

ONE SIZE DOES NOT FIT ALL: ANALYZING VARIATIONS IN THE
IMPLEMENTATION OF COMMUNITY-LED TOTAL SANITATION

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ABSTRACT

Vidya Venkataramanan: One Size Does Not Fit All: Analyzing Variations in the Implementation of Community-Led Total Sanitation
(Under the direction of Jamie Bartram)

An estimated 946 million people in the world practiced open defecation in 2015, 90% of whom lived in rural areas. Poor sanitation poses a substantive environmental health and development challenge. Community-led total sanitation (CLTS) has become the predominant behavior change approach to improve sanitation in rural communities in lower income countries. It is acknowledged as flexible and context-specific, but a systematic analysis of its implementation was lacking.

The purpose of this dissertation was to study the context and process of CLTS implementation in various settings to identify factors that influence implementation and thereby, outcomes of the intervention. I conducted a systematic literature review of the available evidence on CLTS to document adaptations, effectiveness on sanitation and health outcomes, and quality of evidence. I found that the diffusion of CLTS worldwide was backed by minimal rigorous evidence of its effectiveness. I also found that, although CLTS adaptations had been widely documented by practitioners, no study had characterized adaptations to understand how best to structure programs to improve their effectiveness in various settings. Therefore, I analyzed adaptations through qualitative case studies of CLTS implementation in seven countries. Data collection included interviews with 293 respondents, and 34 community visits. Rather than being a “community-led” approach, I found that CLTS can be categorized into three broad implementation modalities: NGO-led CLTS, government-led CLTS, and mixed leadership of CLTS. I applied an implementation research framework to these case studies to systematically

analyze context and process factors that influence CLTS implementation. This framework serves as both a hypothesis generating tool for researchers and a diagnostic tool for practitioners.

My work suggests that an honest exploration and understanding of CLTS implementation is vital to identify improvements, to understand the potential of the approach to achieve desired outcomes, and to recognize ways in which it can be implemented to improve rural sanitation in different contexts and settings. By building a stronger evidence base of mixed methods, and offering concrete tools and recommendations for practitioners and policymakers, the aim is to bridge the gaps between academic implementation theory, ambitious policymaking, and dynamic CLTS practice to improve sanitation programs.

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LIST OF ABBREVIATIONS

CATS	Community Approaches to Total Sanitation
CLTS	Community-led Total Sanitation
CFIR	Conceptual Framework for Implementation Research
DWT	District Water, Sanitation, and Hygiene Team
INGO	International Non-Governmental Organization
NGO	Non-Governmental Organization
ODF	Open Defecation-Free
PHAST	Participatory Hygiene and Sanitation Transformation
PhATS	Philippines Phased Approach to Total Sanitation
RCT	Randomized Controlled Trial
SLTS	School-led Total Sanitation
TSC	Total Sanitation Campaign
UNICEF	United Nations Children’s Fund
UNC	University of North Carolina at Chapel Hill
VDC	Village Development Committee
VHT	Village Health Team
WaSH	Water, Sanitation, and Hygiene
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

Between 1990 and 2015, the percentage of people in rural areas with access to some form of sanitation increased from 62% to 75% (UNICEF and World Health Organization 2015). Despite this progress, sanitation remains a substantive public health and development challenge. Nearly one billion people in the world practice open defecation, the majority of whom live in rural areas (UNICEF and World Health Organization 2015). Open defecation can adversely impact public health (Clasen et al. 2014; Spears et al. 2013); the environment (UNICEF and World Health Organization 2015); the economy (DeFrancis 2011); and the safety and dignity of vulnerable populations (Hulland et al. 2015a; Kulkarni and O'Reilly 2014).

For decades, the rural sanitation challenge was framed as one of access. Sanitation programs largely comprised free or subsidized latrine construction projects. This investment in infrastructure has been widely acknowledged by practitioners and policymakers to have resulted in modest gains, if at all, in the actual use of sanitation facilities, although reliable data are not easily available to corroborate this consensus (Jenkins and Sugden 2006). The challenge was reframed to include education and awareness of health benefits, and approaches such as Participatory Hygiene and Sanitation Transformation (PHAST) were popularized around the world (WHO 1997). Few formal evaluations were conducted on the effectiveness of the educational approaches at improving use of sanitation facilities, but anecdotes suggested that education was not sufficient to transform awareness into behavior change (Peal et al. 2010). A widespread shift occurred in the early 2000s towards a more radical approach to generate demand for change in sanitation behavior.

Community-led Total Sanitation

Community-led total sanitation (CLTS) is an approach that has begun to reframe the sanitation challenge into one of behavior and culture. This approach aims to end open defecation at the community level—as opposed to increasing latrine access at the household level—by triggering collective behavior change. Facilitators conduct participatory meetings—called “triggerings”—using shocking imagery and language. The Handbook on CLTS states,

Triggering is based on stimulating a collective sense of disgust and shame among community members as they confront the crude facts about mass open defecation and its negative impacts on the entire community. The basic assumption is that no human being can stay unmoved once they have learned that they are ingesting other people’s shit. The goal of the facilitator is purely to help community members see for themselves that open defecation has disgusting consequences and creates an unpleasant environment. It is then up to community members to decide how to deal with the problem and to take action. (Kar and Chambers 2008, p.21).

