their environment clean.”

This confirms the survey data, where 74.2% of respondents reported “significant improvements” in sanitation since CLTS was introduced.

However, some interviewees expressed concerns about sanitation sustainability, stating that:

“If the sanitation officers stop coming, people will go back to their old ways.”

This echoes findings by Venkataramanan et al. (2018), which highlighted that without continuous engagement and reinforcement, sanitation gains may be reversed.

Equally important theme was motivations for improved sanitation practices. Understanding why households adopt better sanitation behaviours is crucial for ensuring long-term success. Interviewees identified health benefits as the main motivation, aligning with survey findings where 74.2% of respondents cited health as their primary reason for adopting sanitation improvements.

One resident explained:

“People now know that poor sanitation causes diseases. They want to protect their families from cholera and malaria.”



This supports Bartram et al. (2022), who argued that health risk awareness is one of the strongest motivators for sanitation behaviour change.

However, economic incentives were less influential, with only 7.5% of survey respondents citing financial rewards as a reason for improving sanitation. This suggests that CLTS's no-subsidy approach has been effective in fostering personal responsibility for sanitation improvements.

Overall, the qualitative analysis confirmed that CLTS has positively influenced sanitation practices in the Tamale Metropolis. However, interviewees reported: a decline in open defecation, increased latrine construction, greater awareness of hand-washing and hygiene and, improved community sanitation.

4.4 Challenges Associated With the Implementation of the CLTS Programme

Community-Led Total Sanitation (CLTS) has been implemented in the Tamale Metropolis with the goal of eliminating open defecation and improving sanitation practices. However, like many sanitation initiatives, CLTS has faced various challenges in adoption, latrine construction, sustainability, and inclusivity. Table 4.4 presents data on the key obstacles encountered by households, the extent to which CLTS addresses vulnerable groups' needs, and conflicts arising from programme implementation.

Table 4.4 Challenges Associated With the Implementation of the CLTS Programme

Challenges encountered in constructing or maintaining a latrine	Mean	Std. Dev.	Rank
Lack of materials	4.58	0.71	1



Financial constraints	4.22	0.83	2
Technical skill gaps	3.95	0.89	3
Cultural barriers	3.74	0.95	4

Do you feel that the CLTS programme adequately addresses the specific needs of vulnerable groups (e.g., elderly, disabled) in your community?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	36.7	36.7	36.7
	No	21	17.5	17.5	54.2
	Not sure	55	45.8	45.8	100
	Total	120	100	100	

Have there been any conflicts or disagreements in your community related to the CLTS programme?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	31	25.8	25.8	25.8
	No	89	74.2	74.2	100
	Total	120	100	100	

Source: Field Survey Data, 2025

Success in CLTS also relies on responsibility being taken up by the people in the community for their sanitary behaviour, namely building and having latrines. But evidence from the research showed that the majority of residents in the community encounter some noteworthy challenges to accomplish this act. The results showed that lack of materials emerged as the most critical constraint (Mean = 4.58, SD = 0.71), indicating that unavailability and high costs of essential construction materials such as



cement, timber, and roofing sheets significantly impede latrine construction. This is consistent with Roma and Pugh (2021), who found that material shortages undermine the sustainability of sanitation interventions in low-income settings. One interviewee/Community leader confirmed:

“Even when people want to build toilets, they cannot find or afford the materials. This is the biggest problem in our area.”

Financial constraints ranked second (2nd) (Mean = 4.22, SD = 0.83), reflecting the inability of many households to fund latrine construction despite CLTS’s emphasis on self-reliance. Jenkins and Scott (2020) similarly argued that while non-subsidy models foster ownership, they disproportionately burden the poorest households, potentially excluding them from improved sanitation. As one respondent/Resident explained:

“We know it is important, but most of us have no money to build. Some families just continue to use the bush.”

Technical skill gaps were the third (3rd) most significant challenge (Mean = 3.95, SD = 0.89), suggesting that many community members lack the expertise to construct durable latrines. Without proper training, latrines often collapse during the rainy season, discouraging continued investment. This finding aligns with Sigler et al. (2020), who noted that capacity building in construction techniques improves latrine quality and long-term adoption. A sanitation officer in the study observed:

“Some people build, but the toilets do not last because they don’t know how to do it properly.”

