UNIVERSITY FOR DEVELOPMENT STUDIES

DYNAMICS OF SUSTAINABLE BEHAVIOUR CHANGE IN SANITATION PRACTICES IN NADOWLI/KALEO DISTRICT

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BY

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A THESIS SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL EXTENSION, RURAL DEVELOPMENT & GENDER STUDIES, FACULTY OF AGRIBUSINESS AND COMMUNICATION SCIENCES, UNIVERSITY FOR DEVELOPMENT STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PHILOSOPHY DEGREE IN INNOVATION COMMUNICATION

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DECLARATION

Student

I, Bismark Kwaku Anyarayor, hereby declare that this thesis, **"**Dynamics of Sustainable Behaviour Change in Sanitation Practices in Nadowli/Kaleo district" is the result of my own original work and that no part of it has been presented for another degree in this University or elsewhere.

Signature……. Date ……

Name: Bismark Kwaku Anyarayor

Supervisors

I hereby declare that the preparation and presentation of the thesis **"**Dynamics of Sustainable Behaviour Change in Sanitation Practices in Nadowli/Kaleo District" was supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

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ABSTRACT

The study investigated the dynamics of sustainable behaviour change in sanitation practices in Nadowli-Kaleo District in Upper West Region of Ghana. The study is guided by the following research objectives: (i) explore why some rural people adopt sustainable ODF innovation but others do not. (ii) determine the effects of sustaining and not sustaining ODF adoption in society (iii) determine factors that affect the adoption and sustenance of ODF innovation in the Nadowli/Kaleo District. A qualitative research design was used to collect data from 252 out of 550 households across seven area councils in the Nadowli/Kaleo District. An interview guide, non-participant observation and key informant interviews were used to collect qualitative data. The study established that: low income levels accounted for households' inability to sustain and utilize latrines. The dynamics adduced for influencing sustainable behaviour change in ODF innovation are health concerns, safety, privacy, comfort, and dignity. Also cultural beliefs contributed to resistance and impeded the adoption and sustenance of ODF. A policy be introduced by actors in the WASH sector to assist poor households in a form of free distribution of materials for the construction of latrines which should reach the poorest households. For unhygienic environment and the outbreak of diseases because of unsustainable behaviour in the adoption of ODF, Behaviour Change Communication (BBC) strategies be intensified to encourage collective response in the adoption and sustenance of ODF innovation to avoid diseases outbreak. Also stakeholders in the WASH sector intensify education to eliminate the cultural fear of people in the use of latrines. Education should be done in collaboration with the traditional leaders of the communities in order to reduce

resistance and promote acceptance. Gender and socio-cultural issues should be factored into CLTS implementation process so as to make it attractive and acceptable.

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DEDICATION

I dedicate this work to my lovely wife, Rebecca Attah Nyocharapo for her profound support even in difficult times, my children; Gideon Kwesi Anyarayor and Kevin Nana kwabena Kameasen Anyarayor and the entire Anyarayor family.

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BCC	Behaviour Change Communication
CARE	Cooperative Assistance for Relief Everywhere
CLTS	Community-Led Total Sanitation
CWSA	Community Water and Sanitation Agency
DANIDA	Danish Development Agency
GDP	Gross Domestic Product
GoG	Government of Ghana
GHS	Ghana Health Service
GSS	Ghana Statistical Service
HH	Household
IIED	the International Institute of Environment and Development
KVIP	Kumasi Ventilated Improved Latrine
MDG	Millennium Development Goal
MLGRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal and District Assemblies
MoFEP	Ministry of Finance and Economic Planning
MWRWH	Ministry of Water Resources, Works and Housing
NGO	Non-Governmental Organization
OD	Open Defaecation
ODF	Open Defaecation Free

PRA	Participatory Rural Appraisal
RESA	Region of East and Southern Africa
SAPs	Structural Adjustment Programmes
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United State Agency for International Development
VIP	Ventilated Pit Latrine
WASH	Water, Sanitation and Hygiene
WA-WASH	West Africa- Water Sanitation and Hygiene
WHO	World Health Organization
WSP	Water and Sanitation Programme

CHAPTER ONE

1.0 GENERAL INTRODUCTION

1.1 BACKGROUND OF STUDY

Sanitation is essential to sustainable development and poverty reduction. The significance of improved sanitation in safeguarding the health and well–being of human kind has been well researched (Cairncross; 2003, WHO, 2004, Moe and Rheingans, 2006). Countries in the Global South have sanitation as a major developmental challenge which has impacted negatively on the progress in health, gender equity, and socio-economic development (UNICEF, 2009). Statistics across Global South nations estimate that 2.5 billion people including 840 million children do not use improved sanitation and therefore practice open defaecation. WHO (2000) defined Improved Sanitation as facilities that ensure hygienic separation of human excreta from human contact. UNICEF (2009) further indicated that improved sanitation includes flush and pour flush toilets with piped sewer systems or septic tanks, soak away pits, ventilated improved pit latrines, pit latrines with slabs, and composting toilets. Not included in the improved sanitation definition are any of the above facilities that are shared between more than one household or are public facilities. Open defaecation threatens public health, leads to high expenditure on health care, impacts negatively on social economic development and increases levels of poverty among rural societies where it is mostly practiced (UNICEF, 2009). In Africa, the number of people in rural areas without improved water supply and sanitation is six times higher than in urban populations (Baur and Woodhouse, 2009).

Rural areas are typically remote, have small and dispersed populations, and few resources. These particulars vary greatly from place to place but the essential problems are the same: no reliable source of treated water and inadequate sanitation facilities. Water and sanitation are linked because contaminated water may result in water borne diseases, such as viral hepatitis, typhoid, cholera, dysentery and other diseases that cause diarrhoea. Repeated diarrhoea cases is an underlying cause of malnutrition, leading to weakened immune systems and impaired growth of human development. Women, adolescent girls, children and infants suffer tremendously from the use of unclean water, inadequate hygiene and sanitation facilities (UNICEF, 2009).

The Government of Ghana (GoG) Compact on Sanitation and Water for All (2010), shows that the country will not attain the MDG target on the provision of water and sanitation and has to increase coverage from 18% in 2008 to 61.5% by 2015 for urban areas and from 7% in 2008 to 55% by 2015 for rural areas. The nationwide coverage of the population in Ghana using improved water and sanitation in urban areas as at 1990 was 34% and rural areas was 7%. Also as at 2008 the nationwide coverage was 56% and 13% respectively for urban and rural areas falling short of the 78% for water and 54% for sanitation targets of the MDG 7 on water and sanitation by 2015. Furthermore, the Water and Sanitation Programme (WSP) report on Economic Impact of Poor Sanitation in Africa (2012), indicated that poor sanitation cost Ghana GH¢420 million equivalent to US$290 million. This represents 1.6% of national Gross Domestic Product (GDP). The poor state of

sanitation of the country has a direct relation with the health status of the population. According to GHS (2010) reports on Ghana Factsheets of Health Statistics, malaria and diarrhoea are the first and fourth major causes of death among children under five years of age accounting for 26% and 9% respectively in 2008. The report also reveals that malaria accounted for 11% and diarrhoea 5% in 2002 of all deaths of all age categories in the country. The 2010 Factsheets of Health Statistics further revealed that a total expenditure of 7.2% and 8.3% of Ghana's Gross Domestic Product (GDP) in 2000 and 2007 were respectively expended in the health sector. Though there is a direct relation between improved sanitation and improved health, the percentage of total expenditure of GDP on health far exceeds the government's 0.5% commitment of total expenditure of GDP on sanitation. This implies that Ghana focuses more on curative health care than on preventive health care. Because of the huge sum of money spent on sanitation, a fundamentally new approach to sanitation will be needed if the aim is to provide improved sanitation, healthy labour force and satisfy the sanitation needs of the citizenry that will sustain livelihoods.

Several strategies were used by Government of Ghana and other non-governmental organizations to address open defaecation problems in rural communities but were concentrated on the provision of sanitation facilities. "Supply Driven" strategy was used mainly in the 1960s with the centralization drive by government. This approach concentrated on the supply of sanitation facilities and focused mainly on the design and construction of sanitation facilities based on the perceived needs of the people. The perceived needs are linked to improving the health status of the people, however, little

consideration was given to demand for the sustainability of the facilities. As in many countries, the effectiveness of "supply-led" approaches has been called into question (Robinson, 2007 cited in Carrard, Pedi, Willetts and Powell; 2009). This calls for different ways of handling sanitation issues. The failures of "Supply- Led" has brought about "demand-responsive" strategy.

Demand-responsive, is where sanitation users decide to select preferred services and contribute towards the capital costs of their sanitation infrastructure and full operation and maintenance costs. In furtherance to this is the decentralized planning, implementation and management of services by beneficiary communities and districts. This has resulted in the reduction of governments' role in providing sanitation services to all citizens and made the communities assume full ownership of their facilities. Demand responsive as an approach to sanitation is to treat sanitation as an economic good, so that people receive the type of sanitation services for which they are willing and able to pay (Kleemeier; 2001, Wellington, Larbi and Appiah2011). Accompanying the demand responsive was the private good component of sanitation. Private individuals are allowed to build their own toilet facilities for private gains.

From 2007, however, stakeholders: Metropolitan, Municipal and District Assemblies (MMDAs), Non-Governmental Organizations (NGOs) in water and sanitation sector in Ghana begun using the Community-Led Total Sanitation (CLTS) strategy (MLGRD & MWRWH, 2009). CLTS was pioneered by Kamal Kar, an independent development

consultant from India in 1999. CLTS spurs community members to action through an 'ignition' moment when they are 'triggered' by collectively realizing that open defaecation amounts to eating each other's faeces. CLTS was initiated in Africa in 2002, but the actual work started in 2007, when Kamal Kar facilitated two CLTS trainings in Tanzania and Ethiopia for Plan-Region of East and Southern Africa (IIED, 2010). The International Institute of Environment and Development report (IIED, 2010) stated that, CLTS is an integrated approach to achieving and sustaining open defaecation free status. Embedded in CLTS is the facilitation of the communities' own analysis of their practices of defaecation and consequences, culminating to collective action to attain Open Defaecation Free (ODF) environment. CLTS does not offer subsidies for communities to build latrines, instead helps communities recognize the health problems associated with open defaecation.

Other Water, Sanitation and Hygiene (WASH) NGOs such as Cooperative Assistance for Relief Everywhere (CARE), United State Agency for International Development (USAID), West Africa-Water Sanitation and Hygiene (WA-WASH) and United Nations Children's Fund (UNICEF) have also gone on to organize "The Water and Sanitation Market" where diverse technological options for providing improved latrines are displayed for community members to choose the option they have financial capacity to construct and also fit their local conditions. Mukherjee, Amin, Saputra, Effentrif, and Djoko (2012) defined sanitation market as the use of marketing principles to generate demand and facilitate supply of improved sanitation, thereby increasing uptake. It includes understanding the target market using formative research and supply capacity assessment, developing behaviour change communication strategies, and getting the marketing mix

right, thus, product, price, place and promotion. Some Water, Sanitation and Hygiene (WASH) NGOs have facilitated in sanitation programmes in an attempt to create awareness about the need to build Kumasi Ventilated Improved Latrine (KVIPs), Ventilated Pit Latrines (VIP) with pipe and Pit latrines for households in Nadowli/Kaleo district. Households were triggered to respond positively by constructing their own household latrines. The essence of governments, development practitioners and NGOs adopting CLTS as a new approach to zero open defaecation and hundred percent (100%) of excreta hygienically contained situation is to establish various community-based sanitation programmes. CLTS strategy is meant to inculcate changed behaviours towards practicing good sanitation, and personal hygiene. CLTS emphasizes on the attainment of Open Defaecation Free (ODF) environment; through the use of local materials to construct simple sanitation innovations and the sustained use of these innovations (Kar and Chambers, 2008). All these efforts by GoG and its development partners were meant to have positive transformation in the society and in the attitude and behaviour of community members. Numerous efforts that is, sensitizing communities on the need for them to construct their own household latrines, sanitation education to address cultural and religious fears of communities on the use of built latrine facilities, Government of Ghana (GoG) commitment of funds, sensitization of communities on the implications of open defaecation to their health, maintenance culture, were put in by actors to improve water and sanitation processes– all of which are rooted in bringing about sustainable behaviour change in the adoption of sanitation practices. In furtherance, it is to stimulate positive

household response to construct and use household latrines, and the fact that improved sanitation is important not only to human health but economic and social development.

These efforts by GOG and development partners fall in line with the Millennium Development Goals (MDGs) targets which were established by the United Nations (UN) to address worldwide poverty. Under MDG 7c, target was set for the provision of clean drinking water: specifically, to "halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation" (UN, 2011). The Millennium Declaration of 2000 and the subsequent effort to achieve the MDGs gave new impetus to long -standing efforts by governments and other development actors to enhance access to water and improve sanitation. Admitting the deficit in achieving the MDGs in sanitation by 2015, the President of Ghana announced that Government of Ghana (GOG) is taking a conscious decision and some adhoc measures to step up its sanitation agenda. These efforts led to the launching of 80 vehicles for the commencement of a National Sanitation Programme by President John Dramani Mahama with the assurance that government would work hard to account for the deficit in sanitation programmes. He also alluded to the fact that open defaecation is 'an attitudinal thing' and that CLTS had come to stay since it has the catalyst to change people's behaviour permanently **(**Ghana News Agency-GNA, 2012)

1.2 Statement of the problem

The 2010 Ghana Population and Housing Census (GSS, 2012) revealed that 72.9% of communities in Nadowli/Kaleo district have no proper sanitation (toilet) facilities. The

implementation of CLTS programme by GoG and its development partners in the district in 2010 led to the construction of some innovative toilet facilities like: pit latrines, VIP, KVIP and Open Soak Away Pit, among others in Nadowli/Kaleo district. The implementation of CLTS was to help effect changed behaviour and bring about ODF environment amongst the citizenry. Mosler (2012) indicated that public health practitioners, policy stakeholders and practitioner literature on open defaecation had increasingly agreed that it is not enough to provide people with water and sanitation hardware.

It is important to note that despite all the numerous efforts put in by actors of the sanitation sector to stimulate positive household response to construct and use household latrines, these puzzling findings occurred in communities where the CLTS programme had taken place in the Nadowli-Kaleo district. According to the UNICEF reports after the implementation of CLTS programme, 34% of households in the communities adopted and sustained ODF innovation, while 32% of households started the programme but relapsed to Open Defaecation (OD) and 34% of households did not adopt the programme and still prefer defaecating openly (UNICEF, 2014). Though all these groups of people fully know the health implications of OD, their attitudes made it impossible to achieve the desired goals of CLTS. CLTS as a sanitation strategy requires changes in mindsets and behaviour at all levels (IIED, 2010). Though through CLTS the software aspect of sanitation delivery is tackled, in an attempt to encouraged behaviour change alongside the sanitation hardware, more need to be done to identify the various dynamics in human

behaviour. The study sought to find out why the patterns of behaviour change exist among people in the Nadowli/Kaleo District of the Upper West region. The identification of the various patterns of human behaviour in the adoption of ODF innovation will stimulate programmes that will help sustain behaviour change in ODF innovation. Thus leading to open defaecation free environment and help reduce if not eliminate diseases related to open defaecation and improve the health statuses of people in the study area.

1.3 Research Questions

The general question which this thesis addressed is: centered on the determinants that stimulate patterns of behaviour change of people in the adoption of ODF innovation in Nadowli/Kaleo District

The study sought to address the following specific and interrelated research questions.

i. Why do some people adopt ODF innovation and sustain it but others do not?
ii. Are there differences in perceptions among people about the adoption and sustenance of ODF innovation in Nadowli/Kaleo District?
iii. What are the perceived effects of sustaining and not sustaining ODF innovation in society?

1.4 Objectives of the Study

The main objective of this study was: to identify the determinants that stimulate patterns of behaviour change in the adoption of ODF innovation in the Nadowli/Kaleo District.

The specific Objectives of the study were to:

i. Explore why some people adopt ODF innovation and sustain it but others do not.

ii. Determine the differences in perceptions by people about the adoption and sustenance of ODF innovation in the Nadowli/Kaleo District.

iii. Determine the perceived effects of sustaining and not sustaining ODF innovation in society.

1.5 Relevance of the Study

The study identifies patterns of human behaviour so as to factor that into ODF programmes. Findings of the study will further be useful to actors in the sanitation sector in the formulation of alternative strategies or methods to the existing ones to ensure sustainable behaviour change in open defaecation. This will serve as a major roadmap for local government, departments and development agencies in roling out programmes to curb open defaecation in the district in particular and Ghana as a whole. Most importantly, this study gives a better insight into how traditional belief systems in a society positively or negatively impact the sustainability of CLTS programme. Again, the study provides information on the influence of persuasive communication strategy in the adoption of ODF innovation. The efficient design of appropriate behaviour change communication strategy in the triggering stages of CLTS implementation will collectively help to carry everybody along and increase the rate of adoption. Finally the study provides information which will serve as a basis for further research into issues of facilitating the building of

latrines and enhancing sustainable behaviuor change to achieve ODF in other rural communities.

1.6 Organization of the Study.

This thesis is organized into five chapters. Chapter one comprises of introduction which focuses on the background of study, problem statement, research questions, and objectives of the study. Also in chapter one is the significance of the study and organization of the thesis. Again key concepts employed in the study are defined to avoid ambiguities in the use of similar terms elsewhere for other purposes. Chapter two focuses on the review of relevant literature related to the research topic and also includes the framework on which the study is conceptualized. Chapter three covers methodology which encompasses: study area, research design, data types, data sources, study population, sampling techniques and sample size, methods of collecting data and data analysis. The results of the study, discussion and interpretation are reported in chapter four and finally, chapter five summarises the major findings, draws relevant conclusions based on the findings, make recommendations for policy and suggestions for further research.

1.7 Definitions of Key Terms

Sanitation: In this study sanitation refers to the building of toilets and safe disposal of human excreta in the built toilet.

Community-Led Total Sanitation (CLTS): This is an integrated approach where communities adopt a sanitation strategy to achieve and sustain open defaecation free (ODF) status.

Total sanitation: Zero open defaecation and 100 per cent hygienically excreta free environment

Innovation: Building of toilet facilities where faeces are exposed into or practicing dig and burry

Open Defaecation (OD): Defaecating in the open and leaving faeces exposed in the environment.

Open Defaecation Free (ODF): Is defined basically as the absence of the practice of open defaecation in a community, region or nation.

The sanitation ladder: A range of different latrines options that people can adopt, no matter their financial circumstances till they reach improved sanitation statuses.

Natural Leaders: Refers to activists and enthusiasts who emerge and take the lead during CLTS processes. They could be men, women and children.

Sanitation marketing: A marketing approach to stimulate demand and supply for sanitation products and services so that households could use their own resources to develop the range of choices that satisfy their toilet facility needs.

Pre-triggering: The first stage of the CLTS process when the change agent arrives at the

village and gives explanation as to the purpose of the visit and building rapport with the community.

Triggering: Facilitated process that usually include a community meeting, mapping, a transect walk to areas of open defaecation and exercises that illustrate the faecal-oral contamination route.

Ignition moment: Period during triggering when there is a realization that due to open defaecation all are ingesting each other's faeces and that this will continue as long as open defaecation is allowed to go on.

Community: A group of people living in a common geographical location, ruled by a set of norms where solidarity is the guiding principle, with a heterogeneous socio-economic structure based on a common development goal.

Household (HH): As far as this research is concerned a household consist of a person or a group of people who live together in the same house or compound and share the same facilities and eat from the same pot.

Sustainable behaviour change: Refers to the degree to which people in a specific area transform their sanitation behaviour practices, construct their own latrines, and continue to adhere to new ways of preventing human faeces from entering the environment in the face of internal and external shocks and stresses.

Unsustainable behaviour change; Refers to the change in sanitation behaviour where people construct toilet facility, use it but could not maintain it and later relapsed to the practice of open defaecation.

Sanitation behaviours. This includes defaecation practices, latrine use, maintenance and upgrading and encouraging dependents to continuously use the latrines.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter describes the state-of-the-art literature on Dynamics of Sustainable Behaviour Change in Sanitation Practices. To meet the objectives of this study, it is necessary to identify common themes and prevailing theories pertaining to sustainable behaviour change in the global and local context. Literature on Open defaecation, access to toilet facilities or behaviour problem, Community-Led Total Sanitation (CLTS), dynamics of sustainable and unsustainable behaviour change in the adoption of Open Defaecation Free (ODF), community participation and sustainable behaviour change in sanitation practices, sustainable social change behaviour and gender dimensions in sustainable behaviour change in sanitation practices situations are reviewed upon which a framework is conceptualized in this chapter.

2. 2 Open Defaecation: Access to Toilet Facilities or Behaviour Problem?

UNICEF, (2008) noted that improved sanitation of a given locality can be said to be a function of the total toilet facility coverage of the said locality. According to (UNICEF and WHO, 2013), since 1990, almost 1.9 billion people have gained access to sanitation facilities. By 2011, almost two thirds (64%) of the world, relied on improved sanitation facilities. The greatest progress has been made in Eastern Asia, where sanitation coverage has increased from 27% in 1990 to 67% in 2011. This amounts to more than 626 million people gaining access to improved sanitation facilities over a 21-year period, but current

trends show that sub-Saharan Africa and Southern Asia still struggle with low sanitation coverage. WHO/UNICEF Joint Monitoring Programme (2010) reports that about 2.6 billion people worldwide do not have access to basic sanitation, 1.5 million people die each year as a results of sanitation related diseases like diarrhoea and cholera (see Table 2.1). The report further indicates that, most of these people live in East Asia and Sub–Saharan Africa. Sanitation coverage in Africa has improved with about 60% of the continent's population having access to sanitation coverage with a varying coverage of 84% in urban areas and 45% in rural areas (WHO/UNICEF JMP, 2010).

Table 2.1: Sanitation Coverage by Region, 2000.

Regions	**Sanitation Coverage (%)**
North America	100
Europe	92
Oceania	93
Latin America and Caribbean	78
Asia	48
Africa	60

Source: WHO/UNICEF/WSSCC, 2010.

Table 2.1 demonstrates that Africa's sanitation coverage as at the year 2000 is more than that of Asia but Africa still has a whopping 40% of its population not having sanitation coverage and this has major developmental concerns. In sub-Saharan Africa, 44% of the population uses either shared or unimproved facilities, and an estimated 26% practices open defaecation while in Southern Asia, the proportion of the population using shared or unimproved facilities has declined to 18 per cent but open defaecation remains the highest in that region (39%). Conventional approaches in South Asia have tackled the

issue of poor sanitation by attempting to raise awareness and emphasize the benefits of toilet usage. This marketing of sanitation in order to create individual demand has not resulted in significant progress (WSP Mission, 2007).

