MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Impact of Community Led Total Sanitation in Reducing Sanitation Related Diseases in Bakori Local Government Area, Katsina State

Idris, I.[1], Yaro, N. A.[2], & Yakasai, K. M.[3]
Email: imranaidrisnadabo@gmail.com

[1]Department of Environmental Health, Maryam Abacha American University of Niger Republic
[2]Department of Environmental Health, Maryam Abacha American University of Nigeria, Kano
[3] Department of Public Health, Maryam Abacha American University of Nigeria, Kano

Abstract
This study investigated the attitudes towards and effectiveness of the Community-Led Total Sanitation (CLTS) model in addressing sanitation challenges in Bakori Local Government Area (LGA), Katsina State, Nigeria. Using a mixed-methods approach, 454 respondents participated through structured questionnaires, interviews, and observations. The results revealed that community attitudes towards CLTS were significantly positive, with high agreement on the model's benefits in promoting sanitation, reducing open defecation, and improving community health. Quantitative analysis using t-tests confirmed that both attitudes and perceived effectiveness were statistically significant ($p < 0.001$). Qualitative insights highlighted the importance of community engagement, behavioural change, and the need for sustainable strategies to overcome financial and infrastructural challenges. While the CLTS model has proven effective, sustaining its outcomes requires financial support, durable latrine construction, continuous monitoring, and integration with broader sanitation initiatives. These findings underscore the critical role of community ownership and targeted support in achieving long-term public health improvements in rural settings.
Keywords: Community, Sustainable, Sanitation, Bakori, Promoting.

Introduction
The United Nations Sustainable Development Goal (SDG) 6.2 aims to eliminate open defecation globally by 2030 (Fagunwa et al., 2025). Despite a slight decrease in the global prevalence of open defecation from 10% to 9% between 2015 and 2020, approximately 494 million people, primarily in rural Sub-Saharan Africa and Asia, still practice it (Belay et al., 2022). Community-Led Total Sanitation (CLTS) was introduced to tackle this issue by emphasizing behavior change over mere infrastructure provision (Adzimah, 2022). Developed by Dr. Kamal Kar in Bangladesh in the early 2000s, CLTS encourages communities to construct latrines independently, aiming for collective behavioral transformation to eliminate open defecation (Anas, 2020). This approach has been adopted in around 60 countries, with notable successes in Bangladesh (Anas, 2020).

However, improvements linked to CLTS have often been modest, and many regions struggle to maintain Open Defecation Free (ODF) status (Radin, 2024). Poor sanitation contributes significantly to diseases like diarrhea, cholera, and typhoid, resulting in over 800,000 deaths annually among children under five (Alum et al., 2024). Improved sanitation is essential for public health and community socio-economic well-being (Andrés et al., 2021). In Nigeria, for instance, subsidy-driven sanitation programs have historically failed to yield sustainable outcomes (Ayadi

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

& Rotowa, 2020). Successful sanitation initiatives must create demand for facilities while fostering long-term behavioral change (Kumar et al., 2023).

Despite numerous efforts, achieving universal access to improved sanitation remains a challenge. Hundreds of millions globally lack adequate sanitation, and interventions often produce mixed health outcomes (Andrés et al., 2021). Studies indicate that simply providing latrines does not ensure their use; various behavioral, cultural, and technical factors influence consistent toilet usage (Biswas et al., 2024). In Nigeria, even with substantial toilet coverage, open defecation persists (Ukpabi, 2024). A significant knowledge gap exists regarding factors influencing sanitation adoption, hindering effective policy formulation (Tchouchu & Ahenkan, 2023). Furthermore, while global sanitation programs have focused on infrastructure, the absence of complementary behavior change strategies has limited their effectiveness (Venis, 2023). Nigeria, with one of the highest open defecation rates globally, exemplifies these challenges (Bappa et al., 2025). Despite commitments to meet the Millennium Development Goal (MDG) target of 65% sanitation coverage by 2015, progress remains inadequate (Weststrate et al., 2019). The CLTS approach has reached only about 16% of Nigeria's villages, with a smaller percentage achieving ODF status (Danjin & Sawyerr, 2019). Regional disparities exist, with the South-East and North-Central regions showing better ODF rates compared to others. Without significant strategic shifts, Nigeria is unlikely to achieve open-defecation-free status by 2025, jeopardizing broader sanitation goals in Africa (Bankole et al., 2023). In Bakori Local Government Area, Katsina State, high rates of sanitation-related diseases persist despite interventions from UNICEF and others, indicating a need for more effective community engagement and sustainable behavior change strategies.