Cultural barriers ranked fourth (4th) (Mean = 3.74, SD = 0.95), indicating that traditional beliefs and taboos continue to inhibit latrine uptake in some communities.



Deep-rooted perceptions that latrines are unclean or spiritually inappropriate persist, as reflected in one respondent's statement:

“Some people don't want toilets in their homes. They see it as dirty and against tradition.”

This supports findings by Giné-Garriga et al. (2020), who highlighted the enduring influence of cultural norms on sanitation behaviours in rural Africa.

In addition to these core challenges, issues of inclusivity and community conflicts emerged as secondary obstacles. Only 36.7% of respondents felt that CLTS adequately catered to the needs of vulnerable groups such as the elderly and disabled, while 45.8% were uncertain, suggesting limited awareness or action on inclusive sanitation. This is problematic as inaccessible facilities exclude those most in need, a concern echoed by Kamal et al. (2021), who emphasised the necessity of incorporating disability-friendly designs into sanitation programmes.

Conflicts related to CLTS were also reported by 25.8% of respondents, stemming from disputes over land allocation for latrines, enforcement of open defecation bans, and resentment from poorer households unable to comply. A local leader pointed out:

“There are places where people argue over where to put toilets. Some say it should be communal, others want it in private homes.”

According to Roma and Pugh (2021), sanitation-related conflicts often arise when policies are introduced without full community consensus. This suggests that greater engagement and negotiation with community members could reduce disputes.

That notwithstanding, several interviewees emphasised that while sanitation awareness has increased, sustained behaviour change remains a challenge. A key concern was low male participation in sanitation activities:



“Women and youth are the ones who clean. The elderly men rarely participate.”

Another sustainability issue was the lack of long-term monitoring. One interviewee warned:

“If sanitation officers stop visiting, people might return to their old ways.”

This supports survey data showing that some community members feel CLTS enforcement is weakening over time. Venkataramanan et al. (2018) emphasised that regular follow-ups and continued community engagement are necessary to ensure sanitation improvements are maintained.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter presents the summary of findings, conclusions and recommendations for future studies. The findings are given in line with the specific objectives of the study, which were to assess the extent of CLTS implementation, determine its impact on sanitation practices, and determine challenges in implementation.

5.1 Summary of Key Findings

5.1.1 Extent of CLTS Implementation in the Tamale Metropolis

The study found that the implementation of CLTS in the Tamale Metropolis has been partially successful. Some communities have been certified open defecation-free (ODF), while others fall behind because there is no frequent enforcement and monitoring. Community-led initiatives and trained facilitators have been successful in some communities. Funding and logistical issues, however, have hindered large-scale implementation.



5.1.2 Impact of CLTS on Sanitation behaviour and Practices

Findings from the study revealed that CLTS has been able to sensitize towards good sanitation practice more so, with resultant improvements in hand-washing and latrine construction habits. These have had a tendency of reverting, however, owing to socio-economic limitations, maintenance limitations, and insufficient reinforcement by government authorities. Reversion to earlier norms among the residents has been facilitated by a lack of continued sensitization and reinforcement.

5.1.3 Challenges in the Implementation of CLTS

The study showed that several barriers were faced in the process of CLTS implementation in the Tamale Metropolis including poor funding, poor technical support, resistance to culture, and poor policy enforcement on sanitation. The research also revealed that some of the families could not build latrines due to a shortage of money, while others cited the unavailability of land. Poor coordination among stakeholders, such as the non-governmental organizations and local government offices, also hindered the process further.

5.2 Conclusion

The research revealed that even though CLTS has been successful in sanitation and hygiene promotion in the Tamale Metropolis, there are some areas that require change for gaining long-term sustainability. CLTS success relies on the active participation of communities, proper mobilisation of resources, and the proper implementation of policies. Mitigating the resource and socio-cultural constraints plays a central role in gaining open defecation-free status by every community.