According to the WHO/UNICEF Joint Monitoring Programme on Water and Sanitation (2008) 360 million representing 60% of Africans had access to improved sanitation facilities in 2006. Coverage increased from 33% in 1990 to 38% in 2006. This represents a 5% improvement in access to improved sanitation facilities over a long period of 16 years. The report further reveals that, Africa's population without access to sanitation has increased by 153 million, from 430 million in 1990 to 583 million in 2006. The report concludes that, the rate at which Africans gained access to sanitation (153 million people since 1990) is insufficient to meeting the MDG sanitation target which seeks to halve by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.

WHO/UNICEF (2012), Joint Monitoring Programme reports on sanitation coverage in West Africa reveals that in Ghana, sanitation coverage is on the low side. The reports indicate that as at 2010, only 14% of the country's total population had access to improved sanitation facility compared to 7% in 1990 whilst 19% of the population practice open defaecation compared to 22% as at 1990 (see Table 2.2). Comparing the rate of sanitation coverage to population growth, Ghana can be said to be off track in attaining the MDG7,

target 7C which seeks to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation. It is therefore not surprising that the poor sanitation coverage has reflected in the health condition of the country. According to the Ghana Health Service (GHS) (2010) report on Health Fact and Figures, malaria and diarrhoea diseases account for 58.1% and 5.1% of all hospital admissions for children under 5 years. The report further indicates that, malaria and diarrhoea related diseases both account for 20.2% and 3.3% respectively of causes of death for children under 5 years. It would therefore be of great relevance if sanitation is improved so as to prevent needless and avoidable child deaths.

Table 2.2: Total Toilet Facilities Coverage of Ghana, 2010.

Year	Improved (%)	Shared (%)	Unimproved (%)	Open Defaecation (%)
1990	7	29	42	22
1995	9	35	34	22
2000	10	43	26	21
2005	12	51	16	21
2010	14	58	9	19

Source: WHO/UNICEF Joint Monitoring Program, 2012.

In spite of the tremendous efforts made the world over to improve access to sanitation facilities, the United Nations estimates that there are 2.5 billion people who still do not use improved toilet facilities and a little over 1 billion practiced open defaecation. Open defaecation is one of the main causes of diarrhoea, which results in the deaths of more than 750,000 children under age 5 every year (UNICEF and WHO, 2012). GSS (2012) indicated that many district authorities in Ghana have been grappling with the problem

of sanitation, especially the disposal of solid waste. Most households (72.9%) use bush or open field as toilet facility. A large majority (82.9%) of households in rural areas in Ghana use OD as a source of disposing their faeces.

The trends in the implementation strategies for sanitation programmes has come full circle, from the appropriate "technology-driven interactions" of the 80's through the "participatory approaches" of the 90's to the use of "social marketing" during the first decade of the new millennium. Despite decades of attempts to improve living conditions, diarrhoea still remains a major challenge in developing countries. As past research has shown, the provision of sanitation facilities alone have offered limited success in reducing diarrhoea diseases, but when combined with hygiene behaviour change interventions, incidences can be greatly reduced as espoused by Esrey, Potash, Roberts and Shiff; (1990) and Fewtrell, Kaufmann, Kay, Enanoria, Haller & Colford, (2005). It is for this reason that health promotion is now considered as indispensable aspect of every sanitation programme. Increasingly, practitioners in this field are recognizing the need to monitor and evaluate their projects, not only in respect to the number, quality and maintenance of latrines points provided, but also on social issues such as individual and community behaviour change. Until the need for and benefits of sanitation are realized and internalized, the mere provision of toilet facilities will not achieve total sanitation (WSP, 2012). However, there remains a dearth of rigorous studies that can confidently assert the power of health promotion to achieve sustainable changed behaviour (Curtis and Cairncross, 2005)

Similarly, as has been argued earlier, the mere provision of toilets by either the state or NGOs does not guarantee their use. This is why 'sustainable behaviour change' has emerged as the key focus of agencies and NGOs working on sanitation issues. Kar and Pasteur (2005) emphasized that, it's not about technology, it's about behaviour. Panter-Brick et al. (2006) demonstrates that sanitation interventions should build on existing practices, skills and priorities, recognise the constraints on human behaviour and either feature community mobilisation or target those most receptive to change. They thus argue that sanitation interventions should be culturally compelling, not just appropriate.

According to Panter-Brick et al. (2006) songs were used to trigger behaviour change and motivate people to repair holes in mosquito bed nets which provided an interesting format to disseminate a culturally compelling message. Songs also play a major role in CLTS, for example in Indonesia, in West Sumatra District (Sijunjung), songs and poems were composed by teachers and school children to ending open defaecation had effectively worked in changing people's behaviour to sustain open defaecation free statuses.

A study conducted in Bangladesh in 2013 focusing on hygiene promotion and sanitation behaviour, emphasizing particularly on sustained behaviour change revealed that toilet usage in Seekhad block and other selected 131 communities were above 90%. The report adds that out of 60 households, almost 80% have sustained toilet usage, due to good Behavioural Change Communication (BCC) strategies which has helped witness a positive change in social behaviour towards sanitation and personal hygiene (ISS, 2013).

BCC strategies which includes the use of slogan writings, wall paintings, group discussions, folk media, fair or exhibition, rallies, essay writing or debate, should not only create demands for household, institutional and community toilets but also generate awareness for its usage, and finally sustain behaviour change in sanitation practices in society. Though access to toilet facilities is crucial in ending open defaecation, if conscious effort is not made to change peoples' behaviour about OD, since OD is an age long practice it will be difficult to get people to use the toilet facilities even if they are provided.

2.3 Community-Led Total Sanitation (CLTS)

The Community-Led Total Sanitation (CLTS) approach for tackling the issue of poor sanitation most especially the phenomenon of Open Defaecation (OD) is more recent. Community-Led Total Sanitation (CLTS) represents a radical alternative to conventional top-down approaches to sanitation and offers hope of achieving the Millennium Development Goals (Kar and Chambers, 2008). The theoretical underpins of CLTS emanates from the decentralization programme in the 1980s. Through the introduction of decentralization policy as pointed out by Voorden (2013), sanitation was treated as an economic good; placing emphasis on behaviour-focused approach, where government and support agents facilitate communities' own change processes. Bottom up participatory approach became necessary to address the new challenges of sanitation. Sanitation issues firmly place household participation and involvement as central throughout the life cycle of sanitation projects and that is crucial for the success and sustainability of sanitation projects. This coincided with the notorious Structural

Adjustment Programmes (SAPs) of the 1980s that served to shrink state expenditure and capacity of providing basic services, shifting the focus to the 'community' in rural areas as the locus for action. This shift also derived from the increasing popularity of concepts such as self-reliance and community empowerment. SAPs promoted the idea of self-reliance during the 1980s, with an emerging emphasis on community mobilisation in water sector projects (Srinavasan, 1990; as cited in Movik &Mehta, 2010).

In contrast to state-led initiatives to improve sanitation that tend to focus on hardware and subsidies, CLTS emphasises community action and behaviour change as the most important elements to better sanitation (Movik &Mehta, 2010). It sought to tackle both the "hardware" and the "software" approaches of improving the issues of sanitation. It sprang out of the work done by Kar Kamal in Bangladesh in 1999, and has spread to various countries in Asia and Africa and for that matter Ghana. The objectives of CLTS relies on energising local communities on the issue of open defaecation by inducing a sense of shame. According to Vidya (2012) a study conducted in Uganda reports that, community mapping, the walk of shame, and photographs of "shit eaters" were effective tools in igniting action during the triggering process. However, an anthropological study of CLTS in Vietnam found a generational difference on how shaming and embarrassment impacted on changing people's behaviour, with young people more easily embarrassed about open defaecation, and old people more stuck to their old ways (Brown, 2009; as cited in Vidya, 2012).

Kar and Chambers, (2008) opined that, CLTS as an approach focuses on igniting a social change in sanitation behaviour through community participation rather than constructing toilets. Through the use of Participatory Rural Appraisal (PRA) methods, community members analyse their own sanitation profile including the extent of open defaecation and the spread of fecal-oral contamination that detrimentally affects every one of them. CLTS is a departure from the mere provision of sanitation facilities to a more defined way of changing peoples' behaviour towards both the construction of toilet facilities and sustain use (Kar and chambers, 2008). CLTS is an innovative approach for mobilizing communities to completely eliminate Open Defaecation (OD). It does this through a process of social participation. It concentrates on the whole community rather than on individual behaviours (Lyla and Mehta, 2010). CLTS as an approach develops the capacity of the community to recognize the collective benefits of stopping open defaecation and encourage a more cooperative approach in dealing with issues of OD. CLTS is committed to establishing a collective sanitation change behaviour of beneficiary communities (Kar and Chambers, 2008).

Kar (2005) categorized the steps in rolling out CLTS into four major steps: pre-triggering, triggering, post-triggering and attainment of ODF status and scaling up. The pre-triggering stage of the CLTS process is a very important stage of the process. The success of this stage is highly crucial to triggering a positive response from local communities. At this stage, the behaviour change agent establishes rapport with the community members and also identifies leaders who range from legitimate leaders, like chiefs, and

what is known as natural leaders, which include persons with respect in the community (Kar et al., 2008). The triggering stage of the CLTS is embedded in a process of stimulating a collective sense of disgust and shame among community members as they confront the crucial fact about mass open defaecation and its negative impact on their entire community. The aim of the CLTS process at this stage is to trigger a positive response from communities by letting them understand that they are "ingesting other people's shit". The goal of the change agent at this stage is to help communities understand that open defaecation has disgusting consequences and creates an unpleasant environment (Kar, 2005). Once this is done, it is then up to the communities to decide what action to take to address the situation. The post triggering stage is a crucial stage as it builds upon the gains of the triggering stage. The post triggering stage is where communities either decide to act together to stop open defaecation or express doubt, hesitation, reservation or disagreement. At this stage, the change agent aid community members by encouraging them to go ahead to curtail open defaecation and practice ODF (Kar and Chambers, 2008).

The Community Led Total Sanitation (CLTS) approach lays emphasis on various techniques of communication in generating community support for behaviour change. The approach incorporates a variety of communication processes like triggering to enhance collective influences on social norms. A study conducted in two states in India indicated that, where the CLTS approach was employed, the process of "triggering" was used to stimulate change in attitudes toward open field defaecation, (Kar & Chambers,

2008). Added to this, a study by WSP in 2008 conducted in Ethiopia on the impact of triggering on CLTS outcomes showed that, the chances of owning a latrine were about nine times higher in households located in villages that participated in a "walk of shame" than those that did not participate in the triggering activity (Faris and Rosenbaum, 2011; as cited in Vidya, 2012). However, a qualitative study on social norms with CLTS in India found little evidence to support the claim that the 'triggering' strategy, by itself, is sufficient for establishing perceived or collective norms leading to collective action that culminates in changing sanitation behaviours in a community (Dyalchand, Khale,; 2009 as in cited in Vidya, 2012).

Many countries adopted and deployed CLTS in slightly different ways. Sometimes there are marked variations even within the same countries. Possibly, this is meant to appropriately situate CLTS in a social context and to implement it in a financially and culturally acceptable manner (Kar, 2012). Despite the slightly different ways of adoption, CLTS in Africa had tremendously improved the sanitation situations in several communities. In Zambia alone, through the CLTS approach, over 245,000 people are now living in open defaecation free (ODF) communities (Kar and Bongartz, 2006). Furthermore, in Mauritania CLTS has spread well even in urban areas, despite being considered a predominantly rural approach. Rosso, a town in southern Mauritania which has a population of 34, 000, for instance have declared eight of its 11 wards as ODF towns, (Kar and Bongartz, 2006). Additionally in Kenya, from only one in 2007, there are now over 200 open defaecation free (ODF) villages as at 2010. The number of latrines

increased from 300 in 2007 to over 4,550 in 2009. The success of CLTS benefits from local sanitation practices, which hinge on cultural beliefs affect all aspects of the villagers' day-to-day activities. Data from Ethiopia on a CLTS plus hygiene promotion intervention also showed an increase in latrine coverage (from 5% to 100%) and a decrease in open defaecation from 64% to 40% from 2005 to 2009 (Faris, and Rosenbaum, 2011; as in cited Vidya, 2012).

The Community Water and Sanitation Agency (CWSA), Cooperative Assistance for Relief Everywhere (CARE) Ghana, United Nations Children's Fund (UNICEF), USIAD and WaterAid have been piloting CLTS since 2007 in approximately 237 communities in Ghana in an attempt to scale up hygiene and sanitation improvements (MLGRD &MWRWH, 2009). The pilot activities were in the Northern, Upper West, Eastern, Central and Greater Accra Regions. The pilot exercises independently adopted slightly different institutional arrangements, drawing facilitators from different local government departments and Non-Governmental Organisation (NGOs). In Ghana for example, renewed concentration on these issues has been a good opportunity to include community led approaches in national sanitation policy documents, where CLTS is now the recognized national approach for rural sanitation (Magala and Roberts, 2009; as cited in Vidya, 2012). The conscious effort by development partners and government through CLTS is to include the communities in project planning and implementation stages and subsequently spark the generation of indigenous innovations and change of behaviour. Support for core elements of basic toilet facilities, such as slabs for latrines, was provided

to poor households, subject to the commitment of the household to becoming ODF society and having dug out the pit in Nadowli/Kaleo district (World Bank, 2010). The project also financed the construction of institutional toilet facilities for selected schools and clinics in the district. However, large upfront subsidies have yielded rather low results not only in Ghana but also in other countries where very large upfront subsidies were provided for the rural sanitation facilities supply without recourse to the behaviour-change concept (World Bank, 2010). The World Bank project on sustainable rural water and sanitation project has devoted huge amount of money to finance the promotion of CLTS and hygiene education seeking to generate household demand to invest in latrines construction. A further allocation up to the minimum threshold of 0.5% of Gross Domestic Product (GDP) to cover capacity building for hygiene education including proper hand-washing methods and country-wide outreach of CLTS showing the Government of Ghana (GoG's) commitment, aiming at realizing a wide coverage insofar as behaviour change in sanitation adoption and sustenance are concerned (MLGRD et al., 2011).

Kar and Pasteur in 2003 pointed out that CLTS spurs community members to action when they are "triggered" to collectively recognize that open defaecation literally results into eating each other's faeces. One of the most effective mechanisms for achieving behaviour change in communities is the participatory process that encourages collective reflection upon current sanitary situation of a community, and mobilises action on its own behalf (Kar and Pasteur, 2005). Kar and Chambers (2008) advocated that participation of people,

and especially the active engagement of women and children, in the CLTS intervention had empowered entire communities to improve their sanitary conditions for the betterment of their collective well-being. Vidya (2012) contend that CLTS is an all-inclusive matter and for that matter people should be guided to construct low-cost latrines by using local resources and expertise. It empowers children to advocate for cleaning up within their community through BCC strategies like: songs, drama and presentations to other people during durbars, all to ignite people to adopt ODF.

In assessing the effectiveness of CLTS, WaterAid (2010) pointed out a significant criticism of CLTS to include questioning the ethics of using shame as a tool for behaviour change. Sah & Negussie (2009) also argue that, there have been some documented negative impacts on members of a village in India who were caught defaecating in the open after the programme implementation, often with harsh penalties from within the communities. In furtherance to this (Chatterjee, 2011), stated that, persuasive attitude is critical as such any harsh penalty will serve as a disincentive. Furthermore, the focus on achieving ODF may have failed to recognize other factors required for sustained behaviour change. As expressed by Kamal Kar, a leader of CLTS: “often declarations and certifications of ‘open defaecation-free’ (ODF) status are seen as an endpoint instead of the start of a new process. After the initial momentum dies out, some people can slip back to old patterns of open defaecation, defying the component of ‘total’ in CLTS. Thus, it is important to both understand post-ODF dynamics in CLTS communities and how and whether communities have moved up the sanitation ladder” (Kar, 2012: 2).

Added to this, CLTS as a strategic sanitation innovation, primarily operating on assumptions that the community members cannot make judgment based on individual personal impressions, feelings and opinions rather they depend on external facts as such, accept and work with anything that comes their way. Where cultural norms of the society do not matter in designing the CLTS innovations, it is likely to suffer setbacks and can lead to unsustain behaviour-changed of the people who adopted the ODF practice (Kar, 2008). Adequate participation in CLTS programme by beneficiaries in the programme design and implementation stages will help communities to construct culturally friendly and acceptable sanitation facilities, which will facilitate use. Movik and Mehta (2010) argue that women's roles are acknowledged and noted as important. There is less attention to the particular gendered perspectives on sanitation issues within the CLTS approach. CLTS education should not be identified as a 'women's area', otherwise men may stay away from contributing towards the construction of toilet facilities, and those components may be seen as less important to them. Furthermore, Movik and Mehta (2010) observe that women may receive more training, but may be prevented from putting their own skills and knowledge into practice by cultural or social norms. CLTS approach therefore should be culturally and socially friendly so as to avert any setback in its implementation. CLTS fundamentally, has the potential of meeting the MDGs. Directly it will meet the MDG 7c on water and sanitation and indirectly, the long term benefits will trickle down to improve sanitation which will help combat major diseases, especially diarrhoea (MDG 6) and also reduce child mortality (MDG 4). Even though CLTS has made significant mark of a development success story, many obstacles remain unattended to before it can

truly be said to offer a viable route to meeting the MDGs (Lyla and Mehta, 2012). For instance, how does CLTS accommodate the dynamism inherent in sustainable behaviour change in the adoption of ODF?

2.4 Dynamics of Sustainable and Unsustainable Behaviour Change in the Adoption of ODF.

'Dynamics refers to the patterns of complexity and interaction observed in the behaviour over time of social, economic and environmental systems' (Scoones et al., 2007; as cited in Movik &Mehta, 2010, p. 4). Wayne (2011) opined that inadequate access to sanitation infrastructure coupled with human behaviour by a third of the world's population practice open defaecation which perpetuates inequalities in health and social outcomes. Human excreta is a potentially dangerous material on human beings which needs to be managed effectively. This can be manage well if peoples' behaviour in practicing ODF is sustained. In spite of the damaging effects of OD on human life, certain dynamics influence the sustainability or otherwise of changed behaviour in the adoption of ODF and for that matter the decision to construct and use household latrines (Movik, 2008).

Knowledge of the health implication of open defaecation has been argued to be significant in determining a positive response to sustainable behaviour change or otherwise. As Kar (2003) pointed out, knowledge on the extent and risk of environmental pollution caused by open defaecation is key to ensuring favourable community response in sustaining the use of household latrines. The view that lack of knowledge is a major reason for the poor response to sustainable behaviour change in sanitation practices is further buttressed by

Kumar and Shukla, (as in Vidya, 2012). They opined that the perception that local people lack sufficient knowledge and skills to take control of projects is a major challenge affecting local peoples' involvement in erecting and using latrines. This assertion is further affirmed by Harriet et al. (2014) when they report that low knowledge level and poor flow of information about the negative effects of open defaecation account for the low involvement and participation in the construction of latrines hence the negative effect on the sustainability of behaviour change in the adoption of ODF. Contrary to this assertion, studies conducted by Gersovitz and Hammer (2003) and Pattanayak et al. (2006) concluded that, general knowledge of the linkage between open defaecation and diseases such as diarrhoea is not the most important barrier to latrine adoption. They argue that, for infectious water-borne diseases, it is specific information not general knowledge on risk exposure on infectious people, vector, parasites, and pathways that influence people's decisions, particularly in endemic area.

Kar (2012) indicated that, the CLTS approach also seeks to ensure positive community response to sustainable behavioral change in the adoption of ODF by playing on the emotions of community members through the *"walk of shame"*. This assertion is further backed by Hernandez, Dejene, & Faris (2009) in a study on "potential motivators behind household toilet adoption". The study concluded that 40.9% of the respondents indicated that, feeling ashamed of contaminating the environment accounted for their decision to adopt and use a household latrine. The feeling of shame advocated by CLTS either motivate people to sustain their behaviours or otherwise in the adoption of ODF.

Hernandez et al. (2009) also revealed that, convenience (27.4%), security (12.7%) and disease prevention (12.7%) are some of the main motivating dynamics that influence households' decision to sustain behaviour change in the adoption of improve sanitation practice.

Other reasons as revealed by Hernandez et al. (2009) include comfort, status, and privacy as other dynamics that influence respondents' decision to sustain the adoption of ODF. Pattanayak et al. (2007) in their study on "promoting latrine use" in Bhadrak, Orissa in India also revealed that, dynamics such as wealth, cost and technical knowhow are some other reasons that affect household responses to the need to adopt to the use of household latrines. The study revealed that, there is a positive correlation between household latrine adoption rate and household wealth status. Households that are better off in terms of technical knowhow and wealth status tend to construct and use household latrines easily whilst household with poor technical knowhow and low economic status tend to sight cost as the reason for not adopting the sustain use of household latrines.

According to Cotton and Pickford (1995) the most commonly identified reasons why households refuse to provide household latrines include the high cost of latrine construction, lack of space and difficulty to maintain latrines. Cotton's and Pickford's conclusion is supported by Michael and Smith (2006), elucidated that poverty and indebtedness limit the spread of latrine coverage and the associated behaviour change. Michael and Smith (2006) asserts that poor people surviving on subsistence prefer to

spend their income on food and other items given little or no attention to latrine construction. The argument that cost is a determinant factor to the poor response to household latrine adoption is further backed by Pattanayak et al.'s (2007) study on "promoting latrine use" in Bhadrak, Orissa in India in which they concluded that cost is one of the major factors responsible for poor response to the need to adopt household latrine use. Though people are ready to adopt and sustain toilet use, the levels of poverty of targeted households to an extent determines the rate of response. Those above poverty level arelikely to response positively than those below poverty level.

Banda and Sarkarb (2007; as cited in Movik and Lyla, 2010) noted that, cultural and religious beliefs also play a part in influencing household adoption and usage of household latrines. Being sensitive to cultural and religious norms and practices is essential for the adoption of CLTS. CLTS as a sanitation approach relies so heavily on triggering spontaneous behaviour change. There is a need therefore, to be aware of how current behaviour and norms of a particular society is couched in particular cultural and religious concepts and practices. For instance, a study in Tamil Nadu, South India, on knowledge and practices with respect to sanitation showed that many of the villagers practiced open defaecation because it was an age-old custom that did not carry any stigma; some even regarded it as a social outing. The influence of cultural beliefs on latrine construction and usage is further established by Johnson, Smith, & Stone (2010) when they opined that, some reasons for the non-usage of latrines are non-explainable scientifically. He explains for example that, in northern Uganda, a woman who has never

given birth is not allowed to use a pit latrine because it is believed that, the pit latrine "spoils the woman's eggs. Musyoki (2007) further observes that the myths of the Maasai of Kenya hold that men do not defaecate at all, which renders any attempt at discussing open defaecation moot. In Nigeria, it is often considered unacceptable among some groups to shit under a roof, hence people go into the open instead (Movik and Lyla, 2010). Williams, Smith, & Cribbet (2008) also espoused that, the concept of dirt and cleaning can vary from culture to culture. He argues that, latrines themselves may be viewed as dirty and evil places. It may be considered more sanitary in certain places to defaecate in the fields than in the latrine.