Sanitation challenges are widespread in many developing countries (Onifade, 2024). Decades of externally imposed sanitation programs have largely failed to address inadequate practices (Zuin et al., 2019). The CLTS model promotes community ownership and self-driven solutions rather than reliance on external aid (Danjin & Sawyerr, 2019). By instilling feelings of shame, disgust, and community pride, CLTS motivates communities to pursue 100% ODF status (Ayamga, 2022). Success stories from Kenya illustrate the model's potential when effectively implemented, though financial constraints and cultural resistance can hinder scalability (Ongere, 2020). Poor sanitation significantly contributes to the disease burden in developing countries, with diarrhea being a leading cause of death among children (Mebrahtom et al., 2022). Sanitation-related illnesses also have economic repercussions, reducing productivity and hindering community development (Velleman et al., 2023). Beyond health, sanitation impacts social factors such as women's dignity and safety, with open defecation exposing women to increased risks (Saleem et al., 2019). Providing toilets alone is insufficient; ensuring consistent usage.

Objectives of the Study

The main aim of the study is to examine the impact of Community Led Total Sanitation in reducing sanitation related diseases in Bakori Local Government Area, Katsina State of Nigeria.

Specific Objectives

1. To ascertain the attitude of the people in the Bakori Local Government Area towards CLTS approach.
2. To examine the effectiveness or otherwise of the CLTS model in addressing sanitation related challenges.

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Community-Led Total Sanitation (CLTS) is a participatory approach introduced in the early 2000s to mobilize rural communities to eliminate open defecation through collective behavior change, rather than infrastructure subsidies (Syam & Bungawati, 2024). The method relies on triggering emotional responses such as shame and disgust to promote the construction and consistent use of latrines, improved hygiene practices, and environmental sanitation (Asantewaa-Tannor et al., 2024). Since its introduction, CLTS has been adopted in over 60 countries and is recognized as a key strategy in achieving Sustainable Development Goal 6.2: access to adequate and equitable sanitation and hygiene for all (Asmally et al., 2025).

Sanitation-related diseases, including diarrheal diseases, helminth infections, and undernutrition, particularly stunting, are among the leading causes of morbidity and mortality in low-income regions (Syam & Bungawati, 2024). These diseases are often caused by fecal-oral contamination resulting from open defecation and poor hygiene behaviors, particularly in settings lacking adequate water and sanitation infrastructure (Utami & Pujihastuti, 2025). Studies consistently demonstrate that reducing open defecation through CLTS leads to significant decreases in disease prevalence, particularly among children under five years of age (Syam & Bungawati, 2024; Asantewaa-Tannor et al., 2024).

In Central Sulawesi, Indonesia, a quasi-experimental study evaluated the impact of cadre-led CLTS education on stunting prevention by assessing maternal knowledge and sanitation behaviors (Syam & Bungawati, 2024). The study revealed statistically significant improvements in hygiene behavior, including handwashing, safe water usage, and food handling practices, following community interventions ($p < 0.000$). The findings affirmed the effectiveness of community mobilization and education in improving public health outcomes in vulnerable populations (Syam & Bungawati, 2024). Similarly, in Ghana, Asantewaa-Tannor et al. (2024) examined the long-term sustainability of open defecation-free (ODF) status in communities certified between two and ten years prior. The study identified motivational, behavioral, leadership, and financial factors as key determinants of sustained sanitation outcomes. The role of natural leaders, continued community monitoring, and financial support mechanisms emerged as critical for maintaining ODF status and thereby reducing the risk of sanitation-related diseases (Asantewaa-Tannor et al., 2024).

However, challenges to effective CLTS implementation persist in urban slums and conflict-affected regions. In Complexo da Maré, Brazil, a literature-based study assessed the implications of poor sanitation infrastructure on public health (Silveira et al., 2025). The study concluded that despite community efforts, open sewage and environmental degradation remained rampant due to systemic inequalities and inadequate governmental support. The authors emphasized that sanitation must be considered a constitutional and social right to ensure equitable public health outcomes, particularly in marginalized urban areas (Silveira et al., 2025).

In Sudan's conflict-affected South Kordofan region, a cross-sectional study conducted by Asmally et al. (2025) revealed critical deficiencies in water, sanitation, and hygiene (WASH) services. The research indicated high levels of microbial contamination in drinking water, poor waste management, and a 10% prevalence of diarrhea among study participants. These findings highlight how conflict undermines the effectiveness of community-based interventions like CLTS and exacerbates sanitation-related disease risks (Asmally et al., 2025).

Another study by Utami and Pujihastuti (2025) explored how health administrative capacity and community nutrition education could reinforce CLTS outcomes. Following a series

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

of health education interventions, sanitation compliance among participants increased by 22%, and environmental disease awareness improved by 20%. The integration of routine training and water quality monitoring significantly contributed to reducing disease risk, demonstrating the value of multisectoral approaches alongside CLTS (Utami & Pujihastuti, 2025).

Despite its success, CLTS faces sustainability challenges, particularly in post-ODF phases. Many communities experience regression due to reduced motivation, lack of follow-up, or inadequate access to maintenance resources (Asantewaa-Tannor et al., 2024). These issues suggest a need for enhanced support systems, including sanitation financing schemes and performance-based incentives, to maintain community engagement and disease prevention efforts over time (Syam & Bungawati, 2024; Utami & Pujihastuti, 2025).

