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From triggering to transformation: a comparative analysis of community-led total sanitation programs in Bangladesh and Ethiopia

Sanou Soumaila[1]

Iradukunda Sengesho Benigne2

Nizeyimana Jean Baptiste3

1. Joint PhD Researcher at Lisala University and UNCR University, Economics & Management Department, Project Management
2. Joint MPhil Researcher at Lisala University and UNCR University, IT Department, Film and TV Production
3. Lecturer at Lisala University, Faculty of Psychology and Education, Department of Technopedagogy

ABSTRACT

This study falls within SDG Focus Goal 6: Clean Water and Sanitation — Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation,

[1] Joint PhD Researcher at Lisala University and UNCR University, Economics & Management Department, Project Management

paying special attention to the needs of women and girls and those in vulnerable situations; Target 6.3: Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials; Target 6.b: Support and strengthen the participation of local communities in improving water and sanitation management.

This study examines the comparative approaches to Community-Led Total Sanitation (CLTS) programs in Bangladesh and Ethiopia, focusing on how each country's historical context, implementation strategies, and adaptive innovations have shaped outcomes in the global effort to end open defecation. The research analyzes the foundational principles of CLTS, the challenges of scaling from local innovation to national policy, and the persistent tensions between community empowerment and the need to address social equity. A comparative policy and case study analysis was conducted examining primary and secondary sources including foundational CLTS literature, academic research, institutional reports, and program evaluations covering developments from 1999 to 2025-2026.

Bangladesh represents the birthplace of CLTS and the model from which the global movement emerged. In 1999-2000, Dr. Kamal Kar pioneered the CLTS methodology in Bangladesh, developing a radical alternative to conventional sanitation programs that had failed to achieve sustainable results despite decades of subsidy-based approaches . The approach rejected hardware subsidies entirely, focusing instead on facilitating communities to conduct their own appraisal and analysis of open defecation and take collective action to become open defecation-free (ODF) . By mobilizing powerful emotions such as disgust and shame, communities were triggered to recognize the public health consequences of open defecation and to construct their own latrines using local materials and skills . The success in Bangladesh catalyzed rapid spread: CLTS has now been implemented in more than 69 countries across Asia, Africa, and Latin America, with over 40 million people living in ODF environments . It has been mainstreamed into the sanitation policies of more than 25 countries . However, research on CLTS communities in Bangladesh reveals critical challenges regarding equity and inclusion. A study examining three CLTS communities found that community-led sanitation often neglects the poorest and most disadvantaged people, who are frequently unable to participate fully . The research recommended using well-being ranking to identify vulnerable members and noted that while vulnerable people strongly believe in CLTS's power to improve their livelihoods, special attention is needed to ensure their inclusion .

The installation of toilet seats to aid disabled people paradoxically decreased the sanitation independence of other household members in some cases, highlighting the complexity of inclusive design .

Ethiopia presents a contrasting picture of CLTS adaptation and rigorous evaluation in a challenging context. Following its introduction to Eastern and Southern Africa by Dr. Kar in 2006, CLTS has been implemented across Ethiopia with varying organizational approaches combining NGOs, projects, and government involvement . A landmark DrPH thesis by Cha (2024) evaluating a CLTS intervention in a rural area of the Southern Nations, Nationalities, and Peoples' Region from 2015 to 2017 provides rare rigorous evidence of CLTS effectiveness. The randomized controlled trial, enrolling 906 children in 24 intervention and 24 control clusters, found that CLTS reduced the incidence of child diarrhea by 34% and longitudinal prevalence by 30% . Critically, the research documented substantial sanitation externalities: children living in high-coverage villages had a 45% lower risk of diarrhea than those in low-coverage villages, even when their own household had only an unimproved latrine . The benefit-cost ratio was determined to be 3.7, demonstrating cost-effectiveness . However, the study also revealed important limitations: low-quality latrines offered little protection, and there was inconclusive evidence regarding the effect on 7-day period prevalence at 10 months post-triggering . Higher-quality latrines meeting specific criteria were associated with a 54% reduction in child diarrhea compared to those not meeting these criteria . A quasi-experimental study comparing conventional CLTS (facilitated by health workers) with teacher-facilitated CLTS found that the decrease in open defecation associated with teacher-facilitated CLTS was 8.2 percentage points smaller, highlighting the importance of facilitator selection and support . Teachers faced competing responsibilities and initially lacked support from local leaders, limiting their effectiveness. The Plan International-UNC research project, designed to improve cost-effectiveness and scalability, is testing modified CLTS methodologies for local actor engagement in Ethiopia, Ghana, and Kenya, addressing the challenge of costly, labor-intensive facilitation .

Both countries demonstrate significant interplay between CLTS principles and implementation realities. Bangladesh's strength lies in its pioneering role, deep community-level experience, and integration into national policy, yet faces persistent challenges of equity and inclusion that require targeted adaptations. Ethiopia's strength lies in rigorous evidence generation, attention to latrine

quality, and systematic efforts to improve scalability, yet grapples with the challenges of facilitator capacity, institutional support, and maintaining momentum after triggering. Neither country has fully resolved the tension between the radical no-subsidy philosophy and the need to support the poorest households, though both offer invaluable lessons for the global CLTS movement.

KEYWORDS: Community-Led Total Sanitation, CLTS, open defecation, Bangladesh, Ethiopia, sanitation equity, behavior change, child health, sanitation externalities, SDG 6, participatory development.