Social and cultural barriers served as a challenge to sustainable behaviour change in the adoption of ODF, not only in Nadowli/Kaleo district, but also throughout Ghana (MLGRD et al., 2011). Nancy and Nimish (2005) added that sanitation and personal hygiene are deeply rooted in cultural norms and social habits unique to each region. Ethnic, religious and gender distinctions affect the individual's and the community's collective decision to sustain the adoption of new sanitation practice and therefore have a restrictive effect on sanitary practices. They further observed in their study on factors that motivate people to adopt safe hygiene practices in Eastern Cape, South Africa that such divides create difficulties when attempting to spur change throughout an entire village, as different religious and tribal communities react uniquely to triggering. Thus, religious beliefs and practices have an impact in terms of triggering and sustaining behaviour change in subtle ways. Religion has a significant influence on attitudes towards

excreta. Muslim and Hindu societies are often faecophobic. Therefore, there is a need to thoroughly understand and build on local cultural and religious assumptions if behaviour change is to be sustained. Muslims also constantly practice anal cleansing with water after defaecation. In most Hindu societies, cleansing with water, and performing specific purification before and after defaecation characterized their religious practice (Avvannavar & Mani, 2008). Therefore, there is a need to thoroughly understand and build on local cultural and religious assumptions if behaviour change is to be sustained.

In addition to the above dynamics, Manase et al. (2001) stated that households' decision to sustain the adoption of latrines usage in studies conducted in Zambia, South Africa and Zimbabwe revealed that, illiteracy, lack of strong linkages between sanitation service providing agencies and communities, supply-led approach to providing sanitation services, and lack of effective communication between the local authorities and communities are some other dynamics that influence the decision of households to sustain their changed-behaviour towards the construction and use of latrines. Kar and Chambers (2008) advocated that equal participation and involvement by men, women and children in the adoption of ODF assures compliance at the household and community levels, while children carry the good practice into adulthood making for lasting behaviour change. According to Kapadia-Kundu, Dyalchand & Khale (2001), familial support is critical for children to change their own behaviour in India. Where age is traditionally prized and children are not viewed as sources of wisdom to guide elders, parental support and involvement are needed to complement and sustain the active role of children within the

community since the children could be used effectively as agents of change. As noted above, a host of dynamics affect the sustainability of behaviour change in ODF and the maintenance of an ODF environment. Concurrence and resolve amongst all members of a community are necessary to achieve the desired changed-behaviour outcome and to permanently sustain it. A study undertaken in Ghana to understand the dynamics of change behaviour affirms this as they noted the importance of incorporating social-cultural preferences in the CLTS approach to sanitation (wellington et al. 2011). Furthermore, they refer to the importance of community capital being tapped into as it aims to develop a sense of community pride. An important dynamic takes place here, the 'outsiders' assume a passive, nonthreatening role as 'learners' and community members are effectively the 'teachers' in this situation. However, learning also takes place for community members as they are confronted with the 'power of their shit

2.5.0 Community Participation and Sustainable Behaviour Change in Sanitation Practices

The failure of the central governments in mobilising communities and motivating them to lasting behaviour change in sanitary practices showed that only building toilets is not sufficient (Kennedy, 2013). This has compelled policy makers to revamp sanitation programmes with greater emphasis on community participation through Behavioural Change Communication (BCC) (Gasper, 2004). The local communities should own the behaviour change campaign and commit to the need of total sanitation. Community participation refers to a phenomenon of empowering people to mobilise their own

capacities, be social actors rather than passive subjects, manage their resources, make decisions and control the activities that affect their lives (Chambers, 1983; Nsibambi, 1997; Bartle, 2004).

Furthermore, John (2010) make similar assertion about the need to involve communities in development of projects in a Bottom-up method, as approach which has now become paramount by empowering the communities to initiate projects based on their felt needs and priorities, plan by themselves, implement by themselves, monitor and conduct evaluation by themselves with outsiders as facilitators and not as dictators. When the community provides impetus for any development effort, the members can proudly identify with it and say, “This is our own”. Ownership of the development process by the community makes it sustainable. Beneficiary households will satisfactorily involve themselves in solving problems of projects if they understand the effects of the problem so as to best prepare them for the task ahead (Freire, 1970). Amponsah (2007) added that members in the community are those effecting change in the community and those affected by it. This is in sync with Robbins (2003) who intimated that an active engagement of people will lead to recognizing their problems and thus help proffer indigenous and innovative solutions to such problems.

Michael and Smith (2006) sought to look at community participation in a different angle and tended that, community participation by the poor is seen in terms of equitable sharing of project benefits. The researcher is of the view that, the availability of latrines to all

people irrespective of sex, gender and age will lead to equitable sharing of the intended benefits, and thus create room for a sustained attitude towards its use. Succinctly, Midgely and Hall (1989), described community participation as an organized effort to increase control over resources and institutions on the part of groups, hitherto excluded from control. It is for this reason that, women and children should be allowed and facilitated to make choices of the type and nature of sanitation facility to be constructed either for the households or the community.

Participation and involvement creates feeling of 'ownership'. This is clearly emphasized by Chambers et al. in CLTS programming, when they stated that end-users do not want to miss-out on something for which they have 'sweated' for (Bongartz, Musyoki, Milligan and Ashley, 2010). Kar (2003) was with the view that, through the triggering process of CLTS, the communities are made to recognize the negative effect of open defaecation on their health and that had served as a trigger in spurring them to adopt the innovation and work towards its sustenance. Affected households where the desired behaviour change on ODF is expected to take place must be assisted by motivating them to participate, build their trust and help them recognize the need to change and sustain their behaviour in the adoption of ODF (Kar, 2012). Conyers et al. (1987) demonstrated that, in order to operationalize community programmes an attempt should be put in place to maximize popular participation and meet the needs of the rural poor. Oloruntoba (2013) further intimated that community participation is a conscious ability to improve the knowledge, skills, competencies, abilities and attitudes of communities to help achieve their goals. This

further epitomizes the significance of community participation and how it help build the capacity of beneficiary communities in rolling out development programmes. People involvement in a programme will lead to a better understanding about its benefits, hence better manage their behaviour to ensure sustainability.

According to Plan Kenya, community participation in CLTS programme in Kilifi district, Kenya in 2007, has seen a steep uptake in the construction and behaviour change in the use of latrines by local communities. From only one in 2007, there are now over 200 open defaecation free (ODF) villages. The number of latrines increased from 300 in 2007 to over 4,550 in 2009 (IIED, 2010). Also DANIDA (2010) indicated that community based health projects, targeting small geographical areas with dense populations have been very successful. An example is a project in Indian urban communities using intensive community participation and interactive methods, such as meetings, exhibitions, health camps, street dramas, health clubs, medical camps and guidance on how to construct latrines. Health clubs in Zimbabwe have succeeded in increasing good hygiene behaviour significantly and coverage of latrines with 43% among club-members as compared with only 2 % among non-members in an area historically depending on subsidies. UNICEF (2009) study on community approaches to total sanitation in India, reported that community participation has elicited the needs of the local community, especially in situations where permanent behaviour change is the ultimate goal of Governments and development partners in CLTS projects. Participation by community members in the type of behaviour change in CLTS innovations had influenced the choice of innovations

accepted by all and subsequently led to the sustainability of the sanitation behaviour. Total sanitation inherently requires participation by all members of the community. Banda et al. reports on participation and sustainable behaviour change in hand washing in schools in Kenya concludes that, introduction of hand washing facilities in schools at an early age could lead to 'long term behaviour change' and prevention of water related diseases (Banda and Sarkarb, 2007).

In the past, the exclusion of poor and disadvantaged people from sanitation programming proved a major hindrance to achieving open defaecation free communities. In recent years however, sanitation programming has evolved dramatically. Increasingly, sanitation programming is focused on engaging communities, creating demand for sanitation, and supporting the development of sustainable systems and appropriate technologies-all of which are rooted in catalyzing community behaviour and social change (UNICEF, 2009). At the core of the shift in sanitation programming is a move from donor-determined and supply-driven approaches to community-led and demand-driven approaches. Community participation should therefore be arranged to initiate the inclusion of different willing social units, so as to enhance the process of effective communication amongst its members. Effective community participation in CLTS implementation in the Nadowli/Kaleo district has the potential of propelling the objective of sustainable behaviour change in ODF practices and social change behaviour.

2.5.1 Prospects of community participation

The importance of end-users "taking-the-lead" in a development programme cannot be overstated. It is argued that interventions targeting a community without involving them yields low results. Investments in WASH facilities are less worthy if end-user is not ready to own and use it (Banda et al., 2007). Further studies have shown that, rural water and sanitation service delivery models that work based on an established community management system, have yielded results that are more sustainable and that effective participation at community levels, through a systematically programmed community WASH actions that integrate operations and management issues; a planned and regulated user-fee management that is fully accounted for, have a positive impact on community participation in local water resources management. There is also a potential reduction in water related sicknesses and time saved for other activities; and thus translates to improved access to clean water (Isham and Kähkönen, 2002).

Lancaster (2002) also points out the following prospects of community participation: the approach helps the project to be sustainable as communities themselves learn how to adopt and correct changes resulting from the project; participation helps to protect interest of the people concerned; it enhances dignity and self-reliance among people, it enabled them to obtain and do things by themselves. They understand their local needs and the nature of their environment better than outsiders; participation makes local people to act as multiplier of new project which they achieve. They can easily transmit the new

knowledge they acquired to other communities and cause a rapid increase in growth of the new idea. Participation promotes a sense of ownership among the community and also empower the community members by building their capacity to identify, define, solve and implement various social and economic issues that affect their lives; participation creates a sense and attitude of self-reliance; this especially happens when the project developer leaves the project to the indigenous community.

It is believed that participation will make people to willingly oversee to the construction of latrines and then take care of the facilities to ensure their sustainability (Tacconi and Tisdell, 1992; Narayan, 1995). In addition, it is suggested that participation can lead to greater community empowerment in the form of strengthened local organizations, a greater sense of pride and the undertaking of new activities (Oakley, 1991). Community participation creates an enabling environment for sustainability by allowing users not only to select the level of services for which they are willing to pay, but also to make choices and commit resources in support of the choices made by households or the communities (Sara and Katz, 1998). Community participation in project initiation, implementation and management, apart from creating a sense of ownership and responsibility within communities, is an important factor in developing an effective and long-lasting project (Kaliba, 2002).

2.5.2 Challenges of Community Participation

The idealized transformation made in rural development through community participation has been challenged on several grounds. First, the exercise of voice and choice can be costly under certain conditions. At most basic level, it may involve real or imputed losses due to the time commitments required for adequate participation. Participation may lead to psychological or physical duress for the most socially and economically disadvantaged, because genuine participation may require taking positions that are contrary to the interests of powerful groups. Although the premise of participatory approaches to community development projects is that the potential benefits outweigh such cost, this is no means certain (Ghazla and Vijayendra, 2004).

Secondly, mainstreaming participation has made it an instrument for promoting pragmatic policy interest, such as cost-effective delivery or low-cost maintenance, rather than a vehicle for radical social transformation. This may shift some of the costs of service to potential beneficiaries. For instance, in both Africa and Asia, participation has been described as a form of forced labour, with the poor pressured into making far more substantial contributions than the rich (Ghazala and Vijayendra, 2004). Another important challenge to community participatory approaches to the adoption of ODF innovation is the 'dynamics of the various players' that are involved (Budge, 2012). Most community participatory programmes fall under the umbrella of a development project and there are frequent power struggles at play among the different stakeholders, not least the outside agencies. It seems almost a contradiction in terms of promoting community

ownership when the outsiders have their own agenda and targets that they have set (Budge, 2010).

Joshi (2011) asserted that community participatory approach to sustainable behaviour change in sanitation practice can fail because of the potential for the sanitation programme to be politically manipulated. Community participation can be employed to describe euphemistically the manipulation of people by politicians, bureaucrats and technocrats for the purposes which are concerned by these others in manner that objectifies and infantilizes people. This resonates with the analysis that sometimes in development projects that alludes to the creation of problems or manipulating poverty as a means to open the door for technical solutions. In examining several community participatory projects, Mosse (2001) found that even in projects with high levels of community participation, what is labelled "local knowledge" was often a construct of the planning context and concealed the underlying politics of knowledge production and use. The challenge boils down to development workers needing to carefully consider whose needs are being met, those of the community or those of the projects.

Again, despite CLTS being participatory and inclusive in nature, the affiliation of women is very marginal considering their inability to make core decisions as far as issues on latrine construction and use are concern. The discourse of community participatory approach of CLTS has not factored cultural practices and believe systems that work against women participation in the various communities around the world to warrant

overall community collective response to changed behaviour in sanitation practices. The non-involvement of the community women and failure to take charge of sanitation issues result in poor service delivery; this is manifested in breakdowns and non-repair of facilities, and dishonesty from the local development agency (Isham et al., 2002). The full involvement of women therefore remain a crucial aspect for long term sustainability of changed-behaviour in ODF practice. Finally, a critical hiccup hindering the sustainability of ODF innovation is the preponderance of sporadic sanitation programmes in rural communities of Nadowli/Kaleo district by different NGOs serving their own interest. Many rural community members express confusion and frustration about lack of connectivity and proper communication between these different groups. A complete rural and regional development agenda needs to firstly embrace new forms of community involvement, such as coalitions, temporary commitments and networks of existing community groups and NGOs in the villages and community level.

2.5 Social Change Behaviour in Sanitation Practices

UNICEF (2005) study on strategic communication - for behaviour and social change in South Asia intimates that social change is most commonly understood as a process of transformation in the way society is organized, within institutions and in the distribution of power within various social and political institutions. The change that occurs in the social system should either be transformational or incremental. Incremental change occurs when an organization or society makes a relatively minor change to its technology, processes or structure whereas transformational change occurs when radical social

change programmes are implemented. The impact of CLTS on open defaecation, is based on transformational change (Kar, 2012). But if CLTS innovations is incrementally rolled out it will help achieve permanency, for the radical implementation through for instance "name and shame" can discourage those who cannot immediately adopt ODF, since they will feel isolated. As stated by Backer (2001), sequential implementation of CLTS is likely to effect a behaviour change if: a person forms a strong positive intention, or makes a commitment to perform the behaviour.

Mosler (2012) stated that, behaviour is the result of psychological processing of factors within the individual. The individual living in the society is likely to be confronted with environmental constraints, which can negatively affect the occurrence of a behaviour. To avert this, the person should possess the skills necessary to perform the behaviour. The behaviour must be rewarding and that will motivate the person to have normative pressure to perform the behaviour. As described by Lewin (as cited in Alicia, 2005) behaviour as a dynamic balance of forces working in opposing directions. These forces are driving and restraining. The driving force facilitate change due to the fact that it push people towards a desired direction and the restraining force hamper change, for it push people towards an opposing direction. Available sanitation facilities, effective triggering strategy and active inclusion of communities' members are the driving forces in the CLTS programme. Alicia (2005) further added that, behaviour is a result of consequences. People will work to sustain behaviour change in sanitation practice if the consequences of that behaviour is rewarding. To change behaviour in sanitation practice is to unfreeze the existing

situation or status quo for example, refusal to construct toilet facilities and practice open defaecation. The status quo is considered the equilibrium state. Unfreezing is necessary to overcome the strains of individual resistance and group conformity. This require uncomfortable stretching of one's ability to change an overt behaviour, such as indiscriminate defaecation in open places. Furthermore, certain amount of sacrifices or "pains" are require by members in a social system, to bring the group conformity and thus bring social change amongst the members.

Fundamentally, values and customs of the beneficiaries' communities determine development priorities. For instance, environmental conditions, or the quality of sanitation infrastructure, the perceived needs of these innovations or the importance of improved sanitation, and the quality health the people are expected to attain will definitely receive different priorities in the communities depending on how local people value them. Change behaviour in sanitation practice, therefore, cannot be sustainable if traditional knowledge and values with its technicalities, social and spiritual dimensions are not accepted as the conduit for rural development. NICE (2007) made a central assumption that behaviour change is desirable, if not essential, in order to improve the health conditions of people in a social system.

Nukunya G. K. (2003) emphasizes on the significance of traditional knowledge in behaviour as he states that social change involves an interplay of traditional indigenous elements on one hand and on the other hand, those of the factors of change whether

internal or external. Sanitation innovations in the study area must consciously be programmed to cater for the traditional elements and factors of change to avoid strains. Wilbert (1963) was with the view that strains will arise as a result of lack of clear understanding of types and rates of change. But for CLTS programme the strains should be made kwon to beneficiary communities through triggering so as to allay the fears of adopting the ODF innovation.

Behaviour change and social change are inter-related and need to occur across all participants in Nadowli/Kaleo district for the programme to make a difference. Within CLTS paradigm, the discourse of "behaviour change" is linked to "social change". While behaviour change in this circumstance implies individual level of change; social change seeks to create an enabling and favourable environment for the change to occur. Social change becomes sustainable when it is effectively linked to changed behaviour of people. Behaviour and social change is catalyzed by helping communities understand that poor sanitation affects everyone and that a collective approach is required to make the community open defaecation free. Communal commitment to becoming ODF leads to consistent use of sanitation facilities and provides the incentive to repair and sustain them (UNICEF, 2009).

2.6 Gender Dimensions in Sustainable Behaviour Change in Sanitation Practices

At the core of the sociological analysis of gender is the difference between biological sexes and gender: sex is a biological characteristics of an organism; gender is socially

constructed, and socially created. Gender is a social, symbolic system through which a culture attaches significance to biological sex. Gender is something individual learn, yet because it is constructed by cultures, it is more of an individual quality. Cultural construct of gender are conveyed through beliefs and practices in diverse societal domains. This cultural construction has created distinct roles for men and women and affects their changed behaviour with regards to sanitation practices. Distinct roles and relationships between men and women also give rise to gender inequalities where one group is systematically favoured and holds advantages over another.

Sanitation safety in Africa affects gender relations and raises several social, cultural, institutional and economic questions. The cultural and social setting determines power, status, prestige, rights and obligations. It conditions women's access to sanitation compared to men. Adequate sanitation facilities provide greater privacy, convenience, safety, and dignity; these aspects are particularly important for women (Cairncross 1999 and Esrey, Potash, Roberts, and Shiff 1990). Gender relations are very important aspect of culture that influences sanitation preference. For instance studies conducted in Pakistan and India by Movik (2008), on women of all ages cited that women preferred to have a toilet in the home because of social norms. It therefore deemed odd for a woman to be seen defaecating, and have caused women to adjust their eating habits accordingly in order to defaecate secretly in the very early morning or evening (Calvert 2003 & Nawab, Nyborg, Esser, & Jenssen, 2006). Gender differences have been reported as motivations for adopting and sustaining latrine use. Program (2004) pointed out that men desired

latrines mostly for prestige purposes, and displayed higher aversion to the perceived smell and dangers of latrines than women. Men were also attracted to the privacy of open defaecation more than women. According to Program (2004) women on the other hand desired latrines for comfort, cleanliness and convenience and therefore will strive to sustain the behaviour of using latrines, but had higher barriers to the adoption of latrines use and tended to install fewer than men.

Perhaps if gender perspectives are factored into the planning process of sanitation programmes it will ensure that the specific needs and concern of women and men from all social groups will be taken into consideration. In Ghana, women are primarily responsible for the maintenance of sanitation facilities at the household level. Due to that, they have accumulated an impressive wisdom in this endeavours; they are in charge of households' cleanliness, and instilling healthy hygiene behaviours in children (Jenkins & Scott, 2007). In addition to promoting healthy behaviours in the community and thereby minimising exposure to disease, woman also help entrench positive behaviours in the adoption of ODF in children which can last through to adulthood, contributing to the sustainability of the CLTS approach (Kar, 2012). The CLTS experience suggests that empowered women who emerged as natural leaders are better able to lead the change process and therefore has a positive emotional response to change their behaviour and that of their children (Kapadia, 1994). Women and girls often walk several hours every day finding places to defaecate because of privacy and convenience, mostly where sanitation facilities are unavailable, while their male counterparts barely engage in such

activity. Furthermore, girls and women are made more vulnerable by poor sanitation. Lack of safe, separate and private latrines expose women and girls, who in some cultures are forced to defaecate only in the dark to serious illness and also increased the risk of harassment and assault during the night-time walk to and from communal defaecation fields (Mahbub, 2008). In spite of this, Vidya (2012) argue that decisions about the design and the location of toilet facilities are made with no recourse to female users. Gender-sensitive approach to sanitation is therefore needed to provide support for capacity building for sanitation infrastructure and service development for women. Sanitation is naturally less of a priority for men due to biological and social factors, while it is a necessary convenience for women to protect their privacy and dignity (Cotton et al., 1995). A gendered sensitive strategy therefore will be needed to ensure that women participate in the CLTS implementation process in Nadowli/Kaleo district as decision makers and investors. There is also emerging evidence that integrating gender considerations into interventions has a positive effect on health outcomes across various domains Boerder et al. (as cited in Piroska et al., 2007).

Gender stereotypes concerning abilities and interests of men and women, often create non-equitable and non-representative decision making in the sector often lead to discrimination. Gender roles of men and women are fundamental in determining access and control over sanitation and hygiene in most countries in the global south. According to Sidibe (2007) girls of school age, especially after puberty, are often faced with inadequate sanitation facilities at school, which poses problems during menstruation that

frequently lead to school absence. It has been shown that improving school sanitation may help retain girls in school. However, where the toilet facilities are not available and the few available ones are isolated from schools and communities and also not maintained, it could lead to the continuation of open defaecation. Also women patronizing these isolated public latrines are likely to be attacked on their way. This has serious negative effects on women's wiliness to sustain changed behaviour in the adoption of ODF.

A study undertaken in Ghana by Wellington in 2011 noted that, incorporating social-cultural preferences of women and girls in the CLTS approach to sanitation is important (Whittington et al., 1993; as cited in Budge, 2012). Gender differences need to be considered, as demand by women for sustainable behaviour in sanitation practices appears to be stronger than men in some countries (Lenton, 2005; Kurup, 1996). A study to address the social dynamics involved in CLTS conducted in Bangladesh affirms the assertion of Lenton and Kurup. As a woman stated "latrine installation at households contribute to harmony among them. Previously while cleaning the backyard they found faeces and used to rebuke their neighbours which resulted in quarrels. Sometimes quarrel also occurred if someone's child defaecates in other's premises" (Mahbub, 2008; as cited in Budge, 2012: p. 314). A woman will therefore need a toilet in order to avoid these quarrels.

Chambers (2008) assert that facilitators in CLTS programme should be of both genders,

speak the local language fluently, and should be open and approachable. Since that could promote the capacity building of members who emerge as natural leaders, it is imperative that the facilitators draw equitably on both genders and on all socio-economic strata within the community. Training women as natural leaders is important, for instance a village in West Sumatra in Indonesia had only female natural leaders who visited each household to conduct triggering exercises instead of a collective community-level triggering process (Jamasy and Shatifan, 2008; cited in Vidya, 2012), while in Uganda, it was reported that although men and women emerged as natural leaders, women were more effective natural leaders because open defaecation reportedly played a more important role in their lives.