As a result of the triggering session, community members are expected to identify solutions on their own without financial or material support from the implementer. The aim of the approach is to create open defecation-free (ODF) communities (Kar and Chambers 2008). Since its first pilot projects in Bangladesh in 2000, CLTS has been adopted by most international non-governmental organizations (INGOs) involved in sanitation, and is now practiced in over 50 countries. In many countries, it has been scaled up to the national level and incorporated into rural sanitation policy. It has been described as a grass-roots, dynamic, and adaptable approach that creates change on a “grand scale” (Kar and Chambers 2008). However, its immense popularity begs the question: does it work? The inherent diversity of complex interventions implies that CLTS will take different forms in different settings. How, then, do these different versions of CLTS compare in terms of process and effectiveness? What factors affect the ability potential of CLTS to succeed in different settings?

Research on rural sanitation

Research on rural sanitation has primarily focused on the impact of programs on the access to, or use of sanitation (Pattanayak et al. 2009; Patil et al. 2014; Crocker et al. 2016a); on the prevalence of open defecation (Galan et al. 2013); on the adoption of sanitation (Jenkins and Scott 2007); and on health outcomes (Pickering et al. 2015, Clasen et al. 2014).

This emphasis on outcome and impact evaluations is necessary to understand whether programs are able to achieve the desired effect. However, it does not further understanding of the factors necessary to design and implement a program effectively in different contexts. While such evaluations can shed light on the outcomes of programs, they are not designed to analyze the process and effectiveness of the way the programs are implemented.

Defining implementation research

What is needed then, is a more in-depth understanding of implementation itself. May defines implementation as a “deliberately initiated process, in which agents intend to bring into operation new or modified practices that are institutionally sanctioned, and are performed by themselves and other agents” (May 2013, p.4). These set of practices or activities may be referred to as an intervention. A complex intervention, such as CLTS, is one that contains multiple interactions between different organizational levels, program components, behaviors required by implementers and end users, outcome measures, and degrees of “flexibility or tailoring of the intervention” (Craig et al. 2006, p.7). The term implementation research is diverse in its definitions, its applications, and its uses in different fields, from public health to sociology. It spans the study of context, process, outcomes, and impact. The definition of implementation research that guides this dissertation is “the scientific study of the processes used in the implementation of initiatives as well as the contextual factors that affect these processes” (Peters et al. 2013, p.9). In the CLTS context, implementation includes all stages of the intervention: planning and pre-triggering activities, triggering communities, and post-

triggering and ODF verification activities. Context refers to the factors—socio-cultural, historical, political, economic—that may affect the ability to implement an intervention.

Relevance and research aims

CLTS may have been acknowledged worldwide as an adaptable approach, but a systematic analysis of these adaptations and variations has not yet been conducted. This is of concern because, as noted by Peters et al., “even when interventions are designed in similar ways, there is evidence to suggest that implementation occurs differently in different contexts, and with many different effects” (Peters et al. 2013, p.19). Better understanding of implementation has the potential to improve program performance by demonstrating how exactly variations in implementation may influence success in different contexts, and how to better target and tailor CLTS to appropriate settings, using effective institutional arrangements.

There is limited evidence on what types of sanitation behavior change interventions work in which settings, and how they should be organized. Studying the process of implementation can lend much-needed insight into improving program effectiveness, not only of CLTS or behavior change approaches, but rural community development interventions. This exercise is particularly relevant in the context of the Sustainable Development Goals, which state the importance of involving a variety of stakeholders in interventions to “strengthen the participation of local communities” (United Nations General Assembly 2015, p.19).

Therefore, the purpose of this dissertation is to systematically document and analyze variations in the implementation of CLTS, and identify factors that affect its potential to be implemented effectively in different settings. To better understand the diversity of CLTS, I first conduct a systematic review of the CLTS literature to characterize the state of the evidence. Using qualitative research methods, I then analyze variations in CLTS implementation through seven case studies of CLTS in seven countries. Finally, I place these case studies into a

conceptual framework for implementation research to systematically understand the context and process in each setting.

The following questions guide the dissertation:

1. What does the evidence indicate on the process, effectiveness, and impact of CLTS on sanitation and health outcomes?
2. How does CLTS implementation vary in different settings, and how do interactions between different actors and institutions affect implementation?
3. How can a conceptual framework systematically characterize the implementation context and process of CLTS to identify factors that influence implementation?

This dissertation is divided into five chapters. The second, third, and fourth chapters each answer one of the research questions above, and are written in the form of papers to be published in peer-reviewed academic journals. The fifth chapter summarizes the main findings across the three papers and concludes with implications of the dissertation research for practitioners, researchers, and policymakers.