Taken together, the evidence indicates that CLTS significantly contributes to reducing the burden of sanitation-related diseases when implemented with strong community engagement, education, and supportive policies. However, in fragile or underserved environments, the limitations of CLTS alone necessitate its integration into broader development frameworks that address systemic inequities, urban infrastructure, and conflict resilience (Silveira et al., 2025; Asmally et al., 2025).

Methodology

The research was conducted in Bakori Local Government Area (LGA), Katsina State, Nigeria, which was established on May 15, 1989. Geographically, Bakori is situated between latitudes 11°55’30’’N and 12°43’0’’N and longitudes 7°30’0’’E and 7°43’30’’E, covering an area of 679 km². As of the 2006 census, the population was 149,371 (Lawal, 2015). Bakori LGA consists of two districts, Bakori and Tsiga, each led by a traditional ruler, with principal settlements including Bakori, Kakumi, and Tsiga. The population is predominantly Hausa/Fulani Muslims, with some Maguzawa communities. Economic activities primarily involve agriculture, cattle rearing, and trading (Mahmud, 2014).

The climate is tropical continental, characterized by a wet season from May to September and a dry season from October to April, with annual rainfall between 889 mm and 1061 mm and temperatures ranging from 22.2°C to 33.33°C (Adefila, 2014; Alo et al., 1998). The vegetation is of the Sudan savanna type, with sandy loam soils conducive for agriculture (Adefila, 2014).

Data were collected from primary and secondary sources. Primary data were gathered through questionnaires on Kobo Collect, while secondary data were sourced from published journals and official reports. A team of 10 trained data collectors, supervised by study managers, conducted the survey using a modified random route method to select households. The target respondents were caregivers responsible for childcare and food preparation, ensuring familiarity with hygiene practices (Harter et al., 2018). The sample size was calculated to be 464, accounting for a 10% attrition rate.

The questionnaire was developed based on the RANAS model, covering socio-demographic characteristics, sanitation practices, and psychosocial determinants. Data analysis involved both quantitative and qualitative methods, utilizing SPSS for statistical analysis and thematic coding for qualitative data (Kitchen & Tate, 2002). Ethical approval was obtained, ensuring participant anonymity and voluntary participation.

In conclusion, this study provides a comprehensive overview of the socio-economic and environmental context of Bakori LGA, employing robust data collection and analysis methods to

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

explore critical issues related to sanitation and hygiene practices. The findings will contribute to understanding the local dynamics and inform future interventions aimed at improving public health in the region.

Result

Demographic Characteristics of Respondents

The study analyzed data from 454 valid respondents in Bakori Local Government Area (LGA), achieving an excellent response rate of 95%, surpassing the 70% benchmark typically recommended for social research validity. Respondents were proportionally drawn from six wards: Bakori A (20%), Bakori B (18%), Jargaba (17%), Kaboom (15%), Kurami Yankwani (16%), and Tsiga (14%), with Bakori A recording the highest participation. The sample was predominantly male, with 334 males (74%) and 120 females (26%), indicating a substantial gender imbalance. Regarding marital status, the majority of participants were married (84%), followed by singles (11%), widowed/widowers (3%), and separated individuals (2%), reflecting a mature and largely family-oriented population. Educationally, 33% of respondents had attained secondary school education, 31% possessed Qur'anic or Islamic certificates, 18% had completed primary school, and 18% had achieved tertiary-level education, suggesting a moderate to high literacy level within the sample. In terms of employment, farming was the predominant occupation (40%), followed by formal employment (18%), housewives (14%), students (10%), self-employed individuals (8%), unemployed persons (8%), and a minor proportion of retirees and other occupations (2%). The overall demographic profile portrays a rural, agricultural, moderately literate, and male-dominated community, providing critical context for understanding patterns of participation in sanitation programs such as Community-Led Total Sanitation (CLTS) and their health outcomes.

Research Question One: What are the attitudes of the people towards the CLTS approach?

Table 1: Responses on attitudes of the people towards the CLTS approach

S/No	Attitudes of the people towards the CLTS approach	Mean	SD	Decision
1	Are you familiar with the objectives of the Community-Led Total Sanitation (CLTS) approach?	2.16	0.52	Disagreed
2	The CLTS approach has been clearly communicated in my community.	3.21	0.49	Agreed
3	I understand how CLTS contributes to improving community health	2.22	0.51	Disagreed
4	The CLTS approach has significantly reduced open defecation in my community.	2.29	0.55	Disagreed
5	CLTS has improved the cleanliness of the environment in my area.	3.28	0.57	Agreed
6	The CLTS approach has led to a decrease in health problems related to sanitation in my community.	3.31	0.52	Agreed
7	The CLTS approach involves community members in decision-making effectively.	3.25	0.59	Agreed