Again, in Kenya women were specifically empowered by Ministry of Public Health staff, leading to their prominent role in triggering and leading the CLTS process (Tiwari, 2011; as cited in Vidya, 2012). However, a cautionary message from Mahhub in a study conducted in Bangladesh emphasized that female participation in triggering to become natural leaders does not always lead to their empowerment. Furthermore Plan Bangladesh reported that even if women participated in triggering, they did not often have control over toilet construction due to gender dynamics which make men the providers of the super structure (Mahbub, 2008; as cited in Vidya, 2012). Encouraging even the traditionally weaker and more vulnerable members of the community to speak out and work confidently with facilitators help to ensure complete community ownership, this in turn will lead to potential empowerment of groups otherwise less engaged in development

work and decision-making. The inclusion of women and girls as natural leaders in the CLTS triggering exercise has the potential of stimulating behaviour and attitudinal changes among their male counterparts as far the adoption and sustenance of ODF behaviour is concerned.

2.7 Theoretical Framework

The theoretical framework on which this study is built is Behaviour Change Communication (BCC) model. BCC is an interactive process where change agents and communities develop tailored messages and approaches using a variety of communication channels to develop positive behaviours; promote and sustain individual, community and societal behaviour change; and maintain appropriate behaviours (World Bank, 2002). Several attempts to change defaecation behaviour and promote sanitation programmes in rural communities continue to be negligible despite high levels of knowledge, for several health behaviours, particularly sanitation related behaviours. Kar, (2012) noted that the rationalist assumption of a sense of shame is enough to trigger behaviour change in CLTS. However, this rationalist assumption could not wholly influence people to adopt and sustain ODF practice in Nadowli/Kaleo district. The inclusion of Behaviour Change Communication (BCC) strategy in achieving collective change behaviour in ODF is important (MLGRD, 2011).

The BCC approach had recognize the fact that instead of a radical approach in the CLTS implementation process, social persuasion should be used to reduce the divergence in the

interpretation of the newly established change-behaviour. In order to reduce the divergence in the interpretation of the newly established behaviour, 'triggering' process of CLTS should be followed by a sustained period of social persuasion which is a BCC strategy (Kapadia, 1994). The BCC model traced its root to the Diffusion of Innovation (DOI) model (Everett Rogers), where DOI is defined as a process of information exchange through which a change agent communicates a new idea to one several others (Rogers, 1995). Communication therefore is at the heart of DOI theory. In communicating ODF innovation to suspected adopters, four basic requirements must be considered: (1) is ODF new to its user, (2) is it better than what exist currently (OD), (3) is it economically viable and socially desirable and (4) has it a widespread appeal. If these requirements are favourable to the adopter there is a higher possibility of ODF being adopted and sustained.

Effective use of BCC strategy can increase the knowledge base of people. BCC can ensure that people are given the basic facts about open defaecation and its negative consequences on the health of the individual in a language or visual medium or any other medium that they can understand and relate to. Secondly, BCC stimulate community dialogue, and encourage community and national discussions on the basic facts of open defaecation and the underlying factors that contribute to sustainable or unsustainable behaviour. Potential factors such as economic, educational, environmental and socio-cultural that affect the adoption of ODF are discussed through BCC. It also focuses on teaching new skills and behaviours, such as using indigenous materials to build simple latrines and using dig and burry as a means of disposing liquid waste where toilet facilities

are not available. On the other hand, it is essential to note that political and physical environments in the Nadowli-Kaleo district and population diversity can complicate the development of communication tools. This is especially the case where vast distances have to be covered, or multiple languages and cultural traditions are included, in the CLTS programme.

Despite sustained persuasion, it was found that in all the CLTS intervention villages in Nadowli-Kaleo district, some households sustain ODF innovation, some did not sustain ODF innovation and others did not adopt the ODF innovation at all. This was due to driving forces like: **Economic factors;** type of occupation, access and types of latrines, incomes levels, lack of credit to support latrine construction, incentives for practicing ODF and cost of construction and maintenance; **Educational factors;** sanitation campaigns, behaviour change communication strategy, and behaviour change messages rather than building free toilets; **Environmental factors;** distance to sanitation facility, nature of land, quality of sanitation facilities, health status and proximity to the forest and **Socio-cultural factors;** social status, religious /belief system, sex, gender and socially inclusive process, sanctioning open defaecators, community resistance, marital status and age of respondent. Figure 2.1 is based on the assumption that these various driving factors influenced households' decision to adopt sustainable behaviour change or not to adopt ODF innovation in Nadowli-Kaleo District. Through interpersonal communication, mass media and community and cultural networks as **intervening variables**, children and adults are exposed to the embarrassment of indulging in open defaecation in rural

communities (Kapadia-Kundu & Dyalchand, 2008**).** Persuasive communication through the various channels in this framework has a strong emotional appeal, for example, disgust or embarrassment to influence adaptive behaviour in the communities. Figure 2.1 demonstrates that through these communication tools, households are exposed to the prospects and challenges of adopting sustainable change behaviour in ODF innovation-**independent variables**. This will either lead to the rejection of sustainable behaviour change in ODF innovation adoption or model positive attitudes by households to sustain change behaviour in the adoption of ODF innovation as **dependent variable.**

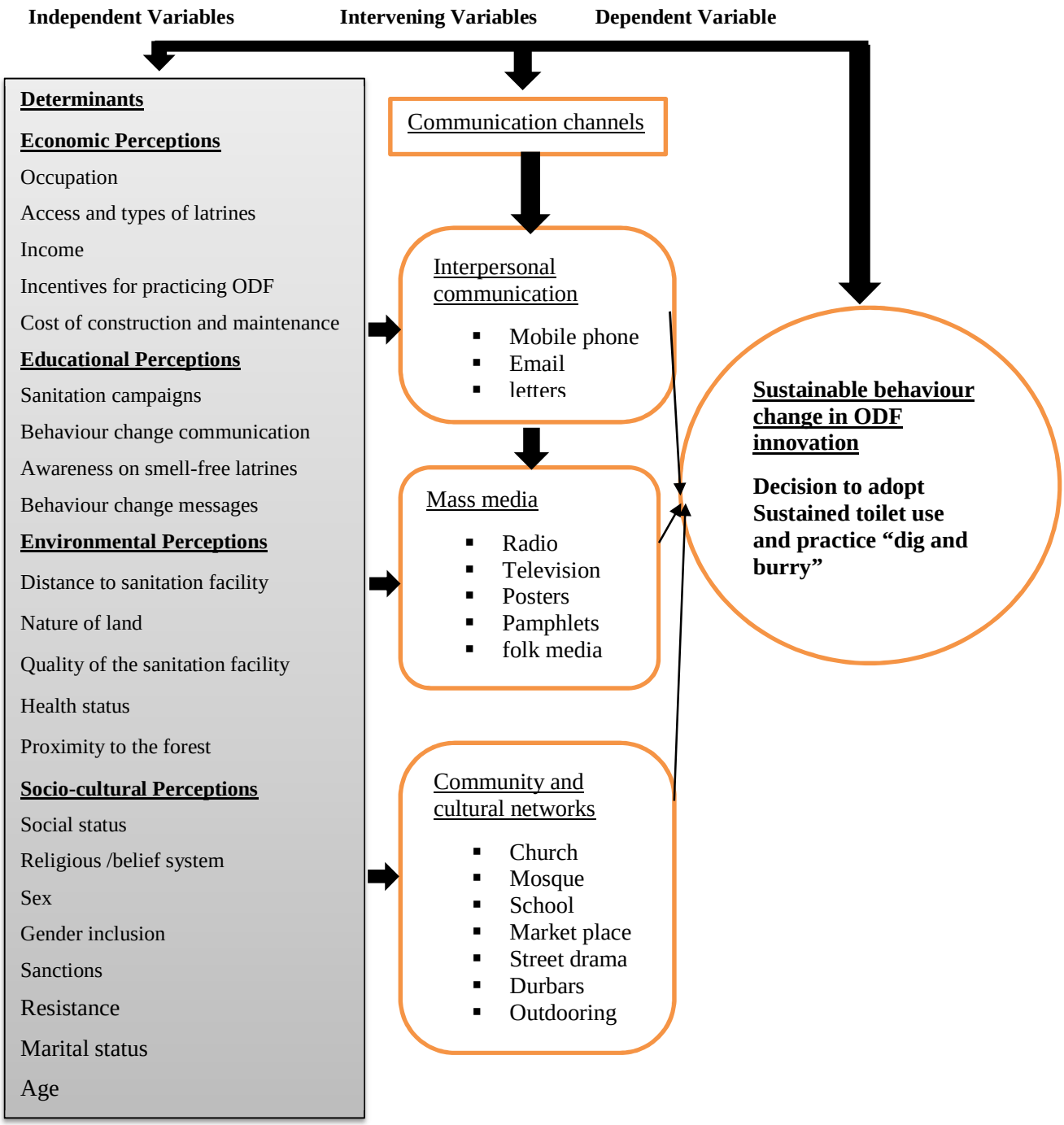

Figure 2.1. A Conceptual Framework (Source; Author's construct 2015).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design and methods used for the thesis. It highlights the data collected, the data collection procedures and the tools used for the data analysis to answer the research questions and meet the research objectives. First the chapter presents a brief development profile of the Nadowli/Kaleo district, focusing particularly on its WASH status, secondly, it describes the study population and the sampling strategies used to select the sample for the study; thirdly, it describes both the primary and secondary data collected; and lastly, it outlines the methods of data collection and data analysis.

3.2 Profile of the District

Figure 3. 1: District Map of Upper West Region (Source: http://mapsof.net/ghana, 2013)

District Map of Nadowli-Kaleo

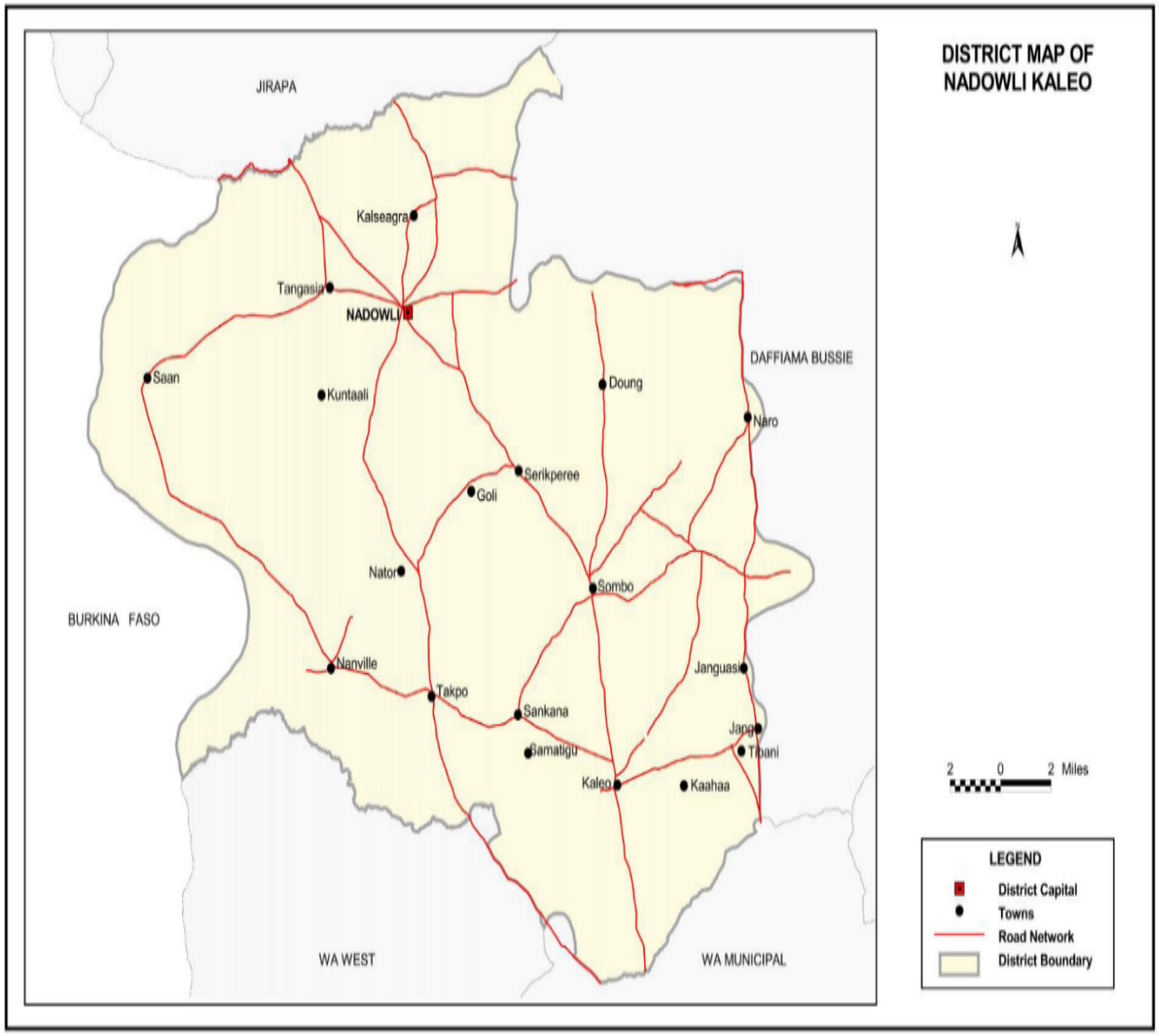

Figure 3.2 Map of Nadowli-Kaleo District. (Source: Ghana Statistical Service, GSS, 2010)

The Nadowli-Kaleo District was carved out of the then Nadowli District in June, 2012 under Legislative Instrument (L.I) 2101 with Nadowli as its capital (see figure 1). It is located in the heart of the Upper West region of Ghana. It lies between Latitude 11˚30˚ and 10˚ 20˚ north and longitude 3˚ 10 ˚ and 2˚10˚ west. The District shares boundaries with Jirapa District to the North, to the South with Wa West, to the East with Daffiama, Bussie Issa District and to the West with Ivory Coast. The District, with a territorial size of 1,132.02 km2 extends from the Billi Bridge (4km from WA) to the Dapuori Bridge (almost 12km from Jirapa) on the main Wa-Jirapa-Hamile road. From west to east, it extends from the Black Volta to Daffiama (GSS, 2012).

The population of Nadowli-Kaleo District, according to the 2010 Population and Housing Census, is 61,561 representing about 8.8 percent of the region's total population. Males constitute 46.7 percent and females are in the majority, representing 53.3 percent. The district is basically made of rural localities. The district has a sex ratio of 87.6 with a youthful population. As much as 40.5 percent of persons are below 15 years, thus depicting a broad based population pyramid which tapers off with a smaller percentage of elderly persons (9.6 %) who are 60 years and above. The total age dependency ratio for the District is 92.4 and the age dependency ratio for males is higher (100.6) than that for females (85.8). The district has one major ethnic group: the Dagaaba who constitute 96% of the total population and others are Sissala who are 3% and can be found in the southeastern parts of the district. The rest constitutes only 1% of the total population. There are three religious groups in the district namely: Christianity (68.8%), Islam (17%),

Traditional Religion (9.9%) and the population with no religious affiliation constitutes 3.9 percent (GSS, 2012).

3.2.1 Water and sanitation

There are eight community small water supply systems in the Nadowli/Kaleo district located in eight communities, six (6) are private, belonging to health and religious institutions whilst two (2) are public and managed by communities. Also 240 boreholes are located in the communities. Out of these, 119 are functional and 121 needs rehabilitation. However 53 of the boreholes are privately owned. Several other communities are without any improved water facility (GSS, 2012).

The existing sanitation facilities in the district include Ventilated Pit Latrine (VIP), Kumasi Ventilated Improved Pit Latrine (KVIP), pan toilet latrines and Water Closets, which can only be found in institutions and a few private houses. It is estimated that 77.6 percent of the households has no toilet facility and use bush or field as toilet facility which poses serious environmental and sanitation problems and 9.9 percent use public toilet as their toilet facility in the District. Less than one percent (0.2%) use bucket or pan as toilet facility. The District Assembly is now emphasizing household toilets and hygienic education, to ensure a sense of ownership of facilities and their maintenance (Ghana Statistical Service, 2010).

3.2.2 Structure of the Economy

Being a typical rural district, the economy of Nadowli/Kaleo is dominated by the agriculture sector with commerce and industrial sectors-least developed. Of the employed population, a large proportion of about 69.9 percent are engaged as skilled agricultural, forestry and fishery workers. The second larger group in terms of proportion is those who work in craft and related trades, constituting 15.2 percent of the working population of the district. About 6.6 percent of them work in service and sales and only 3.4% are engaged as professionals. The nature of income of the people influences the type of toilet facility to construct. Measures should therefore be taken to ensure that incomes of farmers are improved through better storage and marketing of agricultural produce as well as the introduction of other income generating activities in more deprived areas (GSS, 2014).

3.3 Research Design and Approach

Parahoo (1997: “142”) defines research design as “a plan that describes how, when and where data are to be collected and analyzed”. A qualitative research design was employed for the study. Qualitative research methods give an understanding of the situation in its uniqueness, presenting what respondents perceive about the situation and what their meanings are (Patton, 2002). Also qualitative procedure is clearly explanatory and descriptive (Sarantakos, 1998). Specifically, a phenomenological approach was used because it provides a description of what people experience and how they experience what they experience (Patton, 2002). The phenomenological paradigm was useful because it provided complex descriptions of how respondents experienced the

phenomenon being studied (Mack, Woodsong, Macqueen, Guest & Namey, 2005). This study adopted an exploratory approach with the aim of seeking the thoughts and perceptions of rural households on the dynamics of human behaviour in Nadowli/Kaleo district where the Community-Led Total Sanitation (CLTS) approach has been used to stimulate community action for sustainable behaviour change to take place. The respondents were allowed to freely recount their lived experiences in relation to the objectives of the study.

3.4 The Study Population

The target population for this study comprised households who adopted sustained behaviour change in ODF practice, households who adopted ODF but did not sustain the behaviour and households who did not adopt the ODF behaviour in the study area. They consisted of young and old as well a male and female in Nadowli-Kaleo district of Upper West region.

3.5 Sample Size and Sampling Techniques

The study used a multi-stage sampling strategy to select the respondents. To begin with, the District was divided into seven Area Councils based on the geographical location of the various communities: Jang, Nadowli, Sankana, Chrikpong, Nator, Sombo and Kaleo. Secondly, purposive sampling was used to select four intervention communities from each of the seven area councils. In order to determine the dynamics of sustainable behaviour change in ODF innovation, households were stratified into sustained, unsustained and non-adopter groups based on the post CLTS implementation reports by

UNICEFF (2014). Nine households (3 sustained, 3 unsustained and 3 non-adopters) were randomly selected using the lottery method from each community. Eighty four households of respondents were selected from each category making a total of 252 respondents as sample size for the study from a sample frame of 550-total households where the CLTS programme was piloted. Selection of respondents from the households for the study was voluntary. Nine key informants comprising of seven assembly men from the seven area councils were randomly selected and the two district environmental officers were also selected.

Table 3.1. Proportion of Sample Units selected from each community seven Area Councils

Area council	Communities	Number of Households as at 2012			Number of sample unit selected		
		Sustained	Unsustained	Non-adopter	Sustained	Unsustained	Non-adopter
Kaleo	Gudori	7	6	7	3	3	3
	Gbogyiri	3	3	3	3	3	3
	Musama	4	4	4	3	3	3
	Daasigi	4	3	3	3	3	3
Nadowli	Sigidouri	7	7	6	3	3	3
	Toyaga	7	7	7	3	3	3
	Duong	7	7	7	3	3	3
	Chakale	4	5	5	3	3	3
Sankana	Nyimbali	8	9	9	3	3	3
	Yaali	8	8	9	3	3	3
	Botile	3	3	3	3	3	3
	Dibore	6	7	7	3	3	3
Chrikpong	Duuronpari	3	4	4	3	3	3
	Gonpari	5	5	4	3	3	3
	Biire	8	6	8	3	3	3
	Kontaali	7	7	8	3	3	3
Nator	Kpazie Muolo	9	9	7	3	3	3
	Janguasi	8	9	6	3	3	3
	Dongin	3	3	4	3	3	3
	Toyaga	8	9	9	3	3	3
Sombo	Papu	9	8	6	3	3	3
	Banu	7	8	5	3	3	3
	Nyimbali	8	8	6	3	3	3

	Piree	9	8	9	3	3	3
Jang	Zongo	7	6	7	3	3	3
	Duong No 1	8	9	7	3	3	3
	Duong No 2	8	8	7	3	3	3
	Buu	9	6	9	3	3	3
Total	**28**	**184**	**182**	**184**	**84**	**84**	**84**

Source: Field survey, 2014

3.6 Method of Data collection

Data was collected from respondents through interview guide using open-ended questions, documentary sources, non-participant observation and key informants interviews from the 252 households and nine key informant. The open-ended questions allowed respondents to express themselves freely and enabled the researcher and participants to discuss emerging issues in much detail. Also the choice of open-ended questions was influenced by a variety of factors including the sample size, type and number of questions needed to collect data as indicated by Saunders, Lewis, and Thornhill, 1997; (as cited in Sualihu, 2012). Additionally, the data collection method allowed the researcher to probe participants' responses for elaboration and to explore key issues raised by respondents, which were useful for the study. The consent of the respondents was sought before the interviews were conducted and participants were assured of anonymity and confidentiality regarding the information they provided. The data was collected with the help of a field assistants who helped administer the questionnaires to individual respondents.

Non-participant observation was used for objective assessment of on-site situations such as quality of toilet facilities, where household members' defaecate, which sex group patronize the use of the latrines and whether women use latrines with men at all times. Also an interview guide was used to collect data from the key informants. Key informant refers to anyone who can provide detailed information and opinion based on his or her knowledge of a particular issue.

Secondary information relevant to the study was also obtained from articles, journals, reports, and environmental health policy documents, project monitoring reports from stakeholders, books and theses for purposes of cross checking data obtain through the interviews. The combination of primary and secondary methods of data collection in the research helped obtained qualitative information that was narrated and cross checked with other data, a method called "triangulation" Law et al., 1998; (as cited in Sualihu, 2012).

3.7 Data Analysis

Kumar (1999) stated that data analysis is the computation of certain measures along searching for pattern of relationships that exist among variables. The study variables included types of latrines, access to and quality of latrines, income levels, location and distance to the latrine site, marital status, attitude and behaviour towards ODF, sanitation campaigns and age as independent variables and sustainable behaviour change in ODF innovation as the dependent variable. The raw data was coded and analyzed inductively because it enabled the dominant or significant themes to emerge (Thomas, 2003). The

data collected were analyzed through the following procedures:

3.7.1 Description of the Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics of respondents in the study area were described using descriptive statistics. The characteristics were age, sex, religion, marital status, educational level and occupation. These were analysed using frequencies and percentages. The softwares that were used to analyze this data were the Statistical Package for Social Sciences (SPSS) and Microsoft excel.