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RÉSUMÉ (French Version)

Cette étude examine les approches comparatives des programmes d'Assainissement Total Piloté par la Communauté (ATPC) au Bangladesh et en Éthiopie, en se concentrant sur la manière dont le contexte historique, les stratégies de mise en œuvre et les innovations adaptatives de chaque pays ont façonné les résultats dans l'effort mondial pour mettre fin à la défécation en plein air. La recherche analyse les principes fondamentaux de l'ATPC, les défis du passage de l'innovation locale à la politique nationale, et les tensions persistantes entre l'autonomisation communautaire et la nécessité de traiter l'équité sociale. Une analyse comparative des politiques et des études de cas a été menée en examinant des sources primaires et secondaires, y compris la littérature fondatrice sur l'ATPC, la recherche académique, les rapports institutionnels et les évaluations de programmes couvrant les développements de 1999 à 2025-2026.

Le Bangladesh représente le berceau de l'ATPC et le modèle d'où le mouvement mondial a émergé. En 1999-2000, le Dr. Kamal Kar a pionnier la méthodologie ATPC au Bangladesh, développant une alternative radicale aux programmes d'assainissement conventionnels qui avaient échoué à obtenir des résultats durables malgré des décennies d'approches basées sur les subventions . L'approche rejetait entièrement les subventions matérielles, se concentrant plutôt sur la facilitation des communautés pour qu'elles effectuent leur propre évaluation et analyse de la défécation en plein air et prennent des mesures collectives pour devenir des communautés sans défécation en

plein air . En mobilisant des émotions puissantes telles que le dégoût et la honte, les communautés étaient déclenchées pour reconnaître les conséquences sanitaires publiques de la défécation en plein air et pour construire leurs propres latrines en utilisant des matériaux et des compétences locaux . Le succès au Bangladesh a catalysé une propagation rapide : l'ATPC est maintenant mis en œuvre dans plus de 69 pays à travers l'Asie, l'Afrique et l'Amérique latine, avec plus de 40 millions de personnes vivant dans des environnements sans défécation en plein air . Il a été intégré dans les politiques d'assainissement de plus de 25 pays . Cependant, la recherche sur les communautés ATPC au Bangladesh révèle des défis critiques concernant l'équité et l'inclusion. Une étude examinant trois communautés ATPC a révélé que l'assainissement piloté par la communauté néglige souvent les personnes les plus pauvres et les plus défavorisées, qui sont fréquemment incapables de participer pleinement . La recherche a recommandé d'utiliser le classement du bien-être pour identifier les membres vulnérables et a noté que bien que les personnes vulnérables croient fermement au pouvoir de l'ATPC d'améliorer leurs moyens de subsistance, une attention spéciale est nécessaire pour garantir leur inclusion . L'installation de sièges de toilettes pour aider les personnes handicapées a paradoxalement diminué l'indépendance sanitaire d'autres membres du ménage dans certains cas, soulignant la complexité de la conception inclusive .

L'Éthiopie présente un tableau contrasté de l'adaptation de l'ATPC et de l'évaluation rigoureuse dans un contexte difficile. Suite à son introduction en Afrique orientale et australe par le Dr. Kar en 2006, l'ATPC a été mis en œuvre à travers l'Éthiopie avec des approches organisationnelles variables combinant ONG, projets et implication gouvernementale . Une thèse de doctorat de référence de Cha (2024) évaluant une intervention ATPC dans une zone rurale de la région des Nations, Nationalités et Peuples du Sud de 2015 à 2017 fournit des preuves rigoureuses rares de l'efficacité de l'ATPC. L'essai randomisé contrôlé, incluant 906 enfants dans 24 grappes d'intervention et 24 grappes témoins, a révélé que l'ATPC réduisait l'incidence de la diarrhée infantile de 34 % et la prévalence longitudinale de 30 % . De manière critique, la recherche a documenté des externalités sanitaires substantielles : les enfants vivant dans des villages à haute couverture avaient un risque de diarrhée inférieur de 45 % par rapport à ceux des villages à faible couverture, même lorsque leur propre ménage n'avait qu'une latrine non améliorée . Le rapport coûts-bénéfices a été déterminé à 3,7, démontrant la rentabilité . Cependant, l'étude a également

révélé des limitations importantes : les latrines de mauvaise qualité offraient peu de protection, et les preuves concernant l'effet sur la prévalence sur 7 jours à 10 mois après le déclenchement étaient non concluantes . Les latrines de meilleure qualité répondant à des critères spécifiques étaient associées à une réduction de 54 % de la diarrhée infantile par rapport à celles ne répondant pas à ces critères . Une étude quasi-expérimentale comparant l'ATPC conventionnel (facilité par des agents de santé) avec l'ATPC facilité par des enseignants a révélé que la diminution de la défécation en plein air associée à l'ATPC facilité par les enseignants était inférieure de 8,2 points de pourcentage, soulignant l'importance de la sélection et du soutien des facilitateurs . Les enseignants faisaient face à des responsabilités concurrentes et manquaient initialement de soutien des dirigeants locaux, limitant leur efficacité. Le projet de recherche Plan International-UNC, conçu pour améliorer le rapport coût-efficacité et l'évolutivité, teste des méthodologies ATPC modifiées pour l'engagement des acteurs locaux en Éthiopie, au Ghana et au Kenya, relevant le défi de la facilitation coûteuse et exigeante en main-d'œuvre .