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

8	Women and marginalized groups are adequately involved in the CLTS process.	3.23	0.62	Agreed
9	I feel that my voice and opinions are valued in the implementation of CLTS.	3.19	0.64	Agreed
10	The financial burden of implementing CLTS is manageable for households in my community.	3.20	0.62	Agreed
11	There are sufficient resources and support for the success of CLTS in my area.	3.13	0.76	Agreed
12	Cultural or traditional practices in my community pose challenges to the success of CLTS.	3.04	0.87	Agreed
13	I am satisfied with the results of the CLTS approach in my community.	3.27	0.57	Agreed
14	I believe the outcomes of CLTS are sustainable in the long term.	3.27	0.62	Agreed
15	I would recommend the CLTS approach to other communities.	3.36	0.49	Agreed
	Grand Mean	**3.094**	**0.597**	**Agreed**

Source: Field survey, 2024

Table 1 shows the attitudes of the people towards the CLTS approach in Bakori LGA, Kastina State. It is found that the grand mean of 3.094 and SD (0.59) is greater than the cut-off points of 3, implying that the respondents generally agreed with the Attitudes of the people towards the CLTS approach in Bakori LGA. Item-by-item analysis indicates that they agreed with all the items except item number 1, 3, 4 which are all below the cut-off point. The conclusion is that majority of the respondents' attitudes towards the CLTS approach in Bakori LGA, is significantly high, Katsina State.

Research Question Two: How effective is CLTS model in addressing sanitation challenges of the people in Bakori LGA?

Table 2: Responses on effective is CLTS model in addressing sanitation challenges of the people in Bakori LGA

S/No	Effective is CLTS model in addressing sanitation challenges of the people	Mean	SD	Decision
16	The CLTS model has effectively reduced open defecation in my community.	3.25	0.50	Agreed
17	The CLTS model has encouraged households to build and use latrines.	3.33	0.48	Agreed
18	Open defecation is no longer a major issue in my community due to the CLTS model.	3.32	0.48	Agreed
19	The CLTS model has raised awareness about the health risks of poor sanitation.	3.33	0.48	Agreed
20	The CLTS model has successfully changed sanitation-related behaviors in my community.	3.28	0.52	Agreed

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

21	The CLTS approach has increased community pride and ownership of sanitation initiatives.	3.27	0.53	Agreed
22	The CLTS model has significantly improved public health in my community.	3.33	0.52	Agreed
23	Cases of waterborne diseases have decreased since the implementation of CLTS.	3.36	0.49	Agreed
24	The environment in my community is noticeably cleaner because of the CLTS model.	3.35	0.49	Agreed
25	The CLTS model addresses the needs of all community members, including marginalized groups.	3.23	0.60	Agreed
26	The improvements brought by the CLTS model are sustainable over the long term.	3.22	0.64	Agreed
27	The CLTS model has empowered the community to take responsibility for sanitation challenges.	3.28	0.59	Agreed
28	The CLTS model has been effective despite cultural or traditional barriers in my community.	3.25	0.61	Agreed
29	The CLTS model has been successful in addressing financial barriers to better sanitation.	3.22	0.65	Agreed
30	The CLTS approach provides adequate support and resources for maintaining sanitation improvements.	3.16	0.72	Agreed
	Grand Mean	**3.278**	**0.556**	**Agreed**

Source: Field survey, 2024

Collected and analysed data presented in Table 2 shows the responses on Effective is CLTS model in addressing sanitation challenges of the people in Katsina State, Nigeria. It is shown that the computed grand mean of 3.278 and SD of 0.556 is greater than the cut-off points of 3, implying that the respondents generally agreed with the items measuring effective is CLTS model in addressing sanitation challenges of the people in Kastina State, Nigeria

Item-by-item analysis indicates that all items had a mean cut off greater than the accepted cut off point of 3.00, In conclusion is that majority of the respondents agreed on the effectiveness of CLTS model in addressing sanitation challenges of the people in Katsina State, Nigeria.

Hypotheses Testing

Hypothesis One: The attitude of people towards CLTS approach will not be significantly high

In testing the first null hypothesis, the variable of interest is attitude of people towards CLTS approach in Bakori LGA, measured by 15 items. The respondents' scores on the scale were summed-up. For the attitude of people towards CLTS approach to be considered significantly high among the respondents, the scores made on the whole scale should be significantly higher/greater than45 (which is the midpoint between strongly agree and strongly disagree). This implies 3 X 15, the number of items measuring the constructs. This null hypothesis was tested with a one-sample t-test) otherwise called population t-test). The results are presented in Table 3.

Table 3: Population t-test analysis of whether attitude of people towards CLTS approach in Bakori LGA

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Variable	Sample Mean	Sample SD	Ref. Mean	T	Sig	Remark
Attitude of people towards CLTS approach	63.40	6.07	45	64.60	< .001	Sig.

A look at the results indicated a statistically significant the level of attitude of people towards CLTS approach in Bakori LGA. (M=63.40, SD=6.07), t(453) = 64.60, P <.001. The magnitude of difference in the mean (mean difference =18.40), 95% CL: 17.84to 18.96) was large (eta squared = 0.64). With these results the first null hypothesis is hereby not supported and hence rejected for the alternative. This implies that the attitude of people towards CLTS approach will be significantly high.