3.7.2 Objective one sought to determine why some rural people adopt ODF innovation and sustain it but others do not.

The determinants on why some rural people sustain ODF innovation and others do not was also analysed using descriptive statistics such as tables and charts. A 4-point Likert Rating Scale (LRS) was used to seek the views of respondents on the determinants of behaviour change patterns and were ranked as ***Strongly Disagree (1), Disagree (2), Agree (3***), and ***Strongly agree (4)***. The Likert-Type response data on the views of respondents was analysed using descriptive statistical tools including frequencies, percentages and modes of the respondents' ratings as suggested by Clason and Dormody (1994). Based on the coding of the four response options (Strongly-Disagree = 1, Disagree = 2, Agree = 3 and Strongly-Agree = 4), a modal value of 1 of the respondents ratings on an item will indicates their strong-disagreement on the item, 2 indicates disagreement, 3 indicates agreement and 4 strong-Agreement.

3.7.3 Objective two: Perceptions on what affect the sustenance of behaviour change in the ODF innovation in Nadowli/Kaleo district

Perceptions affecting the sustenance of changed behaviour in ODF innovation in Nadowli/Kaleo district, respondents were made to select and rank the perceptions in order of importance. The Kendall's concordance analysis was used to test for the agreement of the rankings by the respondents. This is because the Kendall's coefficient of concordance (W) is a measure of agreement among several judges (n) assessing a given set of (p) objects (Legendre, 2005). The index (W) measures the ratio of the observed variance of the sum of ranks to the maximum possible variance of the rank. This index makes it possible to find the sum of the ranks for each perceptive being ranked. If the rankings are in perfect agreement, the variability among these sums will be a maximum Mattson, 1986, (as cited in Tahidu, 2010). The Kendall's coefficient of concordance is given by the relation: $W = 12S/p^2 (n^3 - n) – pT$, where: W = Kendall's concordance, p = the number of perceptive, n = number of respondents (sample size), T = the correlation factor for tie ranks and S = the sum of square statistic.

3.7.4 Objective three determined the effects of sustaining and not sustaining ODF Innovation adoption in society.

A 4-point Likert Rating Scale (LRS) was also used to determine the perceived effects of sustaining and not sustaining behaviour change in society on ODF innovation in a similar manner as was done for objective one. Statistical Package for Social Science (SPSS) version 20.0 and Microsoft Excel 2013 was used to analyse the data obtained from the

field after the responses were coded. This objective was also analysed using means, standard deviations, frequencies and percentages

3.8 Ethical Issues and Quality Assurance

In order to ensure and maintain objectivity, ethical issues were considered in the study. According to Sarantakos (2005), ethical consideration in social research enhances the quality of the study, since relevant research methodology is applied, accurate methods of data collection are employed, and falsification of data among others are avoided. The topic and the objectives for conducting the study were explained to the respondents. The researcher assured the respondents of confidentiality of information and anonymity of respondents. The consent of respondents were solicited. Respondents participated voluntarily and free from any coercion. The interview guide was pre–tested in a purposively selected community, to determine their appropriateness in collecting the desired data. It was also tested for clarity, suitability, logical flow of questions, ambiguity and vague meanings. This exercise took two weeks. Issues that came up during the pre-testing were used to refine the interview-guide. Again, all works cited was duly acknowledged and referenced.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents and discusses the results of the study. The results obtained were intended to assess the dynamics of sustainable behaviour change in sanitation practices in Nadowli/Kaleo district. This chapter is divided into four sections in line with the study objectives: the first section deals with the demographic characteristics of the respondents, the second section is concerned with why some people adopt sustainable ODF innovation but others do not; the third section deals with the factors that affect the adoption and sustenance of ODF in the Nadowli/Kaleo district and the fourth section presents the effects of sustaining and not sustaining behaviour change in the adoption of ODF in society.

4.2.0 Socio-Demographic Characteristics of Respondents.

This section describes the population composition of the study according to age, sex, marital status, education and occupation. These demographic characteristics are critical in understanding the components of the dynamics of sustained, unsustained and non-adopted behaviours of households in the study population.

4.2.1 Sex of respondents

Figure 4.1 shows that they are (114) males and (138) female representing 45 percent and 55 percent respectively. This result is a true reflection of the structure of the population

in the district with respect to sex. The 2010 Population and Housing Census district report (GSS, 2012) puts the total population of the Nadowli district at 94,388. Out of this 44,724 (47.4%) are males and 49,664 (52.6%) are females. The sex distribution of the population has some implications for socio-economic and demographic development as well as for labour force and gender related activities in the district (GSS, 2012).

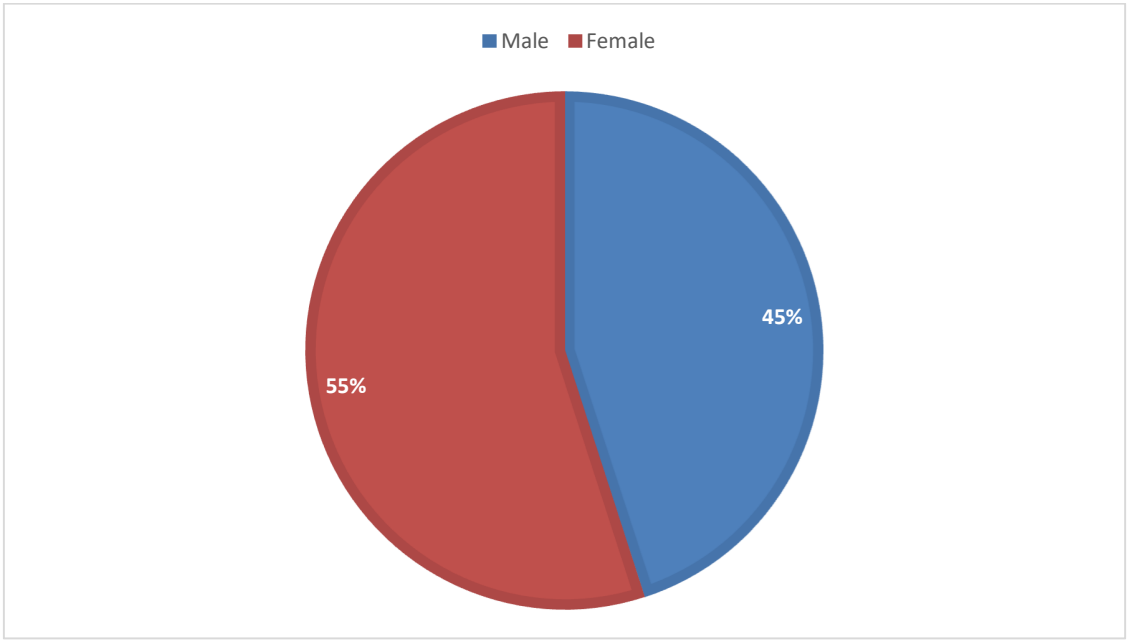

Figure 4.1 Sex of Respondents. (Source: Field survey, 2014)

4.2.2 Age of respondents

Figure 4.2, illustrates that out of 252 respondents, the ages of 31-45 years constitute the highest proportion (42.7%). The number of respondents found between the ages of 46-60 is the second highest, constituting (26.8%). This is followed by respondents between the

ages of 15-30, which represent 25% and finally the respondents from age 60 and above recorded 4.5%.

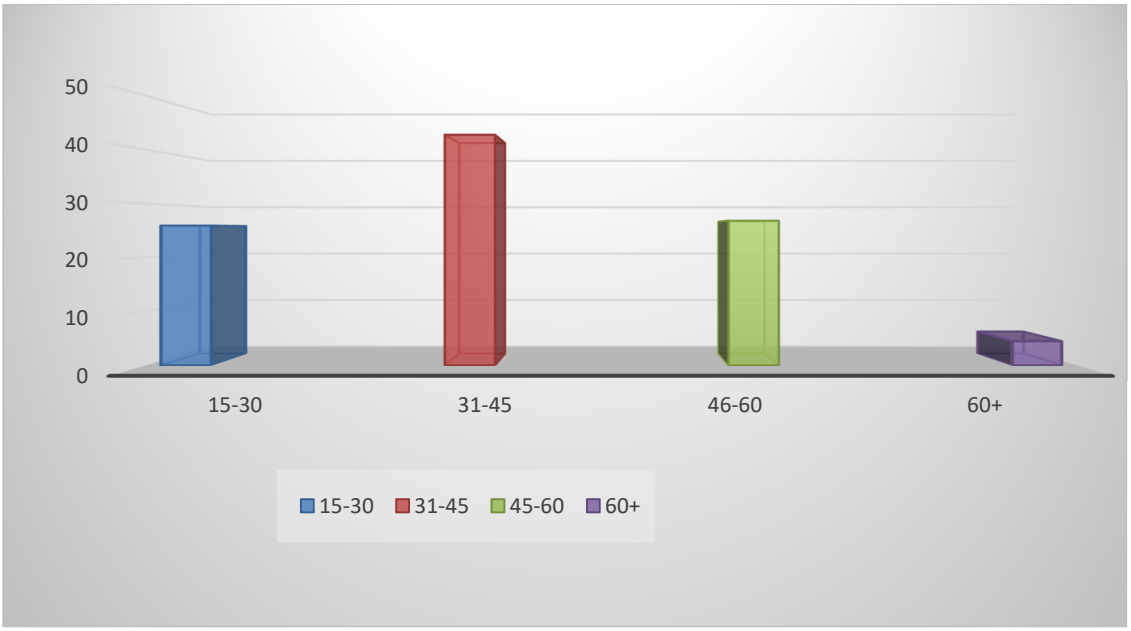

Figure 4.2 Age of Respondents. **(**Source: Field Survey, 2014**)**

Table 4.1 illustrates that a large majority of the respondents (64.7%) were married while 24.6% and 10.7% were single and widowed respectively. The data also depicts that a large majority of the respondents (74.6%) were Christians, while 15.5% practiced African traditional religion and the remaining (9.9%) were Muslims. Further analysis also revealed that, 10.7% attained primary/middle school education, and 13.8% had SHS/Ordinary level education. Only 6.4% of the respondents' attained tertiary education and finally 61.9 % had no formal education, whiles 7.2% had non-formal education.

Table 4.1. Descriptive Statistics on Salient Demographic Characteristics of Respondents.

Variables	Frequency	Percentage
Marital status		
Single	62	24.6
Married	163	64.7
Widowed	27	10.7
Total	**252**	**100**
Religious denomination		
Christian	188	74.6
Muslim	25	9.9
Traditional	39	15.5
Total	**252**	**100**
Level of education		
Primary/JHS/Middle	27	10.7
SHS/O level	35	13.8
Tertiary	16	6.4
Non-formal	18	7.2
No formal education	156	61.9
Total	**252**	**100**

Source; Field Survey, 2014.

4.3.0 Reasons why People Adopt an ODF Innovation and sustain it but others did not.

This section provides information on the second objective which sought to determine why some people adopt ODF innovation but others did not. It captures issues such as the reasons on why some people adopt sustainable ODF innovation, why others adopt ODF

innovation but did not sustain it and why others did not adopt the ODF innovation at all.

4.2.1 Reasons why People Adopt ODF Innovation and sustain it.

Table 4:2 shows the various reasons respondents adduced for adopting ODF innovation and sustaining it. A Likert scale type of questions were used to elicit responses on how these reasons influenced sustained behaviour change in the adoption of ODF innovation. The scale was defined as: ***Strongly disagree (1); Disagree (2); Agree (3); and Strongly agree (4).***

Table 4.2. Respondents' reasons on Why ODF Innovation is Adopted and Sustained.

Statement	**Strongly Disagree (1)**		**Disagree (2)**		**Agree (3)**		**Strongly Agree (4)**		**Scale Mark**
	Freq	%	Freq	%	Freq	%	Freq.	%	
Does participation affects the adoption of ODF?	6	2.3	6	2.3	99	39.3	141	56.1	4
Does level of education of affect behaviour in ODF adoption?	36	14.3	18	7.1	84	33.3	114	45.3	4
Does access and quality of toilet facilities influence usage?	00	00.0	33	13.1	148	58.7	71	28.2	3
Does age influence behaviour in ODF adoption?	34	13.5	20	7.9	28	11.1	170	67.5	4
Does distance to the toilet facility influences people's adoption behaviour?	50	19.8	33	13.1	139	55.2	30	11.9	3
Does incomes affect adoption and sustenance of ODF innovation?	4	1.6	3	1.2	45	17.9	200	79.3	4
Does sex influence the change behaviour in ODF adoption?	2	0.8	8	3.2	195	77.3	47	18.7	3
Does motivation influence peoples' change behaviour to practice ODF?	6	2.4	19	7.5	142	56.3	85	33.8	3
Does persuasive communication lead to collective adoption of ODF?	14	5.6	35	13.9	155	61.5	48	19.0	3

Does religion influence the adoption and sustenance of households' behaviour on ODF?	20	7.9	30	11.9	170	67.5	32	12.7	3
Does "name of shame' affects household's changed behaviour on ODF adoption?	2	0.8	48	19.0	25	9.9	177	70.3	4

Source: Field Survey, 2014.

Table 4.2 demonstrates that respondents *strongly agreed* with a modal value of four (4) to the influence of following variables on the adoption of ODF: participation in CLTS activities, levels of education, age of respondents, income levels of respondents and punishment as a deterring tool, that influence them to sustain the adoption of ODF innovation. About 56% of respondents "*strongly agree"* that participation in CLTS programme had contributed to the sustainability of ODF innovation. They claimed that the awareness created through participation in CLTS, gave them knowledge on health implication of open defaecation. The study findings is similar to Kar's (2003) assertion that CLTS approach had empowered people through participation in India to analyse the extent and risk of environmental pollution caused by open defaecation and that has affected their sanitary behaviour positively. Participation in ODF programme was supposed to influence participants to make their own choices as to the type of toilet facilities they want to construct and to climb the sanitation ladder in future.

Respondents were asked if they agree that the level of education has an influence on their behaviour towards the adoption and sustenance of ODF innovation. Table 4.2 shows that 7.1% of the respondents "*disagreed"* that level of education has an influence on

sustainable behaviour change in the adoption of ODF innovation but 45.3% of the respondents *"strongly agree"* that the level of education of an individual has an influence on his/her behaviour when they are adopting ODF innovation. Educated respondents living in these same communities have constructed, maintained and used their toilet facilities than those who had no formal education. This findings is in line with Kar's (2003) view that, knowledge of the health implication of open defaecation by households, influence their desire to sustain the adoption of ODF.

Table 4.2, also illustrates that about 13.5% of the respondents *"strongly disagree"* that age has an influence on the adoption and sustenance of ODF innovation. Also 7.9% of the respondents "*disagree*" that age could influence their behaviour on ODF adoption and sustenance, while 11.1% of the respondents *"agree"* that age has an influence on their behaviour in the adoption and sustenance of ODF. Again 67.5% of the respondents with the modal mark of four (4) *"strongly agree"* that age influenced their decision to adopt and sustain ODF innovation. The youth are more passionate and active in constructing and using sanitation facilities. How old or young a respondent is, has an influence on his/her rate of adoption and sustenance of an innovation. Respondents in this group who are between the ages of 31-45 tend to be more active and willing to use indigenous materials to construct toilets and also take risks in new development interventions. The study findings shows that the age groups from 15-60 are those who had adopted changed behaviour in ODF innovation therefore, age of an individual significantly influence the

adoption of ODF innovation. The observation made by researcher shows respondents between the age groups of 15-30 and 31-45 are those who are willing to sustain ODF innovation. These age group maintain the toilets facilities and clean these facilities regularly. When asked if sex of a respondent has an influence on once ability to adopt and sustain ODF, large majority of the respondents (77.3%) *"agreed"* that sex influenced their decision to adopt sustainable ODF innovation. Miss Rabiatu an assembly woman of Nator electoral area indicated that;

> *"Gender influences ones desire to adopt and sustain ODF practice. Females tend to have more concern about their privacy, safety, dignity and comfort hence their desire to sustain ODF than their male counterparts. The females, therefore, will wish that there are toilet facilities in every household"*.

On the other hand, 3.2% of the respondents "*disagree"* and reported that sex has no influence on their decision to adopt and sustain ODF behaviour. Table 4.2 further shows that 79.3% "*strongly agree"* that incomes of respondents play a significant role in the construction of toilet facilities and therefore influence the behaviour of people on the adoption and sustenance of ODF practice. Those who have high incomes reported that, there has been changes in their behaviour towards sanitation. This finding affirms the study conducted in Bhadrak, Orissa in India on "promoting latrine use" by Pattanayak et al. (2007) which revealed that, there is a positive correlation between household latrine adoption rate, and sanitation change behaviour and household wealth status.

About 56 % of the respondents also "*agree*" that incentives or motivation in the form of certificates help in the adoption and sustenance of an innovation. Incentives for attaining ODF status played a significant role in sustaining ODF innovation. Respondents, however, indicated that the incentives or rewards should not be in monetary form in order to prevent the creation of a divisive society. They stated that durbars could be organize in honour of those who obtained ODF status. During observation, it was revealed that, incentives in the form of certificates given to those who sustain the adoption of ODF innovation by the district sanitation officers had motivated others to construct their own toilet facilities in order for them to also gain such recognition**.** However 7.5% of the respondents "*disagree"* that incentives have influence on their behaviour as far as the adoption and sustenance of ODF innovation is concerned. Table 4.2 further shows that majority of respondents (70.3%) "*strongly agree"* that punishment for non-adopters of ODF has positively influenced the adoption of ODF innovation. Respondents strongly agreed that meting out punishment like "*name of shame*" to non-adopters of ODF by members of a social system positively influence the adoption and sustenance of ODF. The findings support that of Kar (2003) who indicated that the CLTS approach plays on the emotions of community members through *"walk of shame"*.

Table 4.2 also indicates that 58.7% of respondents "*agree"* with a modal value of three (3) that access and quality of toilet facilities motivates them to sustain their behaviour in the adoption of ODF. This reinforces the view that respondents hold the perception that if toilet facilities are available with an appreciable quality, it motivate them to adopt and

sustain their behaviour as far as ODF practice is concerned in the area. Apart from access and quality of the toilet facility, 55.2% of the respondents "*agree*" that distance to the toilet facility has an influence on the adoption and sustenance of an ODF innovation. They stated that if the distance to the toilet facility is farther from their homes the higher the risk for women who are likely to be raped on their way to and from the toilet site. They will prefer the sanitation facilities to be closer to their homes to warrant continuous use. Respondents were asked if persuasion by the change agents had led to collective adoption of ODF innovation. About 56% of the respondents "*agree*" that persuasive behaviour change communication (BCC) strategies like drama, role play, sanitation songs had led to collective adoption and sustenance of ODF innovation. They indicated that, the BCC strategies adopted during the ODF innovation diffusion period had contributed immensely to its adoption and sustenance. During one-on-one interview, a key informant in Charisombo village reported:

> *"how a facilitator stood in the middle of a defaecation site and took a scoop of faeces on one plate and asked a participant to bring a plate of food and kept the two next to each other. Flies constantly flew from one plate to the other. The facilitator then offered the plate of food to participants and asked if they would eat it, which evoked a lot of disgust. The facilitator told the participants that this is exactly what flies' do to their food and that they are constantly ingesting each other faeces. He added that this BCC strategy had encouraged a collective response in the adoption and sustenance of ODF innovation".*

The following results illustrate how religion influences the adoption of ODF innovation.

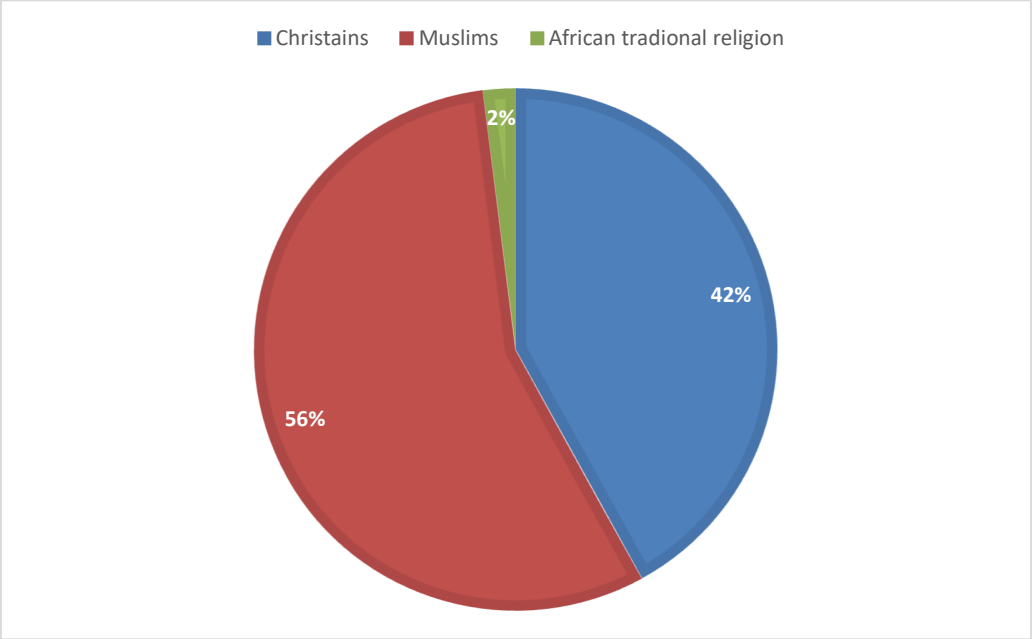

Figure 4.3 Religion and adoption of ODF innovation (Source: Field Survey, 2014.)

Figure 4.3, shows that 56% of the respondents who are Muslims "*agreed*" that religion has an influence on their behaviour as far as the adoption of ODF innovation is concern.

> *Mr Daniel Dong indicated that "Muslims among the respondents indicated that constructing toilet facilities in their homes was to help their wives and daughters most especially, to have their privacy when they visit the toilet facility and also to wash their anus regularly as demanded by their religious practice".*

Muslims therefore show most sustained change behaviour in ODF adoption. This assertion is in tandem with Avvannavar & Mani (2008), they pointed out that Muslims constantly practice anal cleansing with water after defaecation and that this practice can be done in comfort in a confined place. Also 2% of the respondents who are African

traditional worshipers *disagree* and stated that religion does not influence their behaviour in the adoption ODF innovation.

4.2.2 Reasons why People Adopted ODF Innovation but did not Sustain it

In relation to the reasons on why some people adopted ODF innovation but did not sustain it, 33.3 % of the respondents revealed that, their inability to sustain behaviour change in the adoption of ODF innovation was based on several reasons. A Likert scale was used to rank these reasons.

Table 4.3. Reasons why people adopted ODF Innovation but was not sustained.