5.3 Recommendations

The following are the proposed recommendations from the conclusions and findings:

1. Public information campaigns, along with non-government organizations (NGOs) and community leaders, should be complemented by the local government in promoting the need for proper sanitation. This could be done by conducting frequent community meetings, workshops, and incorporating sanitation education in school curriculum.
2. The Ministry of Sanitation and Water Resources and local authorities must give top priority to the construction and maintenance of improved sanitation facilities, especially for disadvantaged groups. Public-private partnerships can be used to offer sustainable infrastructure that is appropriate to the community.
3. There should be an effective monitoring system by the Environmental Health and Sanitation Agency to evaluate the impact of sanitation programmes. This can involve periodic checks, feedback from the community, and prompt intervention measures to tackle arising issues in the implementation of community-managed sanitation programmes.
4. Policymakers need to institute incentives like tax exemptions or subsidies to get the households to invest in good sanitation facilities. Sanitation bylaws have to be enforced by the Metropolitan Assembly to maintain compliance and give assistance to low-income families to build latrines and other necessary sanitation facilities.



5.5 Suggestions for Future Research

Future studies should investigate the long-term behavioural sustainability of CLTS and how socio-economic determinants can affect adoption of sanitation. Comparative studies between urban and rural CLTS programmes could also offer insights into context-specific challenges and solutions.

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APPENDIX

QUESTIONNAIRE

UNIVERSITY FOR DEVELOPMENT STUDIES

FACULTY OF SUSTAINABLE DEVELOPMENT STUDIES

Dear Participant,

Thank you for taking the time to participate in this study. This research seeks to assess the implementation, impact, challenges, and sustainability of the Community-Led Total Sanitation (CLTS) program in the Tamale Metropolis. Your responses will help provide valuable insights into how the program has influenced sanitation practices and identify strategies to enhance its effectiveness and sustainability.

The questionnaire is divided into sections that cover various aspects of the CLTS program, including:

1. Awareness and participation.
2. Changes in sanitation behaviors and practices.
3. Challenges encountered during implementation.
4. Recommendations for sustainability and effectiveness.

Your participation in this survey is entirely voluntary, and all information you provide will remain confidential and anonymous. The data will be used solely for academic purposes and will be reported in a way that ensures individual responses cannot be identified. The questionnaire should take approximately 15–20 minutes to complete. Please answer all questions honestly based on your experiences and perceptions. If you have any questions or concerns regarding this survey, please feel free to contact the researcher using the details below:

Researcher's Name: Iddrisu Rumaisha Yiribila

Contact: 0260834680

Thank you for your time and valuable contribution to this study.

INSTRUCTIONS: *Please tick (✓) in the below boxes appropriately;*

SECTION A: RESPONDENT DEMOGRAPHICS

1. **Gender:** Male []

Female []

2. **Age:** _____ years

3. **Educational Level:**

- No formal education []
- Primary education []
- Secondary education []
- Tertiary education []

4. **Occupation:** _____

5. **Household Size:** _____ members

SECTION B: AWARENESS AND PARTICIPATION IN CLTS



6. Are you aware of the CLTS program in your community?
- Yes []
 - No []
7. If yes, how did you first learn about the CLTS program?
- Community meetings []
 - Local leaders []
 - Neighbors []
 - Media (radio, TV) []
8. Have you participated in any CLTS activities (e.g., community meetings, sanitation workshops)?
- Yes []
 - No []
9. If yes, how frequently do you attend these activities?
- Always []
 - Often []
 - Sometimes []
 - Rarely []
 - Never []

SECTION C: SANITATION PRACTICES AND BEHAVIORAL CHANGES

10. What type of sanitation facility does your household primarily use?
- Open defecation []
 - Shared latrine []
 - Private latrine []
11. Since the introduction of the CLTS program, have you constructed a latrine for your household?
- Yes []
 - No []
12. How often do you wash your hands with soap after defecation?