Hypothesis Two: The effectiveness of CLTS model in addressing sanitation-related challenges will not be significantly high

In testing the second null hypothesis, the effectiveness of CLTS model in addressing sanitation-related challenges, measured by 15 items. The respondents' scores on the scale were summed-up. the effectiveness of CLTS model in addressing sanitation-related challenges the scores made on the whole scale should be significantly higher/greater than45 (which is the midpoint between strongly agree and strongly disagree). This implies 3 X 15, the number of items measuring the constructs. This null hypothesis was tested with a one-sample t-test) otherwise called population t-test). The results are presented in Table 4.

Table 4: Population t-test analysis of between effectiveness of CLTS model in addressing sanitation-related challenges in Bakori LGA

Variable	Sample Mean	Sample SD	Ref. Mean	T	Sig	Remark
Effectiveness of CLTS model in addressing sanitation-related challenges	64.18	6.01	45	67.9	< .001	Sig.

A critical look at the results indicated a statistically significant high effectiveness of CLTS model in addressing sanitation-related challenges in Bakori LGA (M=64.18, SD=6.01), t(453) = 67.9, P =.00. The magnitude of difference in the mean (mean difference =19.18), 95% CL: 18.62to 19.73) was very small (eta squared = 0.02). With these results the second null hypothesis is hereby not supported and hence rejected for the alternative. This implies that the effectiveness of CLTS model in addressing sanitation-related challenges was significantly high.

Discussion of Findings

1. Effectiveness of CLTS in Reducing Open Defecation and Improving Sanitation

Community-Led Total Sanitation (CLTS) has proven effective in promoting sanitation and reducing open defecation globally. Unlike traditional subsidy-based campaigns, CLTS emphasizes behavioral change and community responsibility. Studies in Nigeria, Indonesia, Ghana, and Ethiopia demonstrate significant reductions in open defecation and increases in latrine ownership.

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

However, long-term sustainability faces challenges like latrine collapse, financial barriers for low-income households, and socio-cultural resistance.

In Nigeria, for example, CLTS led to higher latrine adoption rates despite structural issues in loose soil areas (Ukpabi, 2024). Indonesia's randomized trials showed improvements in sanitation behaviours but noted that financial limitations hampered full success (Odagiri, et al., 2020). Ghana's experience highlighted the reversion to open defecation due to maintenance issues, suggesting the need for financial and technical support (Delaire et al., 2022). Similarly, Ethiopia found that facilitation by health professionals was more successful than teacher-led efforts (Sullamo, et al., 2023).

Although CLTS has been transformational, it must be adapted to local conditions and supported by incentives and infrastructure to achieve enduring sanitation improvements. Critical recommendations include improved latrine construction, financial assistance for vulnerable groups, integration with sanitation marketing, and ongoing community engagement.

2. Health Impact: Reduction in Sanitation-Related Diseases

CLTS implementation has significantly reduced diseases like diarrhea and cholera by improving hygiene and sanitation. In Uganda, CLTS communities had a notably lower diarrhea incidence (Anas, 2020). Niger's experience demonstrated a 91% reduction in cholera outbreaks with improved sanitation coverage (Eneh, et al., 2024).

Kenya and India also reported substantial health benefits, particularly in slum areas where CLTS enhanced cleanliness and overall health outcomes (Wasonga, et al., 2023). However, some inconsistencies appeared; for instance, in Mali, short-term diarrhea reduction was not significant, though improvements in child growth were observed (Kouassi, et al., 2023). Moreover, concerns arose regarding groundwater contamination caused by poorly designed latrines (Aondoakaa, 2019).

Recommendations stress ensuring sustainability through post-triggering activities, integrating clean water access, empowering local leadership, and rigorous long-term monitoring. While CLTS clearly improves health outcomes, it must address environmental risks to maximize public health benefits sustainably.

3. Community Engagement and Behaviour Change

CLTS's participatory approach has successfully encouraged community ownership and behaviour change towards sanitation. Studies in Mozambique and Indonesia revealed that social influence, peer pressure, and triggering activities dramatically raised awareness and latrine use (Mbemba, 2022).

However, cultural factors influence CLTS's success. For instance, pastoralist communities in Kenya faced challenges due to traditional norms around toilet sharing (Galmogle et al., 2024). Local leadership and government support also emerged as critical; integrating CLTS into local policies significantly improved sanitation adoption in places like Indonesia and Uganda (Cagnet, 2022).

Despite these successes, long-term behavior change remains difficult without continuous support, monitoring, and technical assistance. Financial incentives, cultural sensitivity, and government-NGO collaboration are vital for maintaining and expanding sanitation improvements.

4. Sustainability Challenges and Resource Allocation

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Despite initial successes, maintaining CLTS achievements requires addressing technical and financial challenges. The no-subsidy philosophy can limit program sustainability, especially for impoverished households needing technical support for durable latrines (Anderson, 2021).

Monitoring weaknesses after ODF certification and the lack of integration with broader sanitation infrastructure (like waste management and clean water) jeopardize progress. Studies advocate enhancing CLTS with sanitation marketing, financing mechanisms, and technological innovations such as composting toilets (Mariwah, et al., 2022).