Statement	**Mean**	**SD**
Participation has no influence on the sustenance of ODF innovation	**3.99**	**0.91**
Level of education of respondent led to non-sustenance of ODF.	**3.13**	**1.19**
Persuasion led to collective adoption	**1.97**	**0.84**
Age could not influence the sustenance of ODF adoption	**2.25**	**1.01**
Punishing people who did not adopt ODF led to non-sustenance	**1.61**	**0.75**
Influence of distance to the toilet facility affect sustainability of ODF behaviour	**2.60**	**1.06**
Incomes of people affect the sustenance of ODF innovation	**2.88**	**1.09**
Sex of an individual caused non-sustenance of ODF behaviour	**2.61**	**1.07**
Expecting motivation for practicing ODF caused non-sustenance	**3.25**	**1.22**
Access and quality of toilet facilities brought about non-sustenance of ODF	**3.92**	**0.91**
Ignoring cultural practices of the people lead to non-sustenance	**3.93**	**0.98**
Religion has affected behaviour change in the sustenance of ODF	**3.63**	**1.15**
Mean	**2.99**	**0.99**

Source: Field Survey, 2014.

Scale: 1 = Strongly Disagree (SD); 2 = Disagree (D); 3 = Agree (A); 4= Strongly Agree (A).

The mean value of 2.99, approximately 3.0 with a Standard Deviation (SD) = 0.99 corresponds to the "*Agree*" response category on the scale. The mean values range from 1.61, SD = 0.75 (Persuasion led to collective adoption.) to 3.99, SD = 0.91 (participation has no influence on the sustenance of ODF innovation). This implies that households' participation in CLTS programme does not automatically result in ODF practice. A mean value of 3.99 is approximately 4.00 which is equivalent to "*Strongly Agree*" on the scale

Table 4.3 further indicates that the following contributed to non-sustenance in the adoption of ODF innovation by households: persuasion has led to collective adoption of ODF (1.97, SD = 0.84) and punishing people who did not adopt ODF innovation leading to non-sustenance (1.61; SD = 0.75). The mean values for these factors show that respondents "*Disagree*" that those factors could lead a relapsed to open defaecation practice. Also respondents "*agreed*" with the statement distance to the toilet facility influence the sustainability of ODF behaviour (2.60, SD =1.06, and indicated that distance to the toilet facility largely influence their decision to sustain ODF behaviour. Respondents further "*Agree*" that income levels largely contributed to their inability to sustain ODF with a mean value of (2.88, SD =1.09). Those who adopted ODF but could not sustain it attributed the situation to inadequate finances for regular maintenance of their toilet facilities. Also sex of individual cause non-sustenance of ODF behaviour with a mean of 2.61, and SD = 1.07 corresponding to the "*Agree*" response category on the scale. It was considered a taboo for men to share the same toilet facility with their female counterparts during their menstrual periods. Respondents also "*Agree*" that level of

education of respondents led to non-sustenance of ODF (3.13, SD = 1.19). They stated that respondents in educated households tend to be more desirous to adopt and sustain ODF innovation than those in households with no formal education due to their ability to understand and appreciate the benefits of ODF.

> *Mr Combat one of the district environmental officer espoused that "respondents from educated households tend to respond positively to the change massage during the triggering period of the CLTS implementation stage. My observation is that they are those who have been able to sustain their behaviour in ODF innovation he stated"*

Also with the mean value of 2.25, and SD = 1.22 respondents *"Disagree"* that giving motivation to households for practicing ODF could cause non-sustenance. They admitted that if they were to be given incentives in the form of finance and toilet facility spare parts for adopting ODF innovation it would have encouraged them to sustain the ODF innovation.

All the remaining statements recorded mean values of approximately 4.00: ignoring cultural practices of the people had led to non-sustenance of ODF innovation (3.93, and SD= .98). The results obtained from the findings shows that the introduction of CLTS had not incorporated cultural practices of the people in the study communities in its programming thereby leading to non-sustenance of ODF innovation.This findings are similar to those of Zeitlyn and Rowshan (1997) and Burghart (1988) who indicated that knowledge on the part of biomedical practitioners and health workers has been dismissive

of indigenous beliefs and practices of people who are to benefit the health programme. Respondents *"strongly agree"* that age could influence non-sustenance of ODF innovation (3.85, SD= 1.01**).** The study found that, the older respondents were not able to sustain ODF innovation because they could not regularly maintain their toilet facilities. Findings from this study are similar to that of Curtis et al. (2004), who stated that women were more strongly moved by emotions of shame and disgust than men, and that sensitivity to disgust tends to decline with age. Respondents *"Strongly Agree"* that access and quality of toilet facilities had caused non-sustenance of ODF innovation (3.92, SD= .91**)**.

4.2.3 Respondents' reasons on Why People did not Adopt ODF Innovation.

The study revealed that 33.3% of respondents did not adopt ODF innovation. They expressed different reasons for the non-adoption of the ODF innovation. Likert scale was used to analyse these perceptions. **The Scale was defined as follows: Strongly Disagree (SD)=1; Disagree(D)=2; Agree (A)=3 and Strongly Agree(SD)=4**

Table 4.4 Respondents' reasons on Why they did not adopt ODF Innovations

Statement	D=1 (%)	AD=2 (%)	A=3 (%)	SA=4 (%)	Total
Non-participation in ODF innovation programme led to non-adoption	56.8	00	43.2	00	100
Level of education of respondent led to non-adopter of ODF	40	00	60	00	100
Persuasion did not influence your decision to adopt ODF innovation	100	00	00	00	100
Age influence the non-adoption of ODF	25.9	00	74.1	00	100

Punishing people who did not adopt ODF discourages you to adopt	19	00	81	00	100
Distance to the toilet facility affected your desire to adopt ODF	84.3	00	15.7	00	100
Incomes levels of people led to non-adoption ODF innovation	100	00	00	00	100
Sex of an individual causes non-adoption of ODF behaviour	17	00	83	00	100
Provision of incentives influence the adoption of ODF Practice	2.1	100	97.9	00	100
Access and quality of toilet facilities cause non-adoption of ODF	8	00	92	00	100
Ignoring cultural practices of the people lead to non-adoption	6	00	94	00	100
Religion has influence non-adoption of ODF behaviour change	100	00	00	00	100

Source: Field Survey, 2014.

Table 4.4 (statement 1), illustrates that 56.8% of the respondents *"Disagreed"* that non participation in ODF innovation programme influence non-adoption. Contrarily to the study findings Kar (2003) espoused that participation and involvement of women and children in CLTS programme is the most effective mechanisms for achieving behaviour change in sanitation practice in communities. He stressed that participatory process encourages collective reflection upon sanitary situation of a community. On the issue of distance to the toilet facility and if it affects ones desire to adopt ODF behaviour (Table 4.4 statement 6), a large majority of respondents (84.3%) *"Disagreed"* that distance to the public toilet was part of the reasons why they did not adopt ODF innovation. They stated that ODF innovation emphasized individual households' toilet construction which should not be located far from their homes. They were of the view that the stench emitted

from the latrines make it difficult to breath and for that matter they prefer to continue with open defaecation which done far from their homes.

When the respondents were asked whether the punishment meted out to people who did not adopt ODF is severe enough to deter them from adopting ODF innovation, a large majority of the respondents (81%) *"Agreed"* (Table 4.4 statement 5). The policy of sanctions through "*naming and shaming*" to discourage the offenders from practicing OD, rather brought about a divisive society, making it difficult for them to change their behaviours. In another development, when the respondents were asked to respond to the statement whether persuasion through BCC strategies during the triggering period of CLTS did not effectively influence their decision to adopt ODF innovation, all (100%) responded in the affirmative (Table 4.4 statement 3). This response is inconsistent with Kar and Chambers (2008) assertion that triggering is an effective tool in persuading people to change their sanitary behaviours. In responding to whether level of incomes have contributed to their unwillingness to adopt ODF innovation, all (100%) of the respondents "*Agreed"* to this statement (Table 4.4 statement 7). They stated that poverty is an issue that affects their ability to install latrines. With less disposable income, poor households have competing priorities and tend to give sanitation a lesser priority. The findings of the study is similar to Micheal's (2006) which stated that poor people surviving on subsistence prefer to spend their income on food, given little or no attention to other items including latrine construction. The argument that cost is a determinant factor to the poor's response to household latrine adoption is further backed by Pattanayak et al. (2007) study on "promoting latrine use" in Bhadrak, Orissa in India in which he

concluded that cost is one of the major factors responsible for poor response to the need to adopt ODF.

Another statement that respondents *"Agreed"* with a large majority (92%), as responsible for non-adoption of ODF is access to and quality of latrines. Access to financing options to build, repair, or upgrade a latrine is fairly low. The respondents indicated that they either did not know or were unsure where they could get financing to construct their latrines even if they want to do so. Also large majority (Table 4.4 statement 8) of the respondents (83%) "*Agreed"* that sex of an individual has influence the adoption of ODF. Their assertion was that women tend to use toilet facilities more because it provides privacy for them. This results disagree with Program (2010) who stated that men were attracted to the privacy more than women. The findings of the study also indicate that cultural beliefs continue to serve as a reason that account for why households did not adopt ODF innovation.

This view was held by a large majority (94%) of the households interviewed. However the observation made by the researcher indicate that those who did not adopt the ODF innovation are only pretending to uphold a belief that do not exist. For some of this same respondents are found sneaking into their neighbours facilities when their neighbours are gone to their farms. Table 4.4 (statement 9) also shows that, a large majority (97.9%) of the respondents "*Agreed"* that incentives or motivation help in the adoption of ODF innovation. Incentives for attaining ODF status plays an important role in sustaining

ODF. They however, indicated that the incentives or rewards given to only those who have adopted and sustained ODF had created a divisive society. Observation, revealed that, incentives rather dampen the interest of the non-adopters of ODF since it was discriminately done for only the sustained group. On the issue of age and its influence on non-adoption of ODF, majority of the respondents (74.1%) *"Agreed"* that the young easily adopt to new innovation than the old since the old are used to their old age ancestral practice of open defaecation (Table 4.4 statement 4). When asked if level of education of respondent caused non-adoption of ODF, 60% of respondents *"Agreed"* to that statement and indicated that those who had education to the senior high level and above were able to sustain the adoption of ODF innovation. They claimed that the levels of education had helped them to understand the issues of ODF innovation. On the issue of religion and its influence on non-adoption of behaviour change in ODF innovation, all (100%) of the respondents respond in the affirmative. They indicated that the adherence of one's religious faith determines the adoption of ODF innovation. Observation revealed that respondents who worship traditional religion are adamant in adopting ODF innovation. This findings is similar to Banda & Sarkar, (2007) as cited in Movik and Lyla 2010) who noted that, religious beliefs play a part in influencing household adoption and usage of household latrines. Respondents in the study area were further asked to indicate if they will use "dig and burry" as an alternative sanitation practice. The findings are summarized in Figure 4.4.

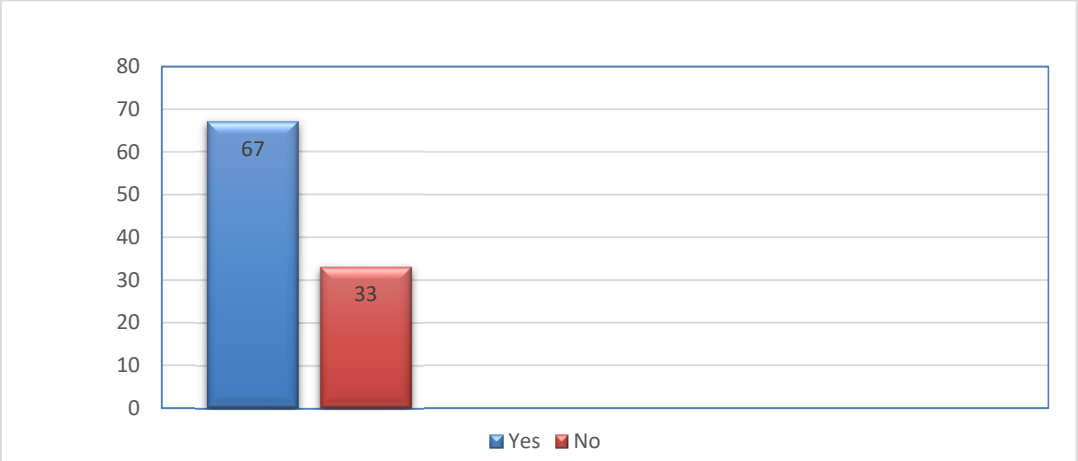

Figure 4.4. "Dig and burry" as an alternative sanitation practice (Source: Field Survey, 2014.)

Figure 4.4, indicates that majority of the respondents (67%) will adopt to the use of "dig and burry" as an improved alternative sanitation practice when they are at places where latrines are not available, while 33% of the respondents stated that they will not use "dig and burry" even when sanitation facilities are unavailable and will therefore resort to open defaecation.

4.3.0 Perceptions that promote the Adoption of ODF in the Nadowli/Kaleo District.

A sanitation oriented person would have to be aware of the various factors that promote sustainable behaviour change in ODF innovation. Respondents were asked to identify which economic, educational, socio-cultural and environmental perceptions that promote the adoption and sustenance of ODF innovation. Kendall's Coefficient of Concordance with the aid of SPSS was used to rank and test for the agreement of the responses. The least ranked mean value is considered as the most important perceptive and the highest ranked mean value as the least ranked factor.

4.3.1 Economic Perceptions that promote the adoption of ODF in Nadowli-Kaleo district

Table 4.5 illustrates that large majority of respondents with a sum of score (163) and a mean rank of (1.53) mentioned income levels as the most ranked economic perception that influence people to adopt and sustain ODF behaviour. Majority of the respondents indicated that their income levels have significant influence on their ability to construct and maintain their toilet facilities.

Table 4.5: Economic perceptions that promote the adoption of ODF in Nadowli-Kaleo district

Perceptions	***Sum of scores**	**Mean Rank**	**Rank Positions**
Economic			
Income levels	163	1.53	1st
Incentives for practicing ODF	220	2.58	2nd
Cost of construction and maintenance	289	3.39	3rd
Type of occupation	341	3.55	4th
Lack of credit to support latrine construction	584	5.95	5th
Assess and types of latrines	614	6.60	6th

***Multiple responses (Source: Field Survey, 2014).

Again incentives for practicing ODF emerged as the second most important perceptive with a mean rank of 2.58. Incentives influence people to adopt and sustain ODF innovation. The respondents indicated that, when people who attain ODF status are rewarded in the form of certificates during durbars, it serves as motivation for others to attain the ODF status. On the issue of cost of construction and maintenance of the latrines, majority of the respondents with a mean rank of 3.39 consider that as a key motivating perception in the adoption and sustenance of ODF. If the types of available toilets are less

costly to construct, coupled with high income levels, they will be willing to construct, maintain and sustain its use.

Table 4.5 again shows minority of respondents with the sum of scores (314) and mean rank of 3.55 indicated that the type of occupation determines the sustainability of behaviour change in the adoption of ODF. If they have secured jobs with regular incomes it can motivate them to construct and maintain their latrines and that will lead to sustained sanitary behaviour. Another motivating perceptive determining the sustainability of behaviour change in the adoption of ODF innovation is lack of credit to support latrine construction with minority (mean rank; 5.95) of the respondents agreeing to that. Another significant perception motivating sustainable behaviour change in the adoption of ODF innovation is access to toilet facilities. Table 4.5 further illustrates that, the least mean rank of 6.60 and sum of scores of 614 of the respondents alluded to this reason.

4.3.2 Educational Perceptions that promote the adoption of ODF in Nadowli-Kaleo district

Table 4.6 illustrates that behaviour change communication strategies like drama, flyers and sanitation songs played an important role in the adoption and sustenance of ODF and therefore, ranked 1st with a mean rank of 1.90. The sum of score of 173 indicates that majority alluded to this assertion. They stated that the BCC strategy effectively employed in triggering CLTS programme had encouraged holistic participation by community members. The position held by the respondents is similar to earlier study conducted by

McConville (2008) in which she stated that behaviour change communication strategy, is an important tool, which when employed could lead to achieving health benefits from sanitation programmes.

Table 4.6. Educational perceptions that promote the adoption of ODF in Nadowli-Kaleo district

Perceptions	*Sum of Scores	Mean Ranks	Rank Positions
Educational			
Behaviour change communication strategy	173	1.90	1st
Behaviour change messages rather than building free toilets	245	3.11	2nd
Sanitation campaigns	399	3.32	3rd
Awareness on smell-free latrines	432	3.69	4th

*Multiple responses (Source: Field Survey, 2014).

Again Table 4.6 shows that majority of the respondents with the mean rank of 3.11 indicated that behaviour change messages (ranked 2nd) given to them during triggering period rather than construction of toilet facilities motivated them to adopt and sustain ODF innovation. The 3rd ranked perceptive was campaigns on sanitation change behaviour with the mean rank of 3.32. Respondents advocated for the need for more sanitation campaigns which will expose participant to affordable latrines. Information on the negative effects of open defaecation should be discussed properly to the people. “The essence of the diffusion process is the information exchange through which an individual communicates a new idea to one or several others” (Rogers, 1995, p. 18). Knowledge on certain cultural beliefs in relation to fears and perceptions of hygienic practices have

changed through the creation of awareness about the design and type of latrines to be constructed to avoid cultural clash, for instance during menstruation. They indicated that sanitation campaigns had changed long-held beliefs through mentioning faeces in public which either is not permissible by the culture of the people in Nadowli/Kaleo district; it equally addresses e needs, preferences and behaviours of children, women and men; to adopt approaches which recognize and allow optimal use of valuable community attributes such as participatory approaches.

4.3.3 Socio-cultural perceptions that promote the adoption of ODF in Nadowli/Kaleo district

Table 4.7: Socio-cultural perceptions promoting the adoption of ODF in Nadowli-Kaleo district

Perceptions	*Sum of Scores	Mean Ranks	Rank Positions
Socio-cultural			
Gender inclusive process	136	2.64	1st
Prestige	341	2.93	2nd
Attitude towards participation	461	4.27	3rd
Sanctioning open defaecators	848	4.88	4th
Resistance to adoption	891	6.96	5th
Religious /belief system	902	7.25	6th

*Multiple responses. (Source: Field Survey, 2014).

Gender and socially inclusive programmes (sum of score 136) in the process of CLTS implementation with the mean rank 2.64 was identified as the most important socio-cultural factor that promotes sustainable behaviour change in sanitation practices. The

rank shows that the involvement of both men and women in the implementation process helps to attain project sustainability. Also Table 4.7 shows that the second most important socio-cultural perceptive influencing changed behaviour in sanitation practices was prestige with the mean rank of 2.93. Prestige acquired in adopting sustainable behaviour change in ODF had served as a morale booster. Table 4.7 further indicates that the third most important perception motivating people to change their behaviour is attitudes towards participation during the introduction of CLTS programme. The attitudinal change programmes had taken into consideration the values, culture and beliefs of the communities and experiences which had led to the desired results. The CLTS programme implementation agents also addressed the myths, attitudes, beliefs and distorted perceptions of separate bathing places and toilet facilities for women and men because of taboos that do not allow them to use the same toilet facilities. Finally, sanctioning open defaecators was ranked 4th with a mean rank of 4.88 as a key motivating perception. This implies that punishing those who practice open defaecation had discouraged people from practicing open defaecation.

4.3.4 Environmental perceptions that promote the adoption of ODF in Nadowli-Kaleo district

Table 4.8 presents information on environmental perceptions that motivate people to adopt and sustain changed behaviour in sanitation practices. Perceptions like health status, sanitation facilities, distance, nature of land and proximity of forest were ranked to get the agreement among the ranks. Table 4.8 below is the summary of the ranks.

Table 4.8. Environmental perceptions that affect the adoption of ODF in Nadowli-Kaleo district

Item	Mean rank	Rank position
Environmental		
Heath status	1.58	1st
Sanitation facility	2.34	2nd
Distance to sanitation facility	3.94	3rd
Nature of land	4.12	4th
Proximity to the forest	7.30	5th

Source: Field Survey, 2014.

Environmental cleanliness constitutes the most important perception motivating people to adopt and sustain ODF innovation. This perceptive was ranked 1st with the mean rank of 1.85. Environmental cleanliness could lead to improve health status. This is followed by quality of the sanitation facility which was ranked the 2nd most important perceptive that motivates them to sustain open defaecation free environment. If regular maintenance of latrines are done by those who have their personal latrines it will help maintain environmental quality, and thus encourage sustained use. Furthermore, distance to sanitation facility was the 3rd most important environmental perceptive with a mean rank of 3.94 motivating sustainable ODF behaviour. Because their personal toilet facilities are situated closer to their homes, it was easier to sustain the use of the latrines, leading to sustained changed behaviour. It will also alley the fears of being attacked on their way to the toilet facilities since they have their facilities not far away from their houses. Table 4.8 further shows that the nature of land in their area with a mean rank of 4.12 influenced

the sustained adoption of ODF innovation. The land is not waterlogged as such their latrines are not destroyed during raining season and also their latrines do not get filled up with underground water.

4.3.5.0 Perceptions Impeding the Adoption of ODF Innovation in the Nadowli/Kaleo District.

Respondents were asked to identify and rank the various perceptive that impede the achievement of sustainable behaviour change in ODF innovation. Economic, educational, socio-cultural and environmental perceptions were identified as important perceptive that could impede the adoption of ODF innovation. These perceptions were ranked using Kendall's Coefficient of Concordance to test for the agreement of the rankings by the respondents.

4.3.5.1 Economic and Educational Perceptions that impede the adoption of ODF in the Nadowli-Kaleo District

All the 252 respondents were asked to give the three top economic perceptive impeding the sustainability of changed behaviour in ODF innovation in Nadowli/Kaleo district. The reasons are summarized in Table 4.9.

Table 4.9 Economic and Educational Perceptions that impede the adoption of ODF in the Nadowli-Kaleo District

Item	Perceptions	Sum of scores	Mean rank	Rank position
Economic	Income level	163	1.85	1st
	Cost of construction and maintenance	314	2.57	2nd
	Type of occupation	416	2.71	3rd
	Available sanitation facilities	584	4.77	4th

	Incentives for practicing ODF	614	5.20	5th
	Financial Support to construct latrines	720	6.08	6th
Educational	Non-awareness on smell-free latrine	279	1.42	1st
	Behaviour change messages	231	2.18	2rd
	Behaviour change communication	478	3.94	3rd
	Sanitation campaigns	514	4.22	4th

*Multiple responses. (Source: Field Survey, 2014).

It is observed from Table 4.9 that, the three most important economic perceptive cited are: level of incomes of respondents with a mean rank of 1.85 and ranked 1st, cost of constructing latrines with a mean rank of 2.57 and was also ranked 2nd and type of occupation as the third most important perceptive. They indicated that these economic perceptive de-motivated them and served as hindrances to the adoption and sustenance of ODF innovation. They claimed that the non-availability of personal latrines in the area of study as a result of inadequate finances could affect the sustainability of behaviour change in sanitation practices. The non-adopters and the unsustained group members (households) travel to open defaecation sites and community public latrines and in the latter case join long queues in the morning or evening.