- Always []
- Often []
- Sometimes []
- Rarely []
- Never []

13. Have you noticed a change in your community's sanitation practices since the CLTS program began?

- Significant improvement []
- Some improvement []
- No change []
- Worsened []

14. In your opinion, what motivates households in your community to adopt improved sanitation practices? (Select all that apply)

- Health benefits []
- Social acceptance []
- Financial incentives []
- Peer pressure []

SECTION D: CHALLENGES IN CLTS IMPLEMENTATION

15. What challenges have you encountered in constructing or maintaining a latrine? (Select all that apply)

- Financial constraints []
- Lack of materials []
- Technical skills []
- Cultural beliefs []

16. Do you feel that the CLTS program adequately addresses the specific needs of vulnerable groups (e.g., elderly, disabled) in your community?

- Yes []
- No []
- Not sure []



17. Have there been any conflicts or disagreements in your community related to the CLTS program?

- Yes []
- No []

18. If yes, what were the main issues?

SECTION E: STRATEGIES FOR SUSTAINABILITY AND EFFECTIVENESS

19. What measures do you think would enhance the sustainability of improved sanitation practices in your community? (Select all that apply)

- Continuous education and awareness []
- Provision of subsidies or financial assistance []
- Regular monitoring and evaluation []
- Community-led maintenance initiatives []

20. Are there traditional or cultural practices in your community that support improved sanitation?

- Yes []
- No []

21. If yes, please describe:

22. What role do you think local leaders should play in promoting sanitation practices?

- Leading by example []
- Organizing community meetings []
- Enforcing sanitation bylaws []

23. In your opinion, how can the CLTS program be improved to better serve your community?

SECTION F: OPEN FEEDBACK



24. Please provide any additional comments or suggestions regarding the CLTS program and sanitation practices in your community:
-

INTERVIEW GUIDE FOR THE QUALITATIVE EXPLORATION OF CLTS PROGRAMME

Thank you for agreeing to participate in this interview. The purpose of this interview is to understand your experiences and perspectives on the Community-Led Total Sanitation (CLTS) program in the Tamale Metropolis. Your responses will remain confidential and will only be used for academic purposes. Please you may choose not to answer any question or withdraw at any time.

1. Extent of CLTS Implementation

- **Awareness:**
 - Can you describe how the CLTS program was introduced to your community?
 - How were community members informed or mobilized to participate?
- **Engagement:**
 - How would you describe the participation level of the community in the CLTS program activities?
 - Are there any groups (e.g., women, youth, or vulnerable populations) that are more involved than others? Why?
- **Coverage:**



- To what extent do you feel the program has reached all members of the community?
- Are there any notable gaps in coverage or inclusion?

2. Impact on Sanitation Behaviors and Practices

- **Behavioral Changes:**

- In your view, what changes in sanitation practices have occurred in the community since the introduction of the CLTS program?
- Are these changes consistent across all households?

- **Community Ownership:**

- Do you believe community members take ownership of sanitation improvements (e.g., latrine construction, handwashing)?
- What motivates or hinders their commitment to these changes?

- **Health Outcomes:**

- Have you observed any changes in health outcomes (e.g., reduction in waterborne diseases) as a result of the program?

3. Challenges Associated with CLTS Implementation

- **Logistical Barriers:**

- What challenges have you faced in implementing the CLTS program (e.g., resources, infrastructure)?
- How have these challenges affected the program's success?

- **Cultural and Social Factors:**

- Are there cultural or social norms that conflict with the program's objectives?
- How has the community responded to efforts to change long-standing sanitation practices?

- **Sustainability Issues:**

- What difficulties do you foresee in maintaining the improvements achieved through the CLTS program?



4. Strategies for Sustainability and Effectiveness

- **Recommendations:**

- What strategies do you think would improve the effectiveness of the CLTS program in your community?
- Are there specific initiatives or resources that you feel are necessary for sustaining sanitation practices?

- **Role of Stakeholders:**

- What role do you think local leaders, NGOs, and government agencies should play in supporting the CLTS program?
- How can community members contribute to the program's long-term success?

- **Innovative Ideas:**

- Do you have any innovative suggestions for enhancing the adoption of sanitation practices in your community?

CLOSING:

Is there anything else you would like to share about your experiences with the CLTS programme?

Thank you for your time and valuable insights.