Recommendations to boost sustainability include organized follow-ups, government funding for durable construction, microfinance options for households, and robust monitoring systems. Strengthening CLTS in this way supports its contribution to achieving Sustainable Development Goals (SDGs) for sanitation.

5. Positive Reception and Community Satisfaction

Community reception to CLTS has generally been positive, with significant satisfaction regarding improved hygiene and environmental conditions. In Kenongo Village, Indonesia, cultural norms reinforced program success (Kouassi, et al., 2023). Nigerian communities similarly embraced CLTS, showing ownership by innovatively solving problems like latrine collapse (Danjin, & Sawyerr, 2019).

Inclusivity, particularly involving marginalized groups like people with disabilities in Malawi, further strengthened community commitment and cohesion (Davies, et al., 2024). However, sustainability challenges, particularly funding for latrine maintenance, remain. Integrating financial support mechanisms like microfinance could mitigate these issues and sustain satisfaction levels (Ali, & Shahreen, 2024).

Overall, CLTS is highly valued for its participatory method, but ongoing support and financial integration are essential for maintaining long-term improvements and community well-being.

Conclusion

The study concludes that the Community-Led Total Sanitation (CLTS) model has been highly effective in Bakori LGA, both in reducing open defecation and improving general sanitation conditions. Respondents demonstrated significantly positive attitudes towards CLTS, appreciating its participatory approach and tangible health benefits. Statistical analysis confirmed the high effectiveness and acceptance of the program. However, sustaining these improvements presents ongoing challenges, particularly regarding latrine durability, financial barriers for vulnerable groups, and the need for continuous community engagement.

The success of CLTS in Bakori LGA aligns with global trends, where community-driven sanitation programs significantly reduce sanitation-related diseases and enhance hygiene. Nonetheless, the study emphasizes that technical support, financial incentives, post-certification monitoring, and integration with wider sanitation infrastructure are necessary to ensure lasting impacts. Addressing these issues will be critical to achieving the Sustainable Development Goals (SDGs) on sanitation and public health in rural communities. In sum, while CLTS is a powerful catalyst for behavioural change and improved sanitation, its future success hinges on strengthened support systems, inclusive participation, and sustainable resource allocation.

References

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Adzimah, I. (2022). Factors Affecting the Implementation of Community–Led Total Sanitation in Central Region, Ghana (Doctoral dissertation, University of Cape Coast).

Ali, M., & Shahreen, T. (2024). Hygiene Promotion Interventions and Their Effectiveness in Protecting Public Health in Rohingya Refugee Settlements in Bangladesh.

Alum, E. U., Obeagu, E. I., & Ugwu, O. P. C. (2024). Enhancing quality water, good sanitation, and proper hygiene is the panacea to diarrhea control and the attainment of some related sustainable development goals: A review. Medicine, 103(38), e39578.

Anas, A. P. (2020). Contribution of community–led total sanitation (clts) in reducing sanitation related diseases in the Kumbungu District (Doctoral dissertation).

Anderson, D. M. (2021). Implementation and Adaptation in Rural Water, Sanitation, and Hygiene Programs (Doctoral dissertation, The University of North Carolina at Chapel Hill).

Andrés, L., Joseph, G., & Rana, S. (2021). The economic and health impacts of inadequate sanitation. In Oxford research encyclopedia of environmental science.

Aondoakaa, S. C. (2019). Investigating the impacts of pit latrines on groundwater quality in Benue State, Nigeria (Doctoral dissertation, University of Nottingham).

Asantewaa-Tannor, P., Emuze, F., & Das, D. K. (2024). Is community-led total sanitation programme ending open defecation? A sustainability perspective from stakeholders in Ghana. Proceedings of the Institution of Civil Engineers.

Asmally, R., Imam, A. M., Eissa, A. A., Saeed, A., Mohamed, A. A. B., Abdalla, E., Esmaeel, M. A. M., Elbashir, M., Elbadawi, M. H., Omer, M., Eltayeb, R., Mohammed, R., Abdalhamed, T., & Merghani, T. (2025). Water, Sanitation and Hygiene in a Conflict Area: A Cross-Sectional Study in South Kordofan, Sudan. Journal of Epidemiology and Global Health, 15(1). https://doi.org/10.1007/s44197-025-00347-4.

Ayadi, P. A., & Rotowa, O. O. (2020). Spatial Heterogeneity in Open Defecation Practice in Residential Zones of Akure, Nigeria. International Journal of Environmental Planning and Management, 6(3), 81-93.

Ayamga, M. (2022). Assessment Of Community-Led Total Sanitation Towards Open Defecation Free Communities In Bawku West District Of The Upper East Region, Ghana (Doctoral dissertation).

Bankole, A. O., James, A. O., Odjegba, E. E., Bankole, A. R., Emmanuel, B. I., Fiore, F. A., ... & Moruzzi, R. (2023). Factors affecting sanitation coverage in three income levels and potential toward achieving SDG 6.2. Water Policy, 25(2), 146-176.