CHAPTER 2: COMMUNITY-LED TOTAL SANITATION: A MIXED-METHODS SYSTEMATIC REVIEW OF EVIDENCE AND ITS QUALITY¹

Introduction

An estimated 946 million people in the world practiced open defecation in 2015, 90% of whom lived in rural areas (UNICEF and World Health Organization 2015). Open defecation adversely affects human health, contributing to diarrheal diseases and childhood stunting (Clasen et al. 2014; Spears et al. 2013; Vyas et al. 2016). Poor sanitation also has an adverse economic impact (DeFrancis 2011), and can disproportionately affect the safety, health and dignity of women (Hulland et al. 2015a; Jadhav et al. 2016; Khanna and Das 2016; Kulkarni et al. 2014).

For decades, governments and non-governmental organizations (NGOs) provided free or subsidized latrines to households, but practitioners widely believe that this approach was unable to guarantee regular latrine use. This led to a focus on hygiene and health education programs, often combined with latrine subsidies, such as the Participatory Hygiene and Sanitation Transformation (PHAST) approach (WHO 1997). By the late 1990s, sanitation professionals believed that while the infrastructure-heavy approach may have increased access to latrines, and educational approaches may have increased awareness of health benefits, these strategies were largely insufficient to generate demand for latrines and change sanitation behavior (Jenkins and Sugden 2006).

¹ This chapter is under review at *Environmental Health Perspectives*

As a response, the community-led total sanitation (CLTS) approach was developed, aiming to create open defecation-free (ODF) communities (Kar and Chambers 2008). This approach signified a fundamental shift from a focus on individual or household sanitation to a community-level concern for open defecation. CLTS facilitators attempt to trigger collective behavior change by encouraging and motivating people to confront the impact of community-wide open defecation. CLTS comprises three stages:

1. pre-triggering: selecting communities, training facilitators, collecting baseline information, and coordinating community entry;
2. triggering: organizing a community-wide meeting where facilitators conduct participatory exercises intended to trigger shame and disgust. Attendees are expected to be motivated to change their sanitation situation;
3. post-triggering: conducting routine follow-up visits, with the goal of verifying and certifying ODF status in communities.

Since the first pilot projects in Bangladesh in 2000, CLTS has been adopted by many international NGOs involved in rural sanitation, and has been incorporated into national policy by many governments. It is arguably now the predominant rural sanitation behavior change approach.

Most literature on CLTS is contained on websites and knowledge bases in the form of “gray literature,” primarily produced by practitioners to share insights from their implementation experiences. It has often been noted that there is limited rigorous evidence on CLTS impacts. Governments and organizations implementing CLTS face the challenge of navigating a vast and cluttered body of literature to inform their decisions.

I identified 41 published systematic reviews relating to sanitation interventions. Most study the impact of sanitation on health outcomes. A handful look at behavior or demand-related topics, such as factors affecting sustained adoption of water and sanitation technologies

(Hulland et al. 2015b), behavioral research relating to point-of-use-water treatment technologies (Fiebelkorn et al. 2012), behavioral models for water and sanitation (Dreibelbis et al. 2013; Dwipayanti et al. 2017), and water, sanitation, and hygiene (WaSH) social marketing approaches (Evans et al. 2014). No reviews were found that concentrate on CLTS or related interventions.

To address this gap, I conducted a mixed-methods systematic review of journal-published and gray literature on CLTS to characterize the state of the evidence. For the purpose of this review, “journal-published” refers only to peer-reviewed journals, with literature in other journals being classified as gray literature. The main objectives of the review were to: 1) assess the quality of evidence; 2) summarize evidence on the effectiveness and impact of CLTS on sanitation and health outcomes; and 3) identify factors affecting CLTS implementation and effectiveness. I aimed to comprehensively document current understanding on CLTS from a variety of sources including researchers, practitioners, and donors.

Methods

Search strategy

The following sources were searched: seven online peer-reviewed databases (Cochrane Library, Embase, Global Health, Web of Science, PubMed, Proquest, and Scopus); the websites of 15 international organizations involved in CLTS and sanitation knowledge hubs that document literature on CLTS; and the first 200 results from Google Scholar, as recommended by Haddaway et al. (2015). A variety of search terms were employed to comprehensively search journal-published and gray literature, including combined key words related to CLTS, open defecation, and demand-led and participatory approaches (see Appendix 1 for the full search strategy and list of databases). Documents were also reviewed from bibliographic hand searches and expert consultations. Searches were first conducted in December 2015 and updated in March 2017.

Document selection and eligibility criteria

A multi-step screening process was conducted for both journal-published and gray literature (Figure 1). Titles and abstracts of search results were screened independently by the author and a research colleague. Any discrepancies in the selection of documents were reconciled before full-text review. Research studies, conference proceedings, evaluations, dissertations, reports, working papers, and organizational learning notes published between January 2000 (the year that CLTS was first piloted) and March 2017 were included. Guidelines, manuals, publicity material, news stories, slide presentations, workshop minutes, blog posts, reviews and commentaries were excluded. In the case of multiple documents reporting data and findings from the same intervention or study, only the most recent document was included. Because the aim was to assess the quality of literature, no documents were excluded based on quality.