Les deux pays démontrent une interaction significative entre les principes de l'ATPC et les réalités de mise en œuvre. La force du Bangladesh réside dans son rôle pionnier, son expérience communautaire approfondie et son intégration dans la politique nationale, mais fait face à des défis persistants d'équité et d'inclusion qui nécessitent des adaptations ciblées. La force de l'Éthiopie réside dans la génération de preuves rigoureuses, l'attention portée à la qualité des latrines et les efforts systématiques pour améliorer l'évolutivité, mais est aux prises avec les défis de la capacité des facilitateurs, du soutien institutionnel et du maintien de l'élan après le déclenchement. Aucun des deux pays n'a pleinement résolu la tension entre la philosophie radicale de l'absence de subventions et la nécessité de soutenir les ménages les plus pauvres, bien que tous deux offrent des leçons inestimables pour le mouvement mondial de l'ATPC.

MOTS-CLÉS : Assainissement Total Piloté par la Communauté, ATPC, défécation en plein air, Bangladesh, Éthiopie, équité en matière d'assainissement, changement de comportement, santé infantile, externalités sanitaires, ODD 6, développement participative.

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Auteurs correspondant: *Sanou Soumaila, Iradukunda Sengesho Benigne and Nizeyimana Jean Baptiste*
Adresses électroniques: *sanousoumaila@cirep.ac.cd,benigneira0@gmail.com, nizeyimana.jb@dphu.ac.cd ,*
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1. INTRODUCTION: TWO FRONTIERS IN THE FIGHT AGAINST OPEN DEFECATION

The global struggle for safe sanitation stands as one of the most consequential public health challenges of our time. Approximately 2 billion people worldwide lack access to basic sanitation facilities, with open defecation affecting hundreds of millions, particularly in rural areas of South Asia and sub-Saharan Africa . The consequences cascade through communities: diarrheal diseases remain a leading cause of child mortality, women and girls face dignity and safety risks, and the cycle of poverty and disease perpetuates across generations. SDG Target 6.2 explicitly calls for achieving access to adequate and equitable sanitation and hygiene for all and ending open defecation by 2030.

This study examines two countries that offer illuminating perspectives on one of the most innovative and widely adopted approaches to sanitation: Community-Led Total Sanitation (CLTS). Bangladesh, where CLTS was pioneered in 1999-2000, represents the movement's birthplace and a laboratory for its evolution over two decades . Ethiopia, where CLTS was introduced in 2006 and has been subjected to rigorous evaluation, represents a frontier of adaptation and evidence generation . Together, they illuminate the possibilities and challenges of a methodology that has spread to over 69 countries and transformed the lives of more than 40 million people .

Bangladesh's CLTS story begins with Dr. Kamal Kar, a development consultant who challenged the conventional wisdom that sanitation progress required hardware subsidies. Working with communities in Bangladesh, he developed an approach that rejected subsidies entirely, focusing instead on facilitating communities to conduct their own appraisal of open defecation and take

collective action . The results were dramatic: communities that had been failed by years of subsidy-based programs achieved total sanitation coverage within months. This success catalyzed a global movement, with CLTS spreading across Asia and Africa and being mainstreamed into the policies of more than 25 countries . Yet research in Bangladesh has also revealed critical challenges: community-led processes can neglect the poorest and most disadvantaged, who are often unable to participate fully .

Ethiopia's CLTS journey began later but has produced some of the most rigorous evidence in the global sanitation sector. Following its introduction in 2006, CLTS has been implemented across Ethiopia with varying organizational approaches . A landmark randomized controlled trial published in 2024 provides robust evidence of CLTS effectiveness: a 34% reduction in child diarrhea incidence and a benefit-cost ratio of 3.7 . The same research documented substantial "sanitation externalities"—community-level benefits that extend beyond individual households. Yet it also revealed that low-quality latrines offer little protection, highlighting the importance of quality alongside coverage .

The contrast between Bangladesh and Ethiopia illuminates critical questions for SDG 6 and global sanitation policy: How does a radical innovation born in one context translate to another? What does rigorous evaluation reveal about the approach's true effectiveness? How can the core principles of community empowerment be reconciled with the need to ensure equity and inclusion? And what can the world learn from two decades of CLTS experience across two continents?

2. LITERATURE REVIEW

2.1 The CLTS Paradigm: From Subsidies to Empowerment

Community-Led Total Sanitation represents a fundamental departure from conventional sanitation programming. Traditional approaches, which provided hardware subsidies to individual households, assumed that sanitation was primarily a private good and that construction and use depended on private decisions . These programs typically achieved small, step-by-step changes,

with improvements becoming steadily more difficult once early adopters and higher-income households had installed facilities . Few large-scale programs succeeded.

CLTS, in contrast, recognizes sanitation as both a public and a private good. As the Community Eye Health Journal explains, "if your neighbours defecate in the open, then your children risk excreta-related disease even when the members of your own household use a sanitary toilet, wash their hands, and practice good hygiene" . This understanding drives the approach's core innovation: triggering collective action rather than supporting individual adoption.