When respondents were asked to identify the educational perceptive that impeded the adoption and sustenance of Open Defaecation Free (ODF) innovation in the Nadowli/Kaleo district, the following factors were identified; sanitation education campaigns, behaviour change communication strategies, awareness on smell-free latrines

and emphasis on behaviour change rather than latrine construction. Out of these identified perceptive, Table 4.9 shows that, the main educational perceptive impeding the adoption of ODF innovation is non-awareness of smell-free latrines which ranked as the most impeding perceptive with a mean rank of 1.41. Behaviour change massages rather than constructing free latrines campaign is the second highest de-motivating perceptive. The table also shows that, greater proportion of the households were de-motivated to adopt ODF innovation because the campaign on the adoption and sustenance of ODF innovation has been on behaviour change without considering the financial capacity of households to construct and maintain the latrines.

> *Miss Fadila, one of the district sanitation officers indicated that; "the campaign was concentrated on behaviour change, but after doing so they realized that some of the households could not even construct their personal household's latrines because they have no money to do so".*

It was also revealed that, behaviour change communication strategies used during the introduction of CLTS programme which recorded (3.94 mean rank) had impeded their desire to adopt and sustain ODF innovation in the Nadowli/Kaleo district. They stated that behaviour change communication massages like sanitation songs, flyers and role plays were ineffectively administered and that created low public awareness on behaviour change. They indicated that sanitation campaign programmes should rather be directed towards changing long-held beliefs about OD. About 66.4% of the respondents had expressed the need for sanitation change behaviour awareness workshops to properly address issues of cleanliness, safe disposal of faeces and construction of toilets.

4.3.5.2 Socio-cultural and environmental perceptions impeding the adoption of ODF in Nadowli-Kaleo District

Table 4.10 Socio-cultural and environmental perceptions that impede the adoption of ODF in Nadowli-Kaleo District

Item	Perceptions	*Sum of scores	Mean rank	Rank position
Socio-cultural	Gender inclusive process	213	2.19	1st
	Religious /belief system	342	4.32	2nd
	Resistance to ODF adoption	466	3.54	3rd
	Attitude towards participation	54	4.61	4th
	Prestige Gender	622	4.71	5th
	Sanctioning open defaecators	708	5.32	6th
Environmental	Quality of the sanitation facility	342	3.59	1st
	Distance to the sanitation facility	392	3.85	2nd
	Nature of land	432	3.97	3rd
	Proximity to the forest	517	4.00	4th
	Health status	705	7.56	5th

*Multiple responses. (Source: Field Survey, 2014).

Gender and socially inclusive programmes in the process of CLTS implementation recorded the highest proportion of households with a sum of score 213 and a mean rank value of 2.19, followed by failure of the CLTS programme to factor into its programming religious belief systems in the Nadowli/Kaleo district with 3.54 as a mean rank. This implies that sanitation awareness programmes that failed to take into consideration the values, culture and beliefs of communities and of indigenous knowledge and experiences could lead to undesirable results. It further shows that the CLTS programme did not address the myths, attitudes, beliefs and distorted perceptions of separate bathing and toilet facilities for women and men because of taboos that did not allow them to use the

same toilet facilities.

> *Mr Cosmos one of the district environmental officers indicated that "some people preferred to defaecate in the bush because they were afraid of been bewitched in the night for sharing toilets with ancestral spirits who also use the same toilet facilities".*

Resistance to the adoption of ODF emerged as the third impediment in the adoption of sustainable behaviour change in sanitation practices with a mean rank 4.32. Incorporating respect for community values, perceptions and practices will therefore alley the fear community members have about changing the behaviour of open defaecation to adopting and sustaining ODF behaviour. The fourth identified de-motivating socio-cultural perceptive, is attitude of respondents towards participation in CLTS programmes, with the mean rank of 4.61. This indicates that attitudes of the CLTS facilitators during the introductory stages of the programme discouraged their participation. They claimed that it was distasteful to mention going to toilet in public as such phrases like "seeing the old lady" and "visiting the chief palace" are used to represent going to toilet in their communities. But the CLTS facilitators used words like "faeces and shit" in their public discourse and that had discouraged their participation in the CLTS programme hence their inability to adopt and sustain ODF innovation.

> *Mr. Abongo, the community sanitation board chairman of (Duong) stressed that "to get every household in the study communities to adopt and sustain behaviour change in ODF practice, CLTS programme should take into consideration the values, culture and beliefs of the communities. And also discount the position held by respondents that improved sanitation practices is ''a rich people's affair''.*

In order to understand how people behave the way they do and which environmental perceptive impede the adoption of open defaecation free practices, perceptions that profoundly impede the adoption of ODF innovation were identified and ranked. Distance to toilet facilities was ranked with a mean rank of 3.59 as the most important environmental perception that impede the adoption and sustenance of ODF innovation. The study observed that distance to the communal sanitation facility plays an important role in the adoption and sustenance of ODF innovation. The study found that the closeness of the communal toilet facility to the user determines the willingness to use the latrine. Where the communal toilet facility is too far from their homes it discourages them from using it.

> *Miss Amina, the assembly woman of Piire community intimated that, "communal toilet for the community is so far from people's houses that it make it easier to run into the nearby bush than walking all through the community to defaecate. She further observed that women who need to cook or attend to young children find travelling a long distance to the community latrine inconvenient and therefore prefer practicing OD"*.

Table 4.10 further shows that quality of the sanitation facility was ranked as the second most important factor that impedes the adoption and sustenance of ODF innovation with a rank of 3.85. They fear that the holes of the latrines may collapse and people may fall inside and die as a result of weak latrine structure. Similar observations were made by Marie (2010) who elucidated that students could not use latrines in a school in South Africa because some of the latrines had badly rusted corrugated iron sheets and broken structures thus passersby could see into the latrines. The results also indicate that nature

of the land in the study area was the third factor impeding the adoption and sustenance of ODF innovation with a sum of score of 423. They stated that because of the susceptibility of the latrines to harsh weather, the fear of it collapsing is prominent. Such fear is heightened during the rainy season. They claimed that floods could carry away their structures and the holes left uncovered can result in death, especially for children who may fall into these holes. Also proximity to the forest constitutes another major reason why households are unwilling to construct and utilize latrines with a rank score of 4.00. They said it was easier to enter into the forest to defaecate than spending much time and resources constructing latrines which cannot last long

4.4.0 Effects of Sustaining and not sustaining ODF Adoption in Nadowli-Kaleo District

The third objective sought the views of respondents in the study communities on the effects of sustaining and not sustaining the adoption of ODF innovation in Nadowli-Kaleo district.

4.4.1 Effects of Sustaining Change Behaviour in ODF innovation

The respondents were asked to indicate the extent to which the perceived effects of sustaining change behaviour in ODF innovation have on their lives in the study area. The results are presented in table 4.11 below.

Table 4.11 Effects of Sustaining ODF Adoption in a society.

Effects	Frequency	Percentage (%)
Health improvement	6	7.1
Safety	10	11.9
Privacy	20	23.8
Dignity	14	16.5
Clean environment	13	15.4
Continuation of ancestral practice	4	4.5
Soil fertility	3	3.5
Comfort	14	16.6
Total	84	100

Source: Field survey, 2014.

In analyzing the effects of adopting sustainable behaviour change on ODF innovation in Nadowli-Kaleo district, the study unearthed the following as presented in Table 4.11. The study found that health issues do not usually come across as the top effect of adopting sustainable behaviour change on ODF innovation by most rural people in Nadowli-Kaleo district. The positive effects for adopting sustainable behaviour change on ODF innovation included privacy, comfort, clean environment, safety (security) for women and dignity. On the issue of health improvement, minority of the respondents (7%) mentioned that health benefits and freedom from diarrhoea contributed to the adoption of sustainable behaviour change in ODF innovation. This findings is similar to Jenkins and Scott (2007), who indicated that prestige, and dignity and not health are rather listed as the key benefits of toilet use. Table 4.11 further indicates that 23.8% of the respondents mentioned privacy as a major effect of adopting sustainable behaviour change in ODF

practice. Privacy is a uniformly celebrated quality among the selected communities. It was observed during the interviews that people prefer not to be seen, especially by other gender or people of other age groups.

> *Madam Akosua a natural leader stated that, "we (women) don't have to feel ashamed anymore. We don't have to feel embarrassed when we defaecate. We can do it in the privacy of our homes"*

This statement was predominant during the interview sessions. Other respondents admitted that sustaining behaviour change in ODF has liberated them from shame. Alternatively, they agreed that if they continue to defaecate in the open, they will continue to lose their privacy.

> *Mrs Francisca Obieta a natural leader pointed out that "latrine offers her privacy for defaecation, urination, and mensuration management, which allows her to adhere to her faith as a Muslim and avoid the shame of being seen by men during these periods.*

Even among non-adopters, location for defaecation had changed to ensure privacy. Privacy is followed by comfort representing 16.6% as a positive effect for households adopting sustainable behaviour change and owning latrines to practice ODF.

> *According to Mr Kolo, "people find it inconvenient to defaecate in the bush, because of their vulnerability to weather, privacy and security concerns. During the rainy season, mosquitoes flourish and excessive rainwater makes the ground muddy and unpleasant. Using a latrine provides the advantage of coping with all kinds of weather".*

Another positive effect of sustainable behaviour change in the adoption of ODF

innovation is safety from snake bites (Danger), and rape by men in the night of young girls when they go to the open field to defaecate. Table 4.11, shows that 11.9% of the respondents in the sustained group category mentioned safety as a positive effect for households sustaining change behaviour in the adoption of ODF. The fact that they have access to a toilet facility provide a sense of safety to respondents and therefore have a positive response to the adoption and sustenance of ODF mostly for women. Also Table 4.11, indicates that 15.4% of the respondents mentioned environmental cleanliness as a positive effect of sustaining behaviour change in the adoption of ODF innovation. While expressing their individual and collective desire to live in a clean environment, they admit that sustaining ODF innovation is an antidote to environmental cleanliness. They further stated that a clean environment, generate a cleaner environment which has led to reduction in diarrhoea and other diseases. About 47% of the respondents perceived that sustainable behaviour change in the adoption of ODF innovation is important for community development. This motivates them to sustain behaviour change in the adoption of ODF innovation. Several hours spent in treating these sicknesses retard development most especially, for women and children. This affirms what UNICEF stated in 2009, that open defaecation threatens public health, leads to high expenditure on health care, impacts negatively on social and economic development and increases levels of poverty among rural societies.

4.4.2 Effects of not sustaining Adoption of ODF Practice in a society

Not sustaining behaviour change in the adoption of ODF refers to a changed behaviour in sanitation practice where people construct toilet facilities, maintain and use it but later

relapse to the practice of open defaecation. The effects of not sustaining behaviour change in the adoption of ODF innovation have consequences for the individuals and the communities as a whole. About 33% of the respondents gave reasons why they could not sustain the adoption of ODF though they know its negative effects. The effects are summarized in Figure 4.5 below.

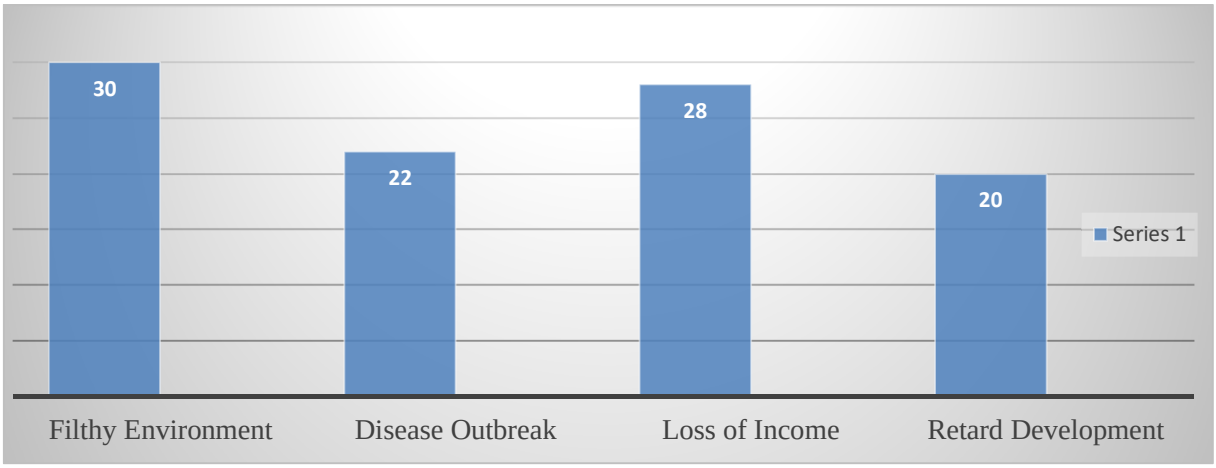

Figure 4.5 Effects of not sustaining ODF Adoption **(**Source: Field Survey, 2014)

Figure 4.5 illustrates that 30% of the households surveyed contended that not sustaining behaviour in the adoption of ODF leads to filthy environment. Indiscriminate defaecation in the environment create opportunity for flies and mosquitoes to flourish. Also 22% of the respondents stated that not sustaining behaviour change in the adoption of ODF has led to diseases outbreak in their communities. Opportunistic diseases like cholera, diarrhoea, malaria and typhoid among others are associated to open defaecation. They indicated that these diseases easily affect women and children. The findings is similar to

that of UNICEF (2009), which stated that water and sanitation are linked because contaminated water may result in water borne diseases, such as viral hepatitis, typhoid, cholera, dysentery and other diseases that cause diarrhoea. Repeated diarrhoea cases is an underlying cause of malnutrition, leading to weakened immune systems and impaired growth of human development. Women, adolescent girls, children and infants suffer tremendously due to open defaecation.

About 28% of the respondents mentioned loss of income for not sustaining behaviour change in the adoption of ODF. A lot of money is spent medicine to treat diseases like dysentery, diarrhoea and cholera which are acquired through indiscriminate defaecation in the open. Children also absent themselves from school when affected by these diseases. The findings is similar to UNICEF (2009) study conducted in countries in the Global South, which stated that open defaecation threatens public health, leads to high expenditure on health care, impact negatively on social and economic development and increase levels of poverty among rural societies. Another effect associated with not sustaining behaviour change in the adoption of ODF innovation is retarded development. About 20% of the respondents held the view that unsustained behaviour change in the adoption of ODF innovation has a negative effect on development.

4.4.3 Effects of non-adoption of ODF innovation in a Society

About 33.3% of respondents who did not adopt ODF innovation argued that open defaecation has been an old practice and for that matter not adopting behaviour change

in ODF innovation has no negative effects. Their reasons for the non-adoption of ODF innovation are summarized in table 4.12 below.

Table 4.12 Effects of non-adoption of ODF innovation in a society

Effects	**Frequency**	**Percentage (%)**
Safety	11	13.1
Smell and heat	15	17.9
Soil fertility	16	19
Health improvement	4	4.8
Retard development	30	35.7
Disease outbreak	8	9.5
Total	**84**	**100**

Source: Field Survey, 2014.

Table 4.12 illustrates that 13.1% of the respondents practice Open Defaecation (OD) because it is conducive and provide airy space for defaecation and therefore gives safety. They were quick to state that open defaecation is comfortable since it is done in an airy environment. Also 35.7% of the respondents, revealed that open defaecation is not connected development. They contended that practising OD has nothing to do with the development of the area. They further pointed out that defaecating at the same spot (latrine) with revered members of the community is rather a sign bad development. After all their societies have practised open defaecation for a long time.

> *According to Abudu, a community natural leader in Takpo village the "non-adopters claimed that defaecating in the bush was a tradition that had been practised since ancient times. Adopting ODF behaviour may require much effort*

but they are not prepared to go through it".

In addition to this, 17.9% of the respondents indicated that they are saved from heat and smell emitted from toilet facilities which are located nearer homes. They concluded that latrines produce odour whereas fresh air is enjoyed during open defaecation. Twelve percent of the respondents further noted that open defaecation will improve the soil fertility of their backyard gardens. They indicated that OD had helped increase the soil fertility of their backyard gardens where they planted maize and indicated that the greener nature of their maize farms was because of the faeces they dumped in the yard through OD. Also a small minority of the respondents (4.8%) debunked the assertion that there is relationship between non- adoption of behaviour change in of ODF (poor sanitation) and disease outbreak. They described how they never felt ill as a result of OD. They asserted therefore that health burden could not be an effect of failure to adopt ODF. Finally 9.5% of the respondents attribute their reluctance to adopt changed behaviour in open defaecation free practice to cultural and religious beliefs. However, the study findings contradict that of Banda et al. (as cited in Movik and Lyla, 2010) who noted that, cultural and religious beliefs has no influence on household adoption and usage of household latrines.

4.5 Conclusion

The study revealed that participation in CLTS programme had contributed to the sustainability of ODF innovation. Behaviour change communication strategies like drama, flyers and sanitation songs played an important role in the adoption and sustenance

of ODF. Level of education and economic constrains account for the main reasons why households are unwilling to own and sustain the utilization of latrines. Also, not sustaining behaviour change in the adoption of ODF has led to diseases outbreak in their communities. In addition, adopting and sustaining ODF innovation saved respondents from heat and smell emitted from toilet facilities which are located nearer homes. To this effect, it would be important for stakeholders in the WASH sector to be mindful of the fact that households' patterns of behaviour change in ODF innovation may not necessarily be as a result of economic constrains or cultural beliefs and practices but several other perceptive.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter looks at the summary of key findings of the study, conclusions drawn from the findings, recommendations based on the findings of the study and suggestions for further research.

5.2.0 Summary of Major Findings

The specific objectives were; first to explore why some people adopt ODF innovation and sustain it but others do not. The rational of this objective was to establish why in the same communities people react to the adoption of an innovation differently. The second specific objective was to examine factors that affect the adoption and sustenance of ODF innovation in the Nadowli/Kaleo District. The rational of this objective was to find out the extent to which these either promoted or impeded the adoption and sustenance of ODF. The third objective was to determine the effects of sustaining and not sustaining ODF adoption in the society. The idea was to measure the extent to which the ODF intervention had led to an improvement in the people life or otherwise.

5.2.1 Reasons why people sustain behaviour change in ODF Adoption but others do not

For those who adopted and sustained behaviour change in ODF adoption, 56.1% of respondents did so because they gained knowledge on health implications of open

defaecation through their participation in CLTS programme. Also 28.2%of the respondents indicated that access to toilet facilities and quality of latrines were responsible for the sustenance of ODF innovation. Those who adopted but could not sustain and those who did not adopt ODF innovation cited income levels as the main contributor to their inability to adopt and sustain ODF innovation. They indicated that farming is their main occupation (74.5%) and the incomes they get from farming are very low. They prefer using the little money they get from farming for other things to maintaining their toilet facilities.

The majority of the respondents (81%) in the non-adopter group had the opinion that punishing people who did not adopt ODF through the policy of "name and shame" rather discouraged the offenders from adopting ODF innovation and brought about a divisive society, thus making it difficult for them to change their behaviours towards adopting ODF innovation. Finally all the respondents (100%) in the non-adopter group agreed that the adherence of one's religious faith and cultural beliefs determines the adoption of ODF innovation.

5.2.2. (a) Perceptions that Promote Adoption of ODF in the Nadowli/Kaleo District.

About 40% of the respondents ranked income levels as the most important economic factor motivating them to adopt and sustain ODF. Again Behaviour Change Communication strategies such as drama, role play by school children, posters, and durbars on good disposal of faeces used during the triggering period of CLTS

implementation was ranked as the most important educational factor that promoted ODF innovation adoption. Socio-cultural factors like gender and socially inclusive process in the participatory stage of ODF implementation process were ranked as the most important socio-cultural factors promoting the adoption and sustenance of ODF. Finally, 55% of the respondents indicated that environmental cleanliness which leads to improved health status of respondents promote the adoption ODF innovation.

5.2.2. (b) Perceptions that impede the adoption of ODF in the Nadowli/Kaleo district.

On the issue of economic factors de-motivating the adoption and sustenance of ODF innovation, the study reveals that 21.8% of respondents mentioned cost of construction of latrines as the most de-motivating economic perceptive. Similarly, lack of community awareness on smell-free latrines (34.2%) was ranked first as the impeding educational perceptive. On the other hand, resistance to change sanitation behaviour (18.8%) was ranked as a major impeding socio-cultural factor. About 28% of the respondents fear that the latrine holes may collapse and people may die inside because of the latrines' susceptibility to harsh weather. Such fear is heightened during the raining season and thus serve as the most impeding environmental factor in the adoption and sustenance to ODF innovation.

5.2.3 Effects of Sustaining and not sustaining ODF Adoption in society.

Quality of latrines will lead to sustained use for various reasons including privacy (22%), which form a major positive effect influencing households' decision to own latrines and

sustain changed behaviour in the adoption of ODF. People prefer not to be seen, especially by other gender or people or other age groups when defaecating.

Unsustained behaviour change in ODF has culminated into filthy environment (30%) where flies carry faeces particles into drinking water and food leading to common sicknesses like diarrhoea, cholera, and typhoid. The study also revealed that 28% of the respondents lose their income through buying of medicine to treat diseases like dysentery, diarrhoea and cholera as a result of indiscriminate defaecation in the open.

The study revealed that 40% of the respondents in the non-adopter group did not adopt ODF innovation because of it is prestigious to continue with their ancestral practice of open defaecation and that departing from such a practice means disconnecting their lineage from their forbearers which can bring serious calamity to them.

5.4. CONCLUSION

The following conclusions are drawn from the findings of the study. Community participation in CLTS programme has given respondents much knowledge on health implications on open defaecation and this has encouraged them to construct households' latrines. Sustained behaviour change has resulted in the comfort, security or safety, privacy, health and dignity of ODF innovation adopters and has also influenced households' decision to construct and use toilets to achieve ODF.

Also low income levels is a hindrance to the maintenance of household latrines and the practice of ODF innovation on sustainable basis. Punishing people who do not adopt ODF through "naming and shaming" discourages them from adopting ODF innovation. Unsustainable behaviour change in ODF adoption has culminated into filthy environment where flies contaminate drinking water and food with faeces particles leading to common sicknesses like diarrhoea, cholera, and typhoid. The continued attachment to ancestral links because of culture and tradition has impeded the adoption of ODF innovation and perpetuated the practice of open defaecation (OD) in the district.

The adoption and sustenance of ODF in the study area is promoted mainly by massages using behaviour change communication, affordable cost of constructing latrines, gender and socially inclusive process and improvement in the health statuses of respondents. On the other hand, cost of construction of latrines (economic), lack of awareness on smell-free latrines (educational), household resistance to new innovation (socio-cultural) and quality of the sanitation facilities (environmental) are factors that impede sustainable behaviour change in the adoption of ODF.