Interventions labeled as CLTS are likely to contain a variety of adaptations, and several “total sanitation” strategies share characteristics with CLTS (e.g. School-led Total Sanitation (SLTS), Community Approaches to Total Sanitation (CATS), and India’s variations on total sanitation campaigns (TSC)). To be inclusive, interventions that met the following criteria were reviewed:

- mentioned sanitation behavior change as a key component of implementation;
- aimed to reduce or end open defecation;
- mobilized entire communities for sanitation rather than targeting households or specific populations;
- included participatory activities such as triggering, village mapping, or transect walks in the decision making and data gathering process;

Although the Handbook on CLTS describes it as a no-subsidy approach (Kar and Chambers 2008), there is considerable debate about the role of latrine subsidies as part of, or following CLTS activities (Papafilippou et al. 2011). Therefore, interventions that met the above criteria and provided subsidized latrine hardware were included.

I classified literature as: quantitative evaluations, qualitative studies, and case studies and project reports, adapting an approach used in a systematic review of cook stoves (Rehfuess et al. 2014). In my review, quantitative evaluations were defined as studies designed to attribute outcomes to a CLTS or CLTS-like intervention. Studies had to include primary data collection of outcomes, and an experimental comparison group (controlled trials, quasi-experimental designs, and before-after comparisons). Quantitative studies that did not meet these criteria or did not have a comparison group were classified as case studies. Qualitative studies were those that used qualitative data collection methods and analytical techniques. Case studies and project reports included mixed methods studies, cross-sectional studies, and literature that described practitioner experiences or reports and evaluations of specific CLTS projects. Papers that shared general lessons or reflections without references to primary data were classified as commentaries and were excluded from the review.

Quality appraisal

To characterize the quality of evidence on CLTS across journal-published and gray literature, a quality appraisal framework was developed for each of the three study types, by reviewing and adapting questions from previously used protocols (Jack et al. 2010; Harden 2010; Heale and Twycross 2015; Loevinsohn 1990; Pluye et al. 2011; Puzzolo et al. 2013; Spencer et al. 2003; Thomas et al. 2004). The framework comprises three categories: quality of reporting, minimizing risk of bias, and appropriateness of conclusions. The same questions were asked about quality of reporting and appropriateness of conclusions across all three study types. However, because of differences in study design and intent, questions to assess the risk of bias

differed by study type. Table 1 presents the quality appraisal framework. Each criterion in the quality appraisal received a score of 0, 0.5, or 1 (see Appendix 2 for scoring). Scores within each category were converted into percentages to assess quality differences by type of literature (journal-published versus gray literature) and type of study. An aggregate score was not computed for each document as this would not allow for a nuanced discussion of quality, and could lead to misinterpretation of scoring. All documents were scored by the author, and 20% of the documents were subjected to independent quality control by one of two fellow researchers.

Data extraction and analysis

Descriptive data on study type, author, project year, study design, countries of focus, country of publication, and methods were entered into a Microsoft Excel database. The main outcomes from quantitative evaluations were extracted and summarized (Table 3). Qualitative content analysis was conducted for all included literature, regardless of study type, using Atlas.ti Version 7.0. Documents were coded in two cycles (each cycle by one author) for the following: enablers and barriers to successful implementation in different stages of CLTS; key themes discussed; and indicators of success measured by programs and researchers (Table 4). The first cycle of coding identified 150 factors reported as enabling or constraining CLTS. By combining similar factors, I narrowed this list to 43 factors in the second cycle. A similar process was conducted for indicators of success. Based on this inductive analysis, factors were grouped under three implementation-related domains and four community-related domains (Table 5).