The CLTS process typically involves several phases [citation:6, 8]:

Phase	**Description**
Triggering	Facilitators use participatory tools (transect walks, community mapping, fecal-oral contamination calculations) to help communities analyze their sanitation situation and generate collective disgust and shame about open defecation
Action Planning	Communities develop their own action plan to become open defecation-free (ODF), deciding on latrine designs, timelines, and mutual support mechanisms
Construction	Households build their own latrines using local materials and skills; no hardware designs or subsidies are provided
Post-ODF Follow-up	External evaluators verify ODF status, certification ceremonies celebrate achievement, and neighboring communities are invited to learn and compete

The approach's founder, Dr. Kamal Kar, emphasized that "outsiders may be needed to help the community identify their current situation and the need for improvement; however, the community must want to change" . The role of NGOs and government is therefore that of facilitator, concentrating on social development, institution building, and community empowerment rather than service delivery .

2.2 Bangladesh: The Birthplace and Its Enduring Lessons

The Genesis of CLTS

In 1999-2000, Dr. Kamal Kar, a specialist in participatory rural appraisal, was working with communities in Bangladesh when he developed what would become CLTS . The approach emerged from frustration with conventional sanitation programs: "It is difficult to find even 100 villages among nearly 85,000 that are 100 per cent sanitised and free from open defecation" . Kar's insight was that subsidies created dependency and undermined ownership; communities would only achieve lasting change when they recognized the problem as their own and mobilized their own resources to solve it.

The CLTS methodology spread rapidly across Bangladesh through partnerships with WaterAid, the Village Education Resources Centre (VERC), and other organizations . By mobilizing powerful emotions—disgust at the sight of feces, shame at the community's situation—and facilitating rigorous community analysis, facilitators were able to trigger collective action that years of subsidy-based programs had failed to achieve.

Global Spread and Impact

From its origins in Bangladesh, CLTS has spread to more than 69 countries across Asia, Africa, and Latin America . Over 40 million people now live in open defecation-free environments as a result . The approach has been mainstreamed into the sanitation policies of more than 25 countries, including India, Indonesia, Pakistan, Ethiopia, and Kenya .

The spread has not been uniform or without challenges. As Kar and colleagues have documented, going to scale requires "continuous learning, adaptation and innovation" . Practical elements of successful scaling include training facilitators, starting in favorable conditions, conducting campaigns and encouraging competition, supporting Natural Leaders and community consultants, involving children and schools, promoting market-based access to hardware, and verifying and certifying ODF status .

Equity Challenges in Bangladesh

Despite its successes, research in Bangladesh has revealed persistent challenges regarding equity and inclusion. A study of three CLTS communities found that "community-led sanitation often neglects the poorest and most disadvantaged people in society as they are often unable to participate" . Key findings include:

- Vulnerable community members strongly believe in CLTS's power to improve their livelihoods and recognize their importance in participation
- Most households make improvements to their latrines, demonstrating motivation to move up the sanitation ladder
- However, special efforts are needed to identify and include vulnerable members, such as using well-being ranking
- The installation of toilet seats to aid disabled people paradoxically decreased the sanitation independence of other household members in some cases, highlighting the complexity of inclusive design

A WaterAid synthesis study of CLTS in Bangladesh, Nepal, and Nigeria explored whether achieving ODF status is sufficient for sustainable behavior change . It found that ODF is "a necessary but not sufficient condition for the entire community to use and maintain hygienic latrines in the long-term" . Additional factors are needed to translate ODF status into entrenched behavior change and to enable communities to move up the "sanitation ladder" to improved facilities.

2.3 Ethiopia: Rigorous Evidence and Adaptation

Introduction and Spread

Dr. Kamal Kar introduced CLTS to Eastern and Southern Africa in 2006, including Ethiopia . The approach was taken up by a combination of NGOs, projects, and government agencies, with varying organizational approaches . As in Bangladesh, CLTS spread across Ethiopia, though with adaptations to local contexts.

Rigorous Evidence from Ethiopia

Ethiopia has become the site of some of the most rigorous research on CLTS effectiveness. A landmark DrPH thesis by Cha (2024) at the London School of Hygiene & Tropical Medicine evaluated a CLTS intervention in a rural area of the Southern Nations, Nationalities, and Peoples' Region from 2015 to 2017 . The study employed a cluster randomized controlled trial design, enrolling 906 children in 24 intervention and 24 control clusters.

Key findings include:

Outcome	**Effect Size**	**Significance**
Child diarrhea incidence	34% reduction (incidence ratio 0.66)	p=0.03
Longitudinal prevalence	30% reduction (prevalence ratio 0.70)	p=0.02
7-day period prevalence (10 months)	25% reduction (relative risk 0.75)	p=0.45 (non-significant)
Higher-quality latrines	54% reduction in diarrhea (OR 0.46)	p=0.006

The study also documented substantial **sanitation externalities**. Children living in high-coverage villages had a 45% lower risk of diarrhea than those in low-coverage villages, even when their own household had only an unimproved latrine (adjusted OR 0.55) . This finding is crucial: it demonstrates that community-wide sanitation coverage protects individuals regardless of their own facility quality, providing a powerful rationale for collective action.

The economic analysis found a benefit-cost ratio of 3.7 (95% Credible Interval 1.9–5.4) and a net present value of Int'l$1,193,786 . The intervention was clearly cost-effective.

However, the study also revealed important limitations. Low-quality latrines offered little protection; only those meeting specific quality criteria were associated with reduced diarrhea. The effect on 7-day period prevalence at 10 months post-triggering was not statistically significant, suggesting that some benefits may diminish over time or that measurement challenges exist.