Bappa, M., Akowe, J., & Omejeh, T. E. (2025). The Role of Interagency Collaboration in the Control of Open Defecation in Kogi State.

Barrington, D., Sindall, R., Chinyama, A., Morse, T., Sule, M., Beale, J., ... & Evans, B. E. (2024). The persistence of failure in water, sanitation and hygiene programming.

Belay, D. G., Asratie, M. H., Aragaw, F. M., Tsega, N. T., Endalew, M., & Gashaw, M. (2022). Open defecation practice and its determinants among households in sub-Saharan Africa: pooled prevalence and multilevel analysis of 33 sub-Saharan Africa countries demographic and health survey. Tropical Medicine and Health, 50(1), 28.

Biswas, S., De, I., Mudra, G., & Gupta, D. (2024). Toilet Adoption in Rural India: Social Norms and Behavioural Changes. Taylor & Francis.

Cagnet, D. L. (2022). Facilitators to becoming and remaining open defecation free in Uganda: Implications for community-led total sanitation programming.

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Danjin, M. & Sawyerr, H. O. (2019). The challenge of open defaecation (OD) and community-led total sanitation (CLTS) in Nigeria – A Review.

Davies, K., Panulo, M., MacLeod, C., Wilbur, J., Morse, T., Chidziwisano, K., & Dreibelbis, R. (2024). Inclusion of persons living with disabilities in a district-wide sanitation programme: A cross-sectional study in rural Malawi. PLOS global public health, 4(8), e0003005.

Delaire, C., Kisiangani, J., Stuart, K., Antwi-Agyei, P., Khush, R., & Peletz, R. (2022). Can open-defecation free (ODF) communities be sustained? A cross-sectional study in rural Ghana. PLoS One, 17(1), e0261674.

Eneh, S., Onukansi, F., Anokwuru, C., Ikhuoria, O., Edeh, G., Obiekwe, S., ... & Okpara, C. (2024). Cholera outbreak trends in Nigeria: policy recommendations and innovative approaches to prevention and treatment. Frontiers in Public Health, 12, 1464361.

Fagunwa, O. E., Mthiyane, T., Fagunwa, A., Olayemi, K. I., Alozie, A., Onyeaka, H., ... & Ojo, A. (2025). Priority regions for eliminating open defecation in Africa: implications for antimicrobial resistance. Environment, Development and Sustainability, 27(1), 2675-2699.

Ficek, F., & Novotný, J. (2019). Comprehending practitioners' assessments of community-led total sanitation. Health Promotion International, 34(6), e129-e138.

Galmogle, Y., Kirimi, L. M., Mburugu, K. N., & Eliud, G. K. (2024). Influence of Social and Cultural Factors on Adoption of Community-Led Total Sanitation in Laisamis Sub-County, Marsabit County, Kenya.

Kouassi, H. A. A., Andrianisa, H. A., Traoré, M. B., Sossou, S. K., Nguematio, R. M., Ymélé, S. S. S., & Ahossouhe, M. S. (2023). Review of the slippage factors from open defecation-free (ODF) status towards open defecation (OD) after the Community-Led Total Sanitation (CLTS) approach implementation. International journal of hygiene and environmental health, 250, 114160.

Kouassi, H. A. A., Andrianisa, H. A., Traoré, M. B., Sossou, S. K., Nguematio, R. M., & Djambou, M. D. (2023). Acceptance factors for the social norms promoted by the community-led total sanitation (CLTS) approach in the rural areas: case study of the central-western region of Burkina Faso. Sustainability, 15(15), 11945.

Kumar, G. M., Chaturvedi, P., Rao, A. K., Vyas, M., Sethi, V. A., Swathi, B., & Jabbar, K. A. (2023). Flowing futures: innovations in WASH for sustainable water, sanitation, and hygiene. In E3S Web of Conferences (Vol. 453, p. 01040). EDP Sciences.

Mariwah, S., Drangert, J. O., & Adams, E. A. (2022). The potential of composting toilets in addressing the challenges of faecal sludge management in community-led total sanitation (CLTS). Global Public Health, 17(12), 3802-3814.

Mbemba, E. B. (2022). The influence of social networks on behavioral change and promotion of basic sanitation services in Mzimba, Malawi (Doctoral dissertation, Mzuzu University).

Mebrahtom, S., Worku, A., & Gage, D. J. (2022). The risk of water, sanitation and hygiene on diarrhea-related infant mortality in eastern Ethiopia: a population-based nested case-control. BMC Public Health, 22(1), 343.

Mittal, P., & Bansal, R. (2024). Issues and challenges in community engagement. Community Engagement for Sustainable Practices in Higher Education: From Awareness to Action, 211-224.

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Mohetaer, Y., Han, C., Meng, L., Shangguan, Y., & Liu, P. (2025). From Flush to Fulfillment: Unveiling the Influence of Upgraded Sanitation on Subjective Well-Being. Social Indicators Research, 1-36.