5.5 Recommendations

This section briefly highlights some recommendations for sector professionals to consider when planning sustainable behaviour change programmes in the adoption of ODF innovation so as to curtail incidence of open defaecation.

i. In view of the low income levels in the area, it is recommended that a policy be introduced by government and actors in the WASH sector to assist poor households in a form of subsidized materials for the construction of latrines which should reach the poorest households that need them most.

ii. Secondly, in view of the fact that, some households attribute cultural beliefs to the unwillingness to own household latrines and sustain behaviour change in ODF innovation, it is recommended that stakeholders in the WASH sector intensify education to eliminate the cultural fear of people in the use of latrines. The education should be done in collaboration with the traditional leaders where the traditional leaders are given the lead role in the triggering process of the CLTS implementation stage in order to reduce resistance from communities and promote acceptance.

iii. To address the unhygienic environment and the outbreak of diseases because of unsustainable behaviour in the adoption of ODF, it is recommended that Behaviour Change Communication (BBC) strategies like interpersonal communication, mass media and community and cultural networks be intensified to encourage collective response in the adoption and of ODF innovation to avoid diseases outbreak.

iv. To alley the fear of respondents on the susceptibility of latrines to harsh weather and the view that the latrine holes may collapse and people may die inside during the raining season, it is recommended that households construct better and cost effective as well as technologically friendly latrine.

v. Based on the findings of this study, it is proposed that a similar study be replicated in other Districts in Ghana so as to compare the study findings with this study which was

carried out in Nadowli/Kaleo District in other to achieve sustainable behaviour change in sanitation practices in Ghana. Also a further study be conducted on how demographic characteristics significantly influence sustainable behaviour change in the adoption of ODF using correlation analyses.

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Appendices

APPENDIX 1: HOUSEHOLD INTERVIEW GUIDE

Dear participant I thank you very much for agreeing to participate in a research survey on the Dynamics of Sustainable Behaviour Change in Sanitation Practices in Nadowli/Kaleo district. The survey is for a Master of Philosophy Thesis.

Confidentiality of respondents and responses is strictly guaranteed. (Sustained Group).

1.0 GENERAL INFORMATION: (tick the appropriate answer)

Date of Interview ----------Name of community ---------- What is your main occupation? ---------

1. Sex of respondents: Male [ ] Female [ ]

2. Age of respondents: ……..…….….

4. Educational background: 1=primary/Junior high/middle [ ] 2= senior high/O level [ ] 3=Tertiary [ ] 4= Non formal education [ ] 5= nil [ ]

5. Marital status of respondents: 1=single [ ] 2=married [ ] 3=divorced [ ] 4= widowed [ ]

6. Religious Denomination of respondents: 1= Christian [ ] 2= Muslim [ ] 3= traditional [ ]

2.0. Why people adopt an ODF innovation and sustain it.

1. What type of toilet facility is available in your household/community? {a] KVIP [ ] {b}. Flush toilet connected to a septic (long drop) [ ] {c}. Pit latrine with ventilation pipe [ ] {d}. Pit latrine without ventilation pipe (long drop) [ ] {e}. Open soak away pit [ ] {g}. Don't not know [ ] {h}. Others (specify) ----------

SA = Strongly Agree; A =Agree; D = Disagree; SD = Strongly Disagree

Statement	SD=1	D=2	A=3	SA=4
Does participation affects the adoption of ODF?				
How do participation affect the adoption and sustenance of ODF innovation?				
Does level of education influence adoption and sustenance of ODF?				
How do level of education influence the adoption and sustenance of ODF?				
Does access and quality of toilet facility lead to sustain adoption of ODF?				
How do access and quality to toilet facility lead to sustained adoption of ODF?				
Does age influence the adoption and sustenance of an innovation?				
How do age influence the adoption and sustenance of an innovation?				
Does culture play a role in the adoption of sanitation innovations?				
Explain how culture play a role in the adoption of sanitation innovation				
Does distance to the toilet influence people's adoption behaviour?				
How distance to the toilet influence people's behaviour adoption?				
Does incomes affect the adoption and sustenance of ODF?				
Explain how incomes affect the adoption and sustenance of ODF				
Does sex influences the behaviour of people to adopt ODF?				
How do sex influence the behaviour of people to adopt ODF?				
Does motivation influence peoples' behaviour to practice ODF?				
Explain motivation influence behaviour to practice ODF				
Does religion influence adoption and sustenance of households' behaviour on ODF?				
How do religion influence the adoption and sustenance of households?				
Does persuasive communication influence adoption and sustenance of ODF				
Explain how persuasive communication influence ODF adoption and sustenance				
Does "name and shame' affects household's behaviour on ODF adoption?				
Explain how "name and shame" affect behaviour on ODF adoption				

3.0. Perceptions that promote the adoption and sustenance of ODF innovation

4.1 Please rank the perceptions that favour the adoption and sustenance of ODF innovation in order of importance, with one (1) being the most pressing.

Economic Perceptions			Socio-cultural Perceptions		
1	Type of occupation	[ ]	7	Prestige	[ ]
2	Income level	[ ]	8	Religion/belief system	[ ]
3	Cost of construction and maintenance	[ ]	9	Gender inclusive process	[ ]
4	Support to construct toilet facility	[ ]	10	Sanctioning of open defaecators	[ ]
5	Availability of sanitation facilities	[ ]	11	Community resistance	[ ]
6	Incentives/rewards	[ ]	12	Attitude towards participation	[ ]
	Explain how these perceptions promoted the adoption and sustenance of ODF innovation			Briefly how these perceptions promoted the adoption and sustenance of ODF innovation	
	Educational Perceptions			**Environmental Perceptions**	
13	Sanitation campaigns	[ ]	17	Nature of Land	[ ]
14	Behaviour change communication messages	[ ]	18	Distance to the sanitation facility	[ ]
15	Construction & behaviour change massages	[ ]	19	Quality of the sanitation facility	[ ]
16	Awareness on smell-free latrines	[ ]	20	Health status	[ ]
			21	Proximity to the forest	[ ]
	How do these perceptions promote the adoption and sustenance of ODF innovation			Explain how these perceptions promoted the adoption and sustenance of ODF innovation	

3.0. What are the perceive effects of sustaining behaviour change on ODF innovations in society? Tick (√) as appropriate in the columns under: SA=Strongly Agree, A=Agree, D=Disagree and SD=Strongly Disagree in the table below.

No	Effect	SD=1	D=2	A=3	SA=4
1	Comfort				
2	Privacy				
3	Cleanliness				
4	Ancestral practice				
5	Airy environment				
6	Safety				
7	Soil fertility				
8	Dignity				
9	Healthy society				
10	Toilet facilities				
11	Others specify				
12	Explain why and how these effects influence the sustenance of behaviour change in ODF adoption				

APPENDIX 11: HOUSEHOLD INTERVIEW GUIDE

Dear participant I thank you very much for agreeing to participate in a research survey on the Dynamics of Sustainable Change Behaviour in Sanitation Practices in Nadowli/Kaleo district. The survey is for a Master of Philosophy Thesis.

Confidentiality of respondents and responses is strictly guaranteed. (Unsustain Group).

2.0 GENERAL INFORMATION: (tick the appropriate answer)

Date of Interview ---------- Name of community ---------- What is your main occupation? --------

1. Sex of respondents: Male [ ] Female [ ]

2. Age of respondents: ……..…….….

4. Educational background:1=primary/Junior high/middle [ ] 2= senior high/O level [ ] 3=Tertiary [ ]

4= Non formal education [ ] 5= nil [ ]

5. Marital status of respondents: 1=single [ ] 2=married [ ] 3=divorced [ ] 4= widowed [ ]

6. Religious Denomination of respondents: 1= Christian [ ] 2= Muslim [ ] 3= traditional [ ]

2.0 Why people adopt an ODF innovation but did not sustain.

1. What type of toilet facility is available in your household/community?

{a] KVIP [ ] {b}. Flush toilet connected to a septic (long drop) [ ] {c}. Pit latrine with ventilation pipe [ ] {d}. Pit latrine without ventilation pipe (long drop) [ ] {e}. Open soak away pit [ ] {g}. Don't not know [ ] {h}. Others (specify)

SA = Strongly Agree; A =Agree; D = Disagree; SD = Strongly Disagree

Statement	SD=1	D=2	A=3	SA=4
Does participation affects the adoption of ODF?				
How do participation affect the adoption and sustenance of ODF innovation?				
Does level of education influence adoption and sustenance of ODF?				
How do level of education influence the adoption and sustenance of ODF?				
Does access and quality of toilet facility lead to sustain adoption of ODF?				
How do access and quality to toilet facility lead to sustained adoption of ODF?				
Does age influence the adoption and sustenance of an innovation?				
How do age influence the adopt sustenance of an innovation?				
Does culture play a role in the adoption of sanitation innovations?				
Explain how culture play a role in the adoption of sanitation innovation				
Does distance to the toilet influence people's adoption behaviour?				
How distance to the toilet influence people's behaviour adoption?				
Does incomes affect the adoption and sustenance of ODF?				
Explain how incomes affect the adoption and sustenance of ODF				
Does sex influences the behaviour of people to adopt ODF?				
How do sex influence the behaviour of people to adopt ODF?				
Does motivation influence peoples' behaviour to practice ODF?				
Explain how motivation led to non-sustenance of behaviour to practice ODF				
Does religion influence adoption and sustenance of household's behaviour on ODF?				
How do religion influence the adoption and sustenance of households?				
Does persuasive communication influence adoption and sustenance of ODF				
Explain how persuasive communication influence ODF adoption and sustenance				
Does "name and shame' affects household's behaviour on ODF adoption?				
Explain how "walk of shame affect household's behaviour on ODF adoption				

4.0. Perceptions that impede the adoption and sustenance of ODF innovation.

4.1 Please rank the perceptions impeding the adoption and sustenance of ODF innovation in order of importance, with one (1) being the most pressing.

Economic Perceptions			Socio-cultural Perceptions		
1	Type of occupation	[ ]	7	Prestige	[ ]
2	Income level	[ ]	8	Religion/belief system	[ ]
3	Cost of construction and maintenance	[ ]	9	Gender inclusive process	[ ]
4	Support to construct toilet facility	[ ]	10	Sanctioning of open defaecators	[ ]
5	Availability of sanitation facilities	[ ]	11	Community resistance	[ ]
6	Incentives/rewards	[ ]	12	Attitude towards participation	[ ]
	Explain how these perceptions impeded the adoption and sustenance of ODF innovation			Briefly how these perceptions impeded the adoption and sustenance of ODF innovation	
	Educational Perceptions			**Environmental Perceptions**	
13	Sanitation campaigns	[ ]	17	Nature of Land	[ ]
14	Behaviour change communication messages	[ ]	18	Distance to the sanitation facility	[ ]
15	Construction & behaviour change massages	[ ]	19	Quality of the sanitation facility	[ ]
16	Awareness on smell-free latrines	[ ]	20	Health status	[ ]
			21	Proximity to the forest	[ ]
	How do these perceptions impede the adoption and sustenance of ODF innovation			Explain how these perceptions impede the adoption and sustenance of ODF innovation	

3.0 What are the perceive effects of not sustaining behaviour change in society on ODF? Tick (√) as appropriate in the columns under: SA=Strongly Agree, A=Agree, D=Disagree and SD=Strongly Disagree in the table below.

No	Effects	SD=1	D=2	A=3	SA=4
1	Comfort				
2	Privacy				
3	Cleanliness				
4	Ancestral practice				
5	Airy environment				
6	Safety				
7	Soil fertility				
8	Dignity				
9	Healthy society				
10	Toilet facilities				
11	Others specify				
12	Explain why and how these effects influence the sustenance of behaviour change in ODF adoption				

APPENDIX 111: HOUSEHOLD INTERVIEW GUIDE

Dear participant I thank you very much for agreeing to participate in a research survey on the Dynamics of Sustainable Behaviour Change in Sanitation Practices in Nadowli/Kaleo district. The survey is for a Master of Philosophy Thesis.

Confidentiality of respondents and responses is strictly guaranteed. (Non-adopter Group).

3.0 GENERAL INFORMATION: (tick the appropriate answer)

Date of Interview ----------Name of community ---------- What is your main occupation?

1. Sex of respondents: Male [ ] Female [ ]

2. Age of respondents: ……..…….….

4. Educational background: 1=primary/Junior high/middle [ ] 2= senior high/O level [ ] 3=Tertiary [ ] 4= Non formal education [ ] 5= nil [ ]

5. Marital status of respondents: 1=single [ ] 2=married [ ] 3=divorced [ ] 4= widowed [ ]

6. Religious Denomination of respondents: 1= Christian [ ] 2= Muslim [ ] 3= traditional [ ]

SA = Strongly Agree; A =Agree; D = Disagree; SD = Strongly Disagree

Statement	**SD=1**	**D=2**	**A=3**	**SA=4**
Does participation affects the non-adoption of ODF?				
How do participation affect the non-adoption of ODF innovation?				
Does level of education influence non-adoption of ODF?				
How do level of education influence the non-adoption of ODF?				
Does access and quality of toilet facility lead to non-adoption of ODF?				
How do access and quality to toilet facility lead to non-adoption of ODF?				
Does age influence the non-adoption of changed behaviour in ODF innovation?				

How do age influence the non-adoption of changed behaviour in ODF innovation?				
Does culture play a role in the non-adoption of ODF innovations?				
Explain how culture play a role in the non-adoption of ODF innovation				
Does distance to the toilet influence people's non-adoption behaviour?				
How distance to the toilet influence people's non-behaviour adoption?				
Does incomes affect the non-adoption of ODF?				
Explain how incomes affect the non-adoption of ODF				
Does sex influences the behaviour of people not to adopt ODF?				
How do sex influence the behaviour of people not to adopt ODF?				
Does motivation influence peoples' behaviour not to practice ODF?				
Explain how it influence people's behaviour not to adopt ODF				
Does religion influence non-adoption of households' behaviour on ODF?				
How do religion influence the non-adoption of households?				
Does persuasive communication influence non-adoption of ODF				
Explain how persuasive communication influence ODF non-adoption				
Does "name and shame' affects household's behaviour on ODF non-adoption?				
Explain how it affect household's non-adoption behaviour in ODF				

4.0. Perceptions that affect the adoption and sustenance of ODF innovation.

4.1 Please rank the perceptions that affect the adoption of ODF innovation in order of importance, with one (1) being the most pressing.

Economic perceptions		**Socio-cultural perceptions**	
1	Type of occupation [ ]	7	Prestige [ ]
2	Income level [ ]	8	Religion/belief system [ ]
3	Cost of construction and maintenance [ ]	9	Gender inclusive process [ ]
4	Support to construct toilet facility [ ]	10	Sanctioning of open defaecators [ ]
5	Availability of sanitation facilities [ ]	11	Community resistance [ ]
6	Incentives/rewards [ ]	12	Attitude towards participation [ ]
	Explain how these perceptions impeded the adoption and sustenance of ODF innovation		Briefly how these perceptions impeded the adoption and sustenance of ODF innovation
	Educational Perceptions		**Environmental Perceptions**
13	Sanitation campaigns [ ]	17	Nature of Land [ ]
14	Behaviour change communication messages [ ]	18	Distance to the sanitation facility [ ]
15		19	Quality of the sanitation facility [ ]
16	Construction & behaviour change massages [ ]	20	Health status [ ]
	Awareness on smell-free latrines [ ]	21	Proximity to the forest [ ]
	How do these perceptions impede the adoption and sustenance of ODF innovation		Explain how these perceptions impeded the adoption and sustenance of ODF innovation

3.0 What are the perceive effects of non-adoption of ODF innovation in a society? Tick (√) as appropriate in the columns under: SA= Strongly Agree; A =Agree; D = Disagree; SD = Strongly Disagree in the table below.

No	Effects	SD=1	D=2	A=3	AS=4
1	Comfort				
2	Privacy				
3	Cleanliness				
4	Ancestral practice				
5	Airy environment				
6	Safety				
7	Soil fertility				
8	Dignity				
9	Healthy society				
10	Toilet facilities				
11	Others specify				
12	Explain how these effects influence the sustenance of behaviour change in ODF adoption				

APPENDIX 1V: INTERVIEW GUIDE FOR KEY INFORMANT

Thank you very much for hosting me and granting me permission to have an interview with you at this time. My name is Bismark Kwaku Anyarayor an MPhil (Innovation Communication Studies) student of University for Development Studies. My research is about assessing the dynamics of sustainable behaviour change in sanitation practices in Nadowli-Kaleo District. Information obtained during this interview will be kept confidential and used only for academic purposes. The results may be useful in informing water and sanitation policy decision in the district.

Name ……. Department/Community……

Position……..

A	1. What is your take on the state of CLTS in the districts?..... 2. How do you introduce CLTS to the communities in the district and what is the results?.....…… 3. What specific role(s) do CLTS play that is/are different from the government sanitation programmes?..... . 4. In your opinion how did socio-cultural factors affect the adoption and sustainability of ODF innovation? …… 5. What influence has religion on the adoption and sustenance of households' behaviour on ODF?..... .... 6. What role do incomes of people play in the adoption and sustenance of ODF innovation?..... .... 7. How did behaviour change communication influence collective adoption and sustenance of an ODF innovation?.....
B	1. What are the positive effects of sustainable behaviour change on ODF in society?..... .....…… … 2. In your opinion how do these positive effects of ODF influence the adoption and sustenance

	of changed behaviour?..... 3. What are the effects of unsustainable behaviour change on ODF in society? ..... 4. What reasons accounted for the unsustainable behaviour change in ODF practice?..... …… 5. How do the reasons in question 4 affect the adoption and sustenance of ODF innovation?..... ……
C	1. Which economic factors promote the adoption and sustenance of ODF innovation?..... …… 2. In which ways did these factors in question (**C, 1**) promote the adoption and sustenance of changed ODF behaviour?..... ..... 3. In your opinion which educational factors promote the adoption of ODF innovation? ..... …… 4. How does these mentioned factors in (**C, 3)** promote the adoption and sustenance of changed ODF behavioural?..... ..... 5. Which socio-cultural factors promote the adoption and sustenance of ODF innovation? .... 6. How does these factors in (**C, 5**) promote the adoption and sustenance of behaviour on ODF innovation?..... ....…… 7. Which environmental factors promote the adoption and sustenance of ODF innovation?..... ....

	8. How does these factors in (**C, 7**) promote the adoption and sustenance of behaviour on ODF innovation?..... ....
D	1. List the economic factors that impede the adoption and sustenance of ODF innovation? .... 2. How does the listed factors in (**D, 1)** impede the sustainability of ODF behaviour change? ..... . 3. Which educational factors impede the adoption of ODF innovation?..... …… 4. In which ways does these factors in **(D, 3)** impede the adoption and sustenance of ODF behaviour change?..... ..... . 5. Mention possible socio-cultural factors that could impede the adoption and sustenance of ODF innovation?..... . 6. How does these factors in (**D, 5**) impede changed behaviour in the adoption and sustenance of ODF innovation?..... 7. In your opinion which environmental factors impede the adoption of ODF innovation? ..... 8. How does the listed factors in (**D, 7)** impede the sustainability of ODF behaviour change? ..... .

E	What recommendations will you make to curb open defaecation and achieve collective adoption of sustainable behaviour change in ODF innovation among households in the Nadowli-Kaleo District?..... ....

APPENDIX V: PLATES OF AVAILABLE LATRINES IN THE STUDY COMMUNITIES

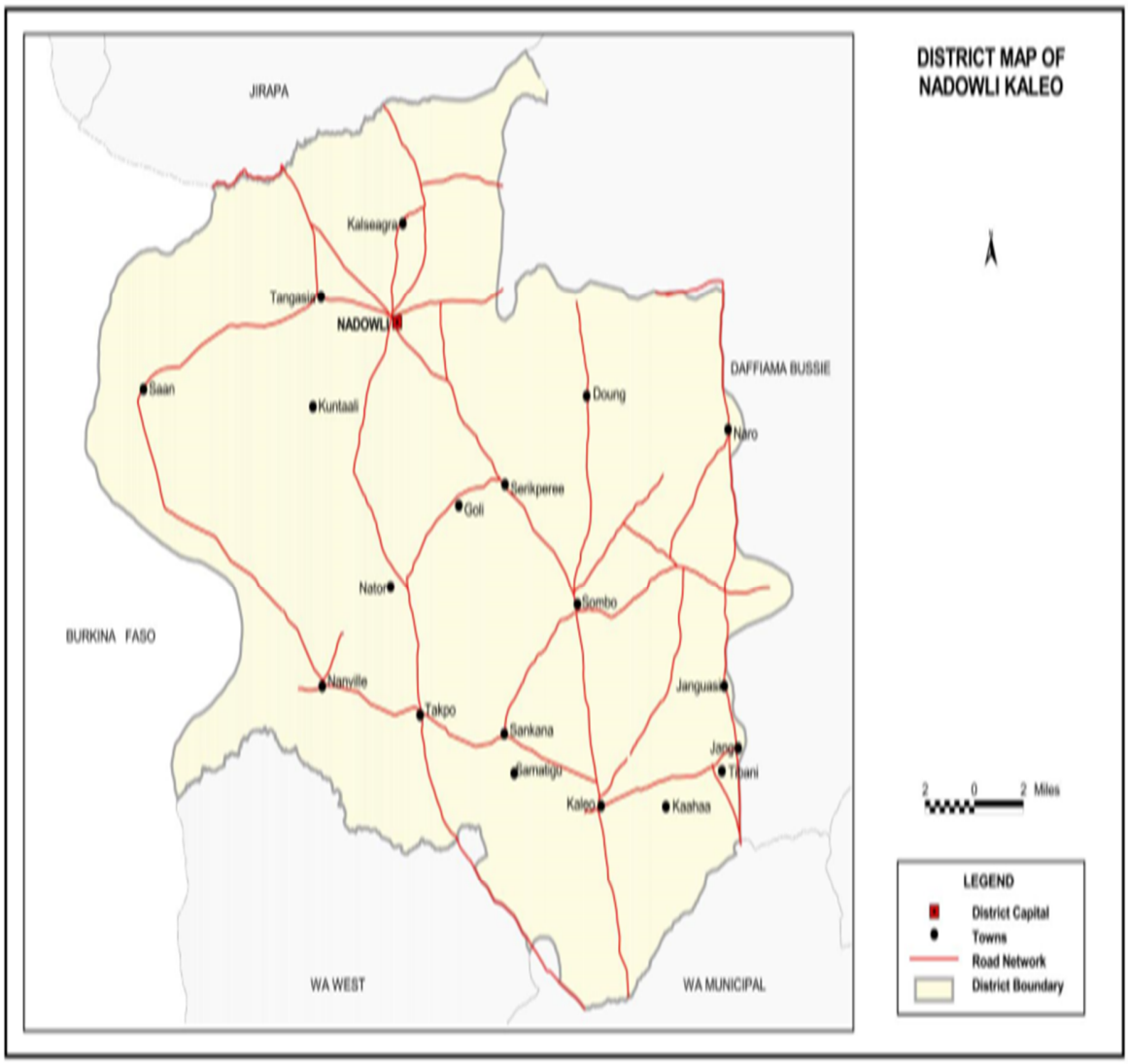
Plate 4.1 used pit latrines without pipes in Charisombo

Plate 4.2. Picture of an abandoned latrine which is used as a pen in Kpazie Muolo

APPENDIX V1. MAPS OF UPPER WEST REGION AND NADOWLI/KALEO DISTRICT.

Map of Upper West Region

Figure 1.1: Map of Nadowli-Kaleo District



Source: Ghana Statistical Service, GIS