Facilitator Effectiveness Research

A quasi-experimental study by Crocker compared two CLTS implementation approaches in Ethiopia: conventional CLTS facilitated by health workers and local leaders, versus an alternative approach in which teachers provided facilitation . The study found that the decrease in open defecation associated with teacher-facilitated CLTS was 8.2 percentage points smaller than for conventional CLTS.

The research identified several reasons for this difference:

- Teachers had competing responsibilities that limited their availability
- Teachers initially lacked support from local leaders
- While teachers demonstrated ability and engagement, they may be more appropriate for a supporting rather than leading role

Importantly, the study found that CLTS was most effective where baseline open defecation was high. There were no significant changes in sanitation practices where baseline open defecation was below 30%, suggesting that CLTS may not be appropriate for communities already on the path to improved sanitation.

Scaling and Cost-Effectiveness Research

The Plan International-UNC research project, implemented in Ethiopia, Ghana, and Kenya, is designed to improve the cost-effectiveness and scalability of CLTS . The project addresses the primary challenge of costly, labor-intensive CLTS facilitation by testing strategies to enhance the roles of local actors at community, facilitator, and government levels.

The project's objectives are:

Objective	**Description**
Learning	Design and implement applied research pilots testing solutions to locally-relevant CLTS scaling challenges

Capturing	Systematically collect and evaluate results, develop standardized metrics for sanitation programming
Sharing	Disseminate knowledge to practitioners and researchers through publications, exchange visits, and learning events

The project addresses both supply and demand for sanitation, aiming to generate sustained community-led demand while ensuring basic levels of supply.

2.4 Comparative Dimensions: Origins, Evidence, and Equity

Dimension	**Bangladesh**	**Ethiopia**
CLTS Introduction	1999-2000 (birthplace)	2006 (introduced by Dr. Kar)
Primary Role	Innovation and global spread	Adaptation and rigorous evaluation
Key Evidence Base	Qualitative studies on equity; WaterAid synthesis	RCT on health impacts; facilitator effectiveness research
Coverage Impact	Foundation of global movement; over 40 million people ODF globally	Documented 34% diarrhea reduction; benefit-cost ratio 3.7
Equity Focus	Research on inclusion of poorest and disabled	Attention to latrine quality and community externalities
Implementation Challenges	Neglect of most disadvantaged; complex inclusive design	Facilitator capacity; institutional support; maintaining momentum
Key Strength	Pioneering role; deep community experience; policy integration	Rigorous evidence; attention to quality; systematic scaling research
Key Tension	No-subsidy philosophy vs. support for poorest	Quality vs. speed; facilitator intensity vs. cost-effectiveness

3. RESEARCH QUESTIONS

This study addresses the following research questions:

1. What are the key characteristics of CLTS implementation in Bangladesh, including its origins, global spread, and persistent equity challenges?
2. What are the key characteristics of CLTS implementation in Ethiopia, including rigorous evidence on health impacts, facilitator effectiveness, and scalability research?
3. How do the two countries compare in terms of historical role, evidence base, equity outcomes, and adaptation strategies?

4. METHODOLOGY

This study employs a comparative policy and case study analysis methodology to examine Community-Led Total Sanitation programs in Bangladesh and Ethiopia. The research design integrates secondary analysis of foundational CLTS literature, academic research, institutional reports, and program evaluations to develop comprehensive understanding of CLTS principles, implementation strategies, and outcomes in both countries.

Research Design: The comparative approach is appropriate for examining how different historical contexts, implementation approaches, and research traditions shape CLTS outcomes. Bangladesh and Ethiopia were selected as cases that offer complementary insights: one is the birthplace and global model, the other is a site of rigorous evaluation and adaptation.

Data Sources: Primary and secondary sources analyzed include:

- CLTS Foundation documentation of Dr. Kamal Kar's work and CLTS origins
- WaterAid synthesis research on CLTS in Bangladesh and other countries
- LSHTM DrPH thesis on CLTS effectiveness in Ethiopia
- CGIAR Working Paper on CLTS experiences in Africa with emphasis on Ethiopia
- Appropedia documentation of CLTS methodology
- SuSanA project database documentation of Plan-UNC scaling research

- Community Eye Health Journal overview of CLTS approach
- Peer-reviewed research on CLTS facilitator effectiveness in Ethiopia

Analytical Framework: The comparative framework examines five dimensions:

1. **Historical Development:** Origins, spread, and policy integration
2. **Evidence Base:** Rigor of research, documented outcomes, identified challenges
3. **Implementation Approach:** Facilitation models, institutional arrangements, scaling strategies
4. **Equity and Inclusion:** Attention to poorest, disabled, and vulnerable groups
5. **Quality and Sustainability:** Latrine quality, behavior change persistence, community externalities

5. RESULTS

5.1 Bangladesh: Innovation, Spread, and Equity Challenges

The Birth of CLTS

Dr. Kamal Kar pioneered CLTS in Bangladesh in 1999-2000, developing a methodology that would transform global sanitation policy . The approach rejected hardware subsidies, which had proven ineffective over decades, and instead focused on facilitating communities to conduct their own appraisal and analysis of open defecation . Using participatory rural appraisal techniques, facilitators helped communities map defecation sites, calculate the volume of feces generated, and trace pathways of fecal-oral contamination. The emotional response—disgust and shame—triggered collective action.

The innovation spread rapidly through partnerships with WaterAid, VERC, and other organizations. CLTS demonstrated that communities could achieve total sanitation coverage within months without external subsidies, a result that conventional programs had failed to achieve over years.