Mwatsahu, F. G. (2022). Effectiveness of Community-Led Total Sanitation Activities on Selected Health Outcomes among Children Aged Below Five Years in Kinango Sub-County, Kwale County, Kenya (Doctoral dissertation, JKUAT-COHES).

Nelson, S., Drabarek, D., Jenkins, A., Negin, J., & Abimbola, S. (2021). How community participation in water and sanitation interventions impacts human health, WASH infrastructure and service longevity in low-income and middle-income countries: a realist review. BMJ open, 11(12), e053320.

Odagiri, M., Cronin, A. A., Thomas, A., Kurniawan, M. A., Zainal, M., Setiabudi, W., ... & Pronyk, P. (2020). Achieving the Sustainable Development Goals for water and sanitation in Indonesia–Results from a five-year (2013–2017) large-scale effectiveness evaluation. International Journal of Hygiene and Environmental Health, 230, 113584.

Ongere, I. (2020). An Assessment of Strategies to Sustain Beneficiaries' Livelihoods by Adventist Centre at Kibagare Slum, Nairobi, County, Kenya (Doctoral dissertation, Egerton University).

Onifade, A. M. (2024). Wastewater infrastructure in Nigeria and the USA: A tale of two nations and their pathway to sustainable development. International Journal of Multidisciplinary Research and Growth Evaluation, 5(4), 179-84.

Radin, M. A. (2024). Understanding the Costs and Benefits of Community-Led Total Sanitation in Eliminating Open Defecation (Doctoral dissertation, The University of North Carolina at Chapel Hill).

Saleem, M., Burdett, T., & Heaslip, V. (2019). Health and social impacts of open defecation on women: a systematic review. BMC public health, 19, 1-12.

Seth, P., & Pingali, P. (2025). Addressing information and credit barriers to making India open defecation free and improving child health: Evidence from a cluster randomized trial in rural India. Plos one, 20(2), e0318198.

Setty, K., Cronk, R., George, S., Anderson, D., O'Flaherty, G., & Bartram, J. (2019). Adapting translational research methods to water, sanitation, and hygiene. International journal of environmental research and public health, 16(20), 4049.

Silveira, M. R. da, Santos, G. B. dos, Faria, G. F., Mendes, S. N. T., & Machado, A. V. M. (2025). Sanitation Challenges in the Complexo da Maré. RGSA: Revista de Gestão Social e Ambiental, 19(1), e010879. https://doi.org/10.24857/rgsa.v19n1-081.

Sullamo, A. E., Mekonnen, E. A., & Mihirete, D. M. (2023). Teacher Educators' Views Vis-à-Vis Their Practices on Facilitating Learning to Teach. Pedagogical Research, 8(4).

Syam, D. M., & Bungawati, A. (2024). The effectiveness of community-led total sanitation cadre intervention in improving stunting knowledge and behavior. Healthcare in Low-resource Settings.

Tchouchu, E., & Ahenkan, A. (2023). Towards a successful implementation of environmental sanitation policy in Ghana: An assessment of key impeding factors. Heliyon, 9(3).

Ukpabi, M. C. (2024). The Consequences of Open Defecation Practice in South East, Nigeria. African Journal of Social and Behavioural Sciences, 14(6).

MAAUN INTERNATIONAL JOURNAL OF POST GRADUATE STUDIES (MIJPS)
IAHERI
INSTITUTE OF AFRICA HIGHER EDUCATION RESEARCH AND INNOVATION
Maryam Abacha American University of Niger
Volume 2, Number 1, January, 2026
https://iaherijournal.maaun.edu.ng
ISSN (Paper): 2817-1673; ISSN (Online): 2817-1683

Utami, U., & Pujihastuti, A. (2025). Improving Health Administration Capacity and Community Nutrition Education to Mitigate the Risk of Environmentally-Based Diseases. Sustainable Applied Modification Evidence Community.

Velleman, Y., Blair, L., Fleming, F., & Fenwick, A. (2023). Water-, Sanitation-, and Hygiene-Related Diseases. In Infectious Diseases (pp. 189-219). New York, NY: Springer US.

Venis, R. A. (2023). Behavior change in water, sanitation, and hygiene: a 100-year perspective. International Studies Perspectives, 24(2), 169-188.

Wasonga, J., Miyamichi, K., Hitachi, M., Ozaki, R., Karama, M., Hirayama, K., & Kaneko, S. (2023). Effects of community-led total sanitation (CLTS) boosting and household factors on latrine ownership in Siaya County, Kenya. International Journal of Environmental Research and Public Health, 20(18), 6781.

Weststrate, J., Dijkstra, G., Eshuis, J., Gianoli, A., & Rusca, M. (2019). The sustainable development goal on water and sanitation: learning from the millennium development goals. Social Indicators Research, 143, 795-810.

Zuin, V., Delaire, C., Peletz, R., Cock-Esteb, A., Khush, R., & Albert, J. (2019). Policy diffusion in the rural sanitation sector: lessons from Community-Led Total Sanitation (CLTS). World Development, 124, 104643.