Table 1. Quality appraisal framework for literature

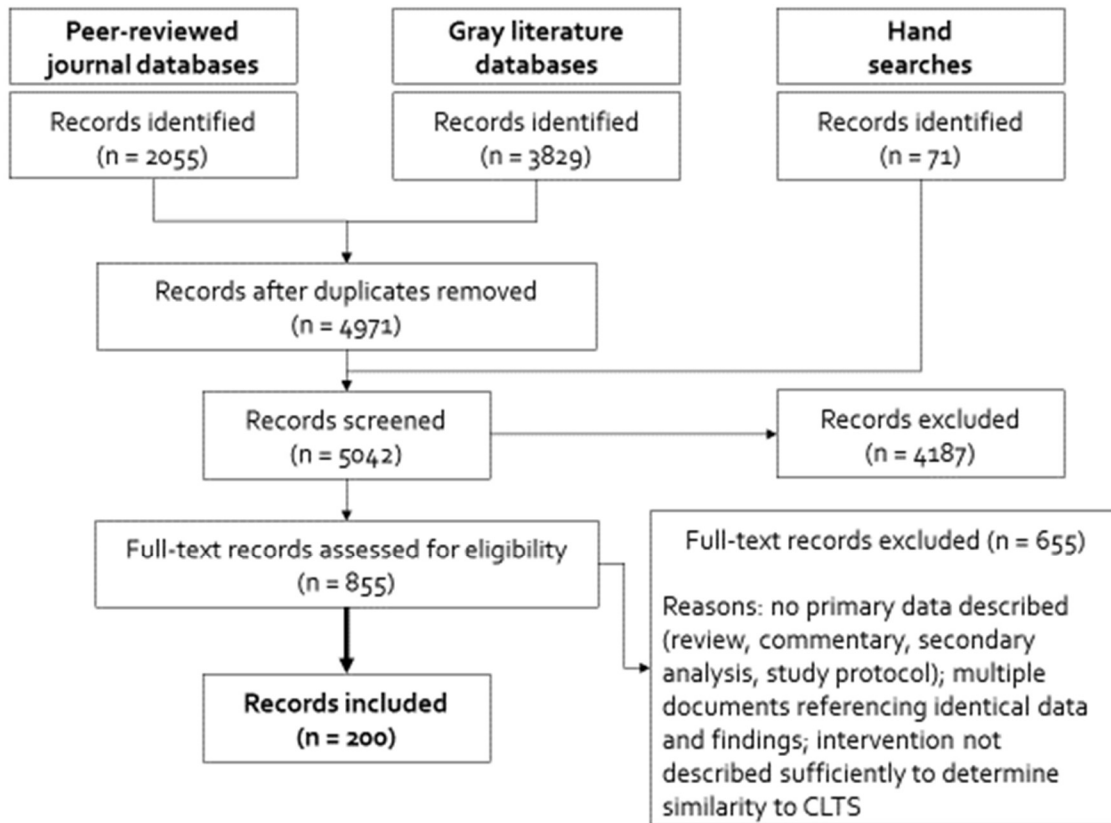
Category	Criteria	Scoring criteria for each study type		
		Quantitative evaluations	Qualitative studies	Case studies and project reports
Quality of reporting	Objectives described	X	X	X
	Context described	X	X	X
	Process of program or intervention described	X	X	X
	Study design described (e.g. sampling, assignment to intervention)	X	X	X
	Data collection methods described	X	X	X
	Analysis process described	X	X	X
Minimizing risk of bias	Assignment to intervention	X		
	Appropriateness of sampling	X	X	X
	Independence of data collection	X	X	X
	Rigor in study execution (collection and analysis)			X
	Rigor in data collection		X	
	Data relevance	X		
	Data accuracy	X		
	Analytical rigor	X	X	
Appropriateness of conclusions	Subject to external peer-review	X	X	X
	Interpretation of findings	X	X	X
	Description of limitations	X	X	X
	Conclusions within scope of study	X	X	X

Note: The framework was developed after reviewing and adapting questions from several previously used protocols (Jack et al. 2010; Harden 2010; Heale and Twycross 2015; Loevinsohn 1990; Pluye et al. 2011; Puzzolo et al. 2013; Spencer et al. 2003; Thomas et al. 2004).

Results

In total, 5884 documents were identified from databases, websites, and hand searches. After screening for duplicates and excluding documents that did not meet the inclusion criteria, the full texts of 855 documents were reviewed for further assessment. Of these, 200 documents were included in this review (see Appendix 3 for a full list of included documents).

Figure 1. Flow diagram of screening and selection process of literature



The results are organized into four sections: broad characteristics of the literature, quality appraisal, summary of quantitative outcomes and indicators from the literature, and qualitative analysis of factors influencing CLTS implementation.

Characteristics of included literature

Table 2 presents broad characteristics of the 200 documents included in the review. One hundred and sixty-two (81%) documents were gray literature. Ten of the 14 (71%) quantitative evaluations were journal-published literature. One hundred and twenty-seven (64%) documents were based exclusively on CLTS interventions, 47 (23%) included CLTS interventions as part of a larger WaSH project, and 26 (13%) documents were based on CLTS-like interventions. The top five publishers of gray literature were the United Nations Children’s Fund (UNICEF); the Water,

Engineering, and Development Centre (WEDC) at the University of Loughborough; and the Institute of Development Studies (IDS) at the University of Sussex.

Fifty-three countries were represented across the literature. Twenty-seven documents reported experiences from more than one country, and often multiple regions of the world. Most documents reported experiences from Africa (n=125, 63%), followed by South Asia (n=60, 30%), and Southeast Asia (n=33, 17%). The most represented countries were India (n=29, 15%); Kenya (n=26, 13%); Nepal (n=19, 10%); Indonesia (n=19, 10%); Ethiopia (n=15, 8%); and Bangladesh (n=15, 8%). More than three-fourths of the literature was published after 2010.