Global Impact

From its Bangladesh origins, CLTS has spread to more than 69 countries across Asia, Africa, and Latin America . Over 40 million people now live in open defecation-free environments . The approach has been mainstreamed into the sanitation policies of more than 25 countries, representing a fundamental shift in how governments and development organizations approach sanitation [citation:1, 4].

Dr. Kar's Handbook and Trainers' Guide on CLTS have been translated into more than ten languages . He was named among the Top Hundred Global Thinkers by Foreign Policy Magazine in 2010, and received the Sarphati Sanitation Lifetime Achievement Award in 2015 .

Equity Research in Bangladesh

Despite global success, research in Bangladesh has revealed critical challenges. A study of three CLTS communities found that "community-led sanitation often neglects the poorest and most disadvantaged people in society as they are often unable to participate" . Key findings include:

Finding	**Implication**
Well-being ranking should identify vulnerable members	Standard CLTS processes may overlook the poorest
Vulnerable people strongly believe in CLTS's power	They are motivated to participate if included
Most households make latrine improvements	Motivation exists to move up sanitation ladder
Toilet seats for disabled decreased independence of others	Inclusive design requires careful consideration

The WaterAid synthesis study of CLTS in Bangladesh, Nepal, and Nigeria explored whether ODF status translates into sustained behavior change . It found that ODF is "a necessary but not sufficient condition" and that additional factors are needed to ensure long-term use and movement up the sanitation ladder.

5.2 Ethiopia: Rigorous Evidence and Systematic Scaling

Health Impact Evidence

The Cha (2024) DrPH thesis provides rigorous evidence of CLTS effectiveness in Ethiopia. Key findings include:

Outcome	**Finding**
Child diarrhea incidence	34% reduction (IR 0.66, p=0.03)
Longitudinal prevalence	30% reduction (PR 0.70, p=0.02)
7-day period prevalence (10 months)	Non-significant (RR 0.75, p=0.45)
Higher-quality latrines	54% diarrhea reduction (OR 0.46, p=0.006)
Sanitation externalities	45% lower risk in high-coverage villages (OR 0.55)
Benefit-cost ratio	3.7 (95% CrI 1.9–5.4)

The study provides crucial evidence that CLTS can reduce child diarrhea cost-effectively. The documentation of sanitation externalities is particularly important: community-wide coverage protects everyone, regardless of individual latrine quality .

However, the finding that low-quality latrines offer little protection underscores the importance of quality alongside coverage. The non-significant result for 7-day period prevalence at 10 months suggests that some benefits may diminish or that measurement challenges exist.

Facilitator Effectiveness Research

The Crocker study comparing conventional CLTS with teacher-facilitated CLTS provides important insights into implementation. Key findings include:

- Teacher-facilitated CLTS achieved an 8.2 percentage point smaller decrease in open defecation
- Teachers faced competing responsibilities and initially lacked support from local leaders
- Teachers demonstrated ability and engagement but may be better suited to supporting rather than leading roles
- CLTS was most effective where baseline open defecation was high; no significant changes where baseline OD was below 30%

Scaling Research

The Plan International-UNC research project in Ethiopia, Ghana, and Kenya addresses the challenge of costly, labor-intensive CLTS facilitation . The project tests strategies to enhance the roles of local actors, aiming to improve cost-effectiveness and scalability. It systematically captures and evaluates results, developing standardized metrics for sanitation programming.

5.3 Comparative Analysis

Dimension	**Bangladesh**	**Ethiopia**
CLTS History	Birthplace (1999-2000)	Introduced 2006
Global Role	Model and innovator	Adapter and evidence-generator
Key Research	Qualitative equity studies; WaterAid synthesis	RCT on health impacts; facilitator effectiveness
Health Evidence	Limited rigorous health impact data	34% diarrhea reduction; 3.7 benefit-cost ratio
Equity Focus	Inclusion of poorest; disability access	Latrine quality; community externalities
Implementation Challenge	Neglect of disadvantaged	Facilitator capacity; institutional support
Quality Attention	Movement up sanitation ladder	Higher-quality latrines critical for protection
Scaling Approach	Natural leaders; champions; cross-visits	Systematic research on cost-effectiveness
Key Strength	Deep community experience; policy integration	Rigorous evidence; externalities documentation
Key Challenge	Translating participation into inclusion	Maintaining quality at scale

6. DISCUSSION OF RESULTS

6.1 Two Generations of CLTS Learning

The contrast between Bangladesh and Ethiopia reveals two distinct generations of CLTS experience. Bangladesh represents the **first generation**: the birthplace of innovation, the laboratory where principles were developed and tested, and the model that spread globally. Its contributions are foundational: demonstrating that communities could achieve total sanitation without subsidies, developing facilitation methodologies, and creating the movement that now reaches millions.

Ethiopia represents the **second generation**: a site of rigorous evaluation, systematic adaptation, and evidence-based refinement. Its contributions are complementary: providing robust evidence of health impacts, documenting sanitation externalities, identifying the importance of latrine quality, and systematically testing approaches to improve scalability and cost-effectiveness.

Each generation has produced knowledge essential for the other. Bangladesh's qualitative research on equity challenges reveals that community-led processes do not automatically include the poorest, providing crucial learning for implementation everywhere. Ethiopia's quantitative evidence on health impacts and cost-effectiveness provides the justification for continued investment that the movement needs.

6.2 The Equity Imperative

Both countries reveal that CLTS, for all its power, does not automatically produce equitable outcomes. Bangladesh's research documents that "community-led sanitation often neglects the poorest and most disadvantaged people in society as they are often unable to participate" . The finding that well-being ranking should identify vulnerable members suggests that deliberate attention to inclusion is necessary, not optional.

Ethiopia's research on latrine quality reveals a different equity dimension: low-quality latrines offer little health protection, meaning that households unable to construct higher-quality facilities may

not benefit fully from the intervention. The sanitation externalities finding—that community coverage protects everyone regardless of individual latrine quality—provides some reassurance, but the fact remains that quality matters and quality is correlated with wealth.

The tension between CLTS's radical no-subsidy philosophy and the need to support the poorest remains unresolved. The Bangladesh research suggests that vulnerable people are motivated to participate and believe in CLTS's power, but they need deliberate inclusion. Ethiopia's research suggests that quality matters and that achieving quality may require support beyond what the poorest households can provide themselves.

6.3 The Importance of Rigorous Evidence

Ethiopia's contribution to the CLTS evidence base cannot be overstated. For years, CLTS spread based on compelling anecdotal success stories and the power of its participatory philosophy. The Cha RCT provides rigorous evidence that CLTS reduces child diarrhea—the primary health outcome the intervention is designed to address . The benefit-cost ratio of 3.7 demonstrates that CLTS is not only effective but economically efficient.

The documentation of sanitation externalities is equally important. By showing that children in high-coverage villages have lower diarrhea risk regardless of their own latrine quality, the research provides a powerful rationale for the community-wide approach that distinguishes CLTS from individual-household programs .

The non-significant finding for 7-day period prevalence at 10 months, and the critical importance of latrine quality, also provide important cautions. CLTS is not a magic bullet; its effects may diminish over time, and quality matters.

6.4 Implementation Matters

The Crocker study comparing facilitator types in Ethiopia demonstrates that implementation details matter enormously. Teacher-facilitated CLTS achieved significantly smaller reductions in open defecation than conventional CLTS facilitated by health workers and local leaders . The

reasons—competing responsibilities, lack of initial support from leaders—are instructive for programs everywhere.

This finding has important implications for scaling. If CLTS requires intensive facilitation by well-supported, motivated facilitators, how can it be scaled cost-effectively to reach millions? The Plan-UNC research project, testing strategies to enhance the roles of local actors, is precisely the kind of systematic inquiry needed .

6.5 The Challenge of Sustainability

The WaterAid synthesis finding that ODF is "a necessary but not sufficient condition" for long-term behavior change highlights the sustainability challenge . Communities may achieve ODF status only to relapse, or may not progress up the sanitation ladder to improved facilities. The Ethiopian finding that some health benefits may diminish over time suggests that sustainability requires ongoing attention.

CLTS's focus on triggering collective action is powerful, but post-triggering follow-up, verification, and support appear essential for maintaining momentum. The certification ceremonies, cross-visits, and competition that have been part of CLTS practice from the beginning are not optional extras but core to sustaining change.

6.6 Implications for SDG 6

The findings have important implications for achieving SDG 6 targets:

Target 6.2 (Adequate and equitable sanitation): CLTS can contribute significantly to ending open defecation, but equity requires deliberate attention. Bangladesh's research shows that the poorest are often excluded unless special efforts are made. Ethiopia's research shows that latrine quality matters for health protection, raising questions about whether "adequate" should be defined in terms of quality, not just presence.

Target 6.3 (Improve water quality): By preventing fecal contamination of water sources, CLTS contributes directly to water quality improvement. The sanitation externalities documented in Ethiopia provide evidence that community-wide coverage protects everyone.

Target 6.b (Support community participation): CLTS is a model of community participation, but it also reveals the limitations of purely community-led approaches. The poorest may need deliberate inclusion; quality may require external support; sustainability may require ongoing follow-up. The lesson is not to abandon community participation but to recognize that it must be supported.

Target 6.2 (Attention to vulnerable groups): Both countries' research highlights the need for special attention to women, girls, the poorest, and disabled people. The Bangladesh finding that toilet seats for disabled people decreased independence of other household members illustrates the complexity of inclusive design.

7. CONCLUSION: FROM TRIGGERING TO TRANSFORMATION

This comparative analysis of Community-Led Total Sanitation programs in Bangladesh and Ethiopia reveals that the CLTS journey is one of continuous learning, adaptation, and refinement. The two countries, with their distinct historical roles and complementary contributions, offer invaluable lessons for the global effort to end open defecation and achieve safe sanitation for all.

Bangladesh's role as the birthplace of CLTS cannot be overstated. In 1999-2000, Dr. Kamal Kar pioneered an approach that rejected the failed paradigm of hardware subsidies and instead empowered communities to analyze their own sanitation situation and take collective action . The approach spread rapidly, first across Bangladesh and then to more than 69 countries worldwide . Over 40 million people now live in open defecation-free environments as a result . CLTS has been mainstreamed into the sanitation policies of more than 25 countries, representing a fundamental shift in how governments and development organizations approach sanitation . Yet Bangladesh's experience also reveals persistent challenges. Research in CLTS communities found that "community-led sanitation often neglects the poorest and most disadvantaged people in society as

they are often unable to participate" . The WaterAid synthesis found that ODF status is "a necessary but not sufficient condition" for sustained behavior change . These findings highlight that community empowerment, for all its power, does not automatically produce equity or long-term sustainability.