Table 2. Characteristics of included literature

Literature and study type	n (%)
Journal-published literature	<u>38 (19%)</u>
Quantitative	10 (26%)
Qualitative	10 (26%)
Case study/project report	18 (47%)
Grey literature	<u>162 (81%)</u>
Quantitative	4 (2%)
Qualitative	19 (14%)
Case study/project report	139 (86%)
Intervention topic	n (%)
Community-led Total Sanitation (CLTS) only	127 (64%)
CLTS + other water, and sanitation, and hygiene intervention	47 (23%)
CLTS-like interventions (e.g. Community Approaches to Total Sanitation, Total Sanitation Campaign)	26 (13%)
World regions represented	n (%)
Africa	125 (63%)
South Asia	60 (30%)
East and Southeast Asia	33 (17%)
Pacific Islands	3 (2%)
Latin America and the Caribbean	3 (2%)

Quality of the literature

Figure 2, Figure 3, and Figure 4 show quality scores in each category by literature type (journal-published versus gray) and study type (quantitative versus qualitative versus case study and project report). Scores are presented as a percentage.

On average, journal-published literature scored higher than gray literature (80% vs. 58%) on quality of reporting. No document scored zero on quality of reporting. Thirteen (7%) documents received a full score. There was greater variability in quality of reporting scores for gray literature than for journal-published literature. Case studies and project reports received the lowest average score (57%).

Journal-published literature scored better than gray literature in minimizing risk of bias. Quantitative evaluations scored highest (69%) in minimizing risk of bias. Three studies scored below 50% and one study scored 100%. Qualitative studies had an average score of 48%. Case studies and project reports had an average score of 20% (53% for journal-published vs. 15% for gray literature). Seventy-two (36%) documents of this type, almost all gray literature, scored zero points on minimizing risk of bias. Twenty-two (11%) case studies and project reports scored 50% or above, and one (1%) scored full points. One hundred and twenty-four (62%) documents in the review scored zero on independence of data collection.

The strength of conclusions category was used to assess interpretation of findings, description of limitations, and appropriateness of conclusions given the study design. Strength of conclusion scores were generally higher than the other two categories. Seven (50%) quantitative evaluations, 13 (45%) qualitative studies, and 27 (17%) case studies and project reports received a maximum score. No quantitative evaluations received a score of zero, whereas two (1%) qualitative studies and three (2%) case studies and project reports received a score of zero. Sixty-four percent of the literature did not describe study limitations (nearly half of the journal-published literature and two-thirds of gray literature). In contrast, 63% of all literature had appropriate conclusions.

Figure 2. Quality appraisal results for quality of reporting category, by literature type and study design

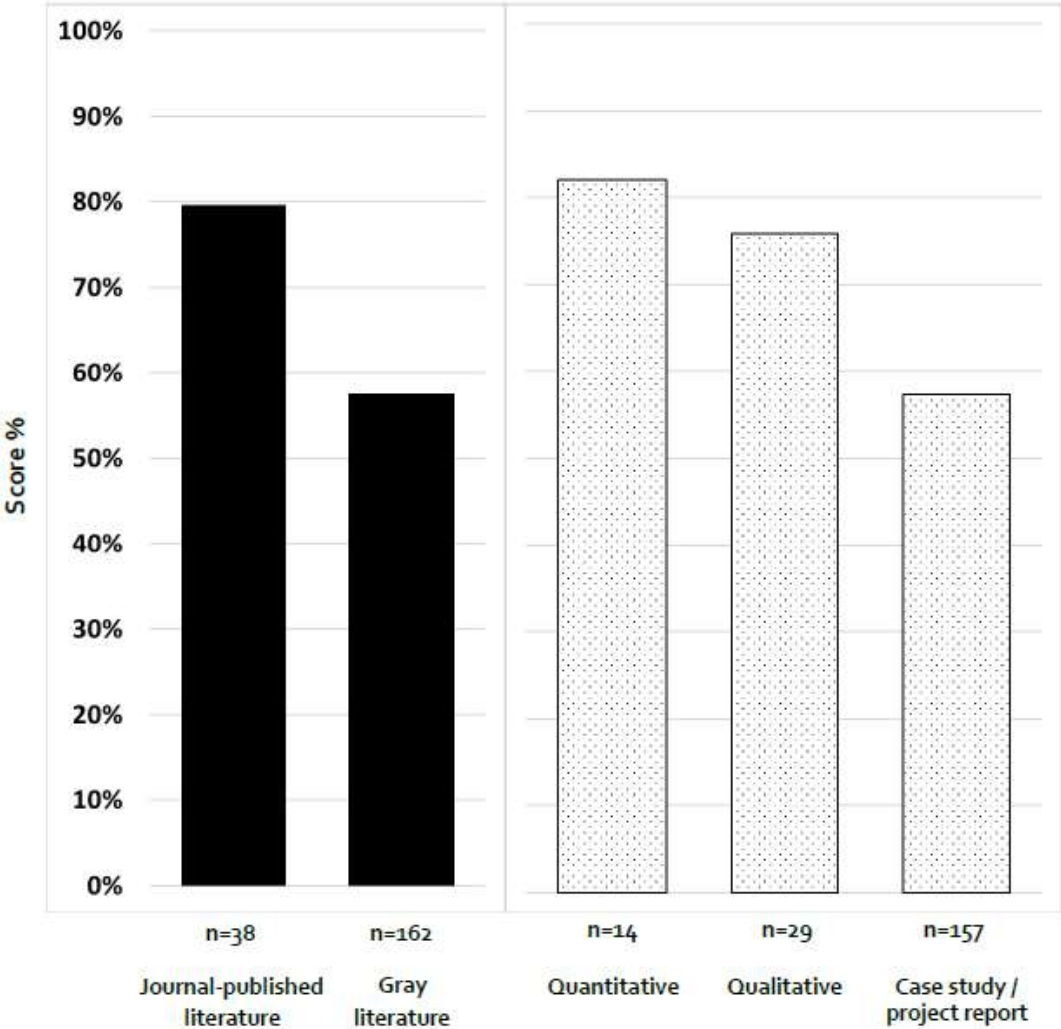
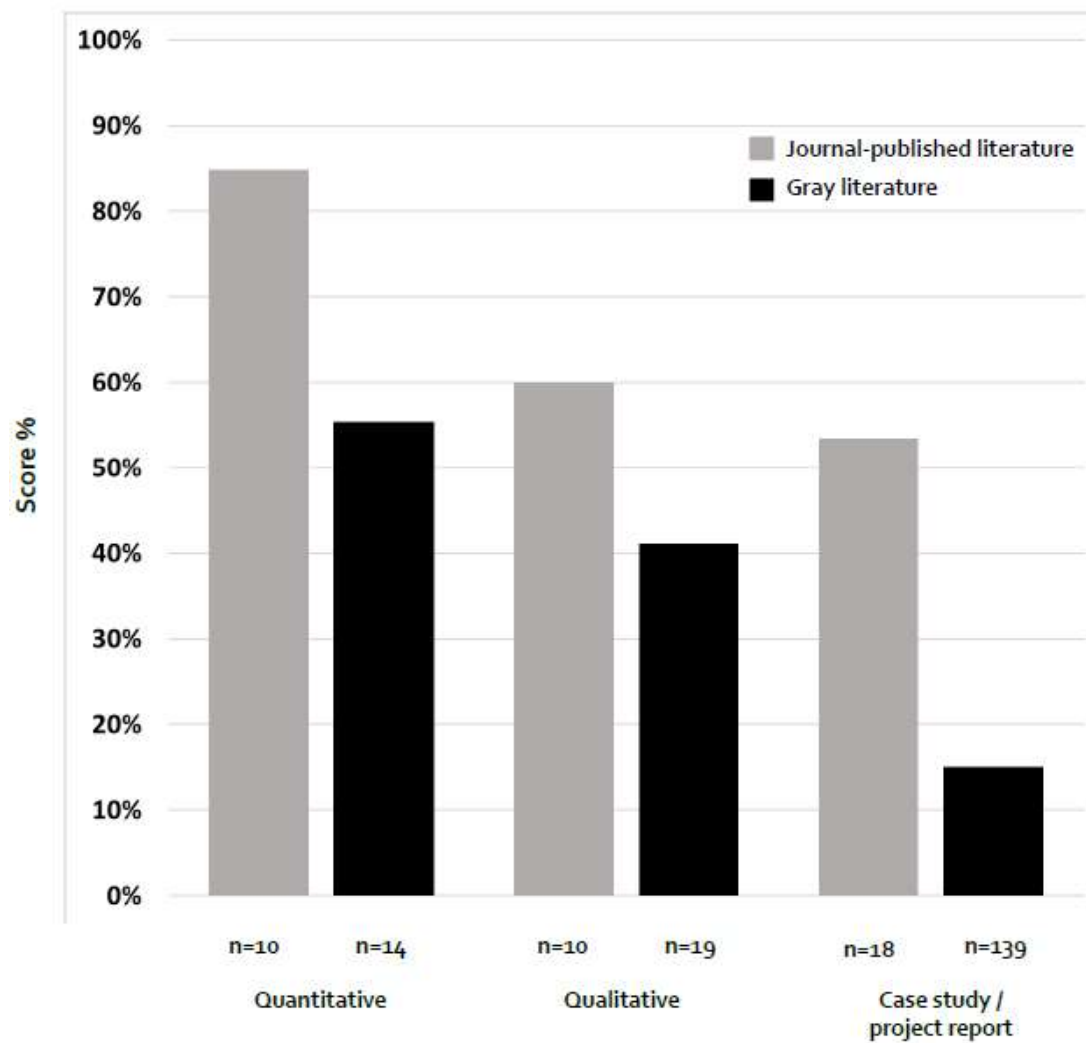
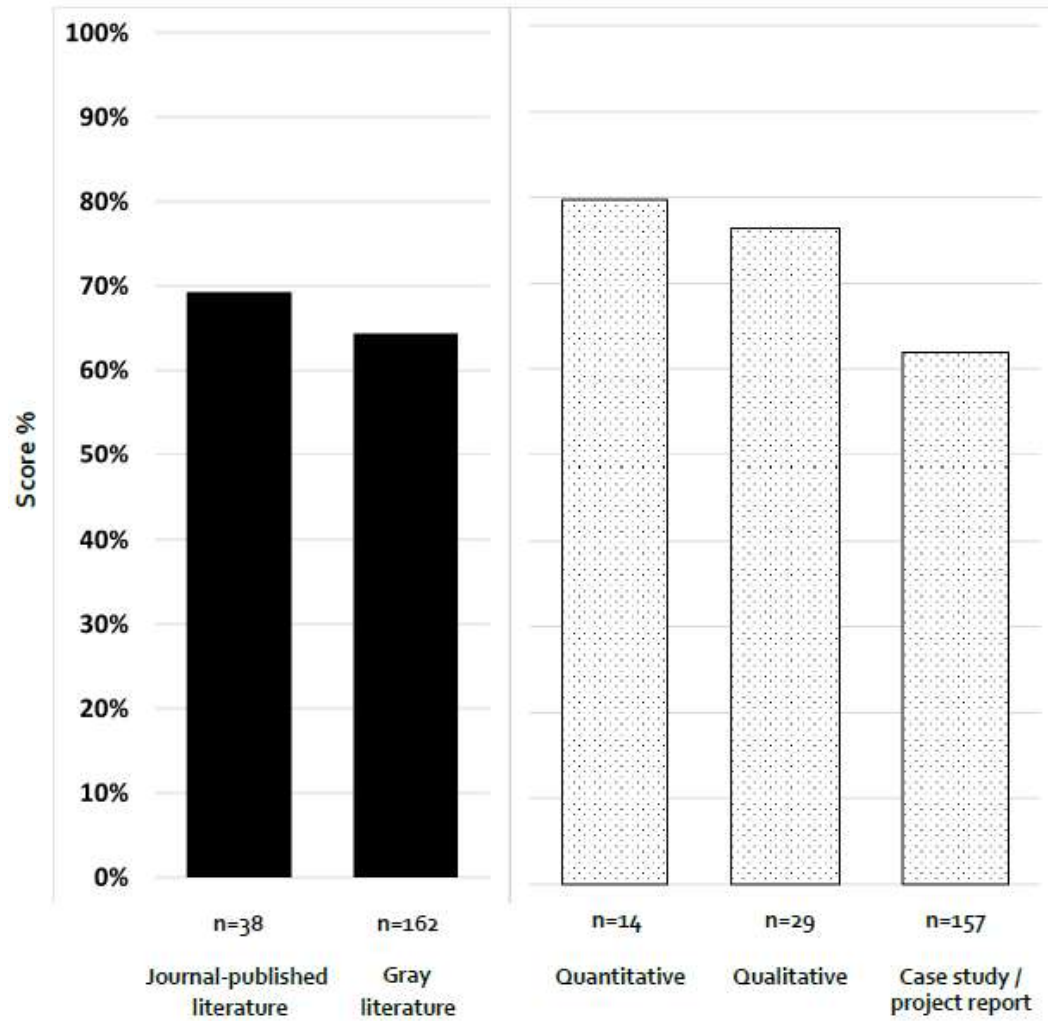


Figure 3. Quality appraisal results for minimizing risk of bias category, by study design



Note: Scores for minimizing risk of bias are only presented by type of study because quality appraisal questions in this category differed slightly for each study design

Figure 4. Quality appraisal results for appropriateness of conclusions category, by literature type and study design



Measuring the effectiveness of CLTS

The main characteristics of the 14 quantitative evaluations, and the main outcomes of the interventions they evaluate, are presented in Table 3. Through qualitative coding of all documents, a list of commonly used indicators of process, outcomes, and motivators were aggregated (Table 4). The following section reports quantitative outcomes from the 14 evaluations as well as indicators used across all 200 documents.

Nine evaluations were randomized controlled trials (RCTs), one used a quasi-experimental design, two used cross-sectional designs with a comparison group, and two were baseline to end-line evaluations of a single intervention group. The RCTs comprised evaluations of the following interventions and comparison groups: CLTS versus a control group in Mali (Pickering et al. 2015); a four-arm intervention of CLTS, CLTS plus handwashing, handwashing only, and a control group in Tanzania (Briceño and Chase 2015); CLTS with sanitation marketing versus a control group in Indonesia (Cameron et al. 2013; Borja-Vega 2014); TSC in India combining behavior change activities with the option of subsidies versus control groups (Patil et al. 2014; Pattanayak et al. 2009; Dickenson et al. 2015); the One Million Initiative in Mozambique that included CLTS