Ethiopia's role as a site of rigorous evaluation and systematic adaptation complements Bangladesh's pioneering contribution. The Cha RCT provides robust evidence that CLTS reduces child diarrhea by 34%, with a benefit-cost ratio of 3.7 . The documentation of sanitation externalities—a 45% lower diarrhea risk for children in high-coverage villages regardless of their own latrine quality—provides a powerful rationale for the community-wide approach . Yet the same research reveals that low-quality latrines offer little protection, and that some health benefits may diminish over time . The Crocker study comparing facilitator types demonstrates that implementation details matter enormously, with teacher-facilitated CLTS achieving significantly smaller reductions in open defecation . The Plan-UNC scaling research addresses the fundamental challenge of how to achieve cost-effective, sustainable scale .

Several cross-cutting insights emerge from this comparison:

First, community empowerment works, but it is not enough. CLTS's core insight—that communities can achieve total sanitation when they recognize the problem as their own—has been validated across continents and decades. But empowerment without attention to equity, quality, and sustainability is incomplete.

Second, rigorous evidence matters. For years, CLTS spread on the power of its philosophy and compelling anecdotes. Ethiopia's RCT provides the kind of evidence that justifies continued investment and guides refinement.

Third, the poorest need deliberate inclusion. Bangladesh's research shows that community-led processes do not automatically include the most disadvantaged. Well-being ranking, targeted support, and attention to disability are necessary.

Fourth, quality is as important as coverage. Ethiopia's research shows that low-quality latrines offer little health protection. The goal must be not just ODF communities but communities with safe, durable facilities.

Fifth, implementation details matter enormously. The facilitator comparison in Ethiopia demonstrates that who facilitates, how they are supported, and what institutional arrangements are in place shape outcomes.

Sixth, sustainability requires ongoing attention. ODF status is not the end of the story. Post-triggering follow-up, verification, and support are essential.

Seventh, scaling requires systematic learning. The Plan-UNC research project, testing strategies to enhance local actor roles, represents the kind of systematic inquiry needed to take CLTS to the next level.

For Bangladesh, priorities emerging from this analysis include:

1. Address equity gaps by integrating well-being ranking and targeted support into standard CLTS practice.
2. Strengthen post-ODF follow-up to ensure sustained behavior change and progression up the sanitation ladder.
3. Learn from Ethiopia's quality research, ensuring that latrine quality receives attention alongside coverage.
4. Continue to share Bangladesh's deep community-level experience with the global CLTS movement.

For Ethiopia, priorities include:

1. Apply the lessons from facilitator effectiveness research, ensuring that CLTS facilitators are well-supported and that institutional arrangements enable their success.
2. Build on the Plan-UNC research to develop cost-effective scaling strategies that maintain quality.
3. Strengthen attention to latrine quality, ensuring that the health benefits documented in research are realized in practice.
4. Share Ethiopia's rigorous evidence with other countries implementing CLTS.

For the international community, the lessons are clear: CLTS is a powerful tool for achieving SDG 6, but it must be implemented with attention to equity, quality, and sustainability. Bangladesh's pioneering experience and Ethiopia's rigorous evidence together provide a roadmap: trigger communities, but support the poorest; achieve coverage, but attend to quality; celebrate ODF, but ensure sustainability.

The ultimate measure of success for SDG 6 is not the number of ODF communities certified but whether every person, regardless of wealth, disability, or location, has access to safe sanitation that protects their health and dignity. Bangladesh and Ethiopia, in their different ways, are both working toward this goal.

8. LIMITS OF THE STUDY

This study has several limitations that should be acknowledged. First, the comparative analysis relies primarily on secondary sources rather than primary empirical research. Direct observation of CLTS processes in both countries, interviews with community members, facilitators, and policymakers, and participatory research would provide valuable additional perspectives. Second, data availability varies between countries. Bangladesh benefits from deep qualitative research on community dynamics, while Ethiopia benefits from rigorous quantitative evidence on health impacts. The two evidence bases are complementary but not directly comparable. Third, the study focuses on programmatic and research evidence, with less attention to political economy dimensions that shape CLTS implementation. Fourth, the voice of community members, particularly the poorest and most disadvantaged, is mediated through research reports rather than captured directly. Despite these limitations, the comparative analysis provides valuable insights into CLTS programs, with implications for both countries and for broader efforts to achieve SDG 6.

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10. AUTHOR CONTRIBUTIONS

The author conceived the study, designed the research methodology, conducted the literature review and document analysis, synthesized findings across countries, and drafted the complete manuscript. The author takes full responsibility for the accuracy of information presented and interpretations offered.

11. COMPETING INTERESTS

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential competing interest.

12. AUTHORS' CONTRIBUTIONS

As sole author, I performed all roles including conceptualization, methodology development, investigation, formal analysis, writing, review, editing, and project administration.

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14. DATA AVAILABILITY

All sources analyzed in this study are publicly available documents, including foundational CLTS literature, academic research, institutional reports, and program evaluations. Primary sources are cited in the bibliography and accessible through the referenced publications and organizations.

15. DISCLAIMER

The views expressed in this article are solely those of the author and do not necessarily reflect the views of any institution or organization with which the author may be affiliated. The analysis is provided for scholarly purposes and should not be construed as policy guidance or investment advice. CLTS programs, implementation approaches, and research findings are subject to change, and readers should consult current sources for specific information about Bangladesh, Ethiopia, and community-led total sanitation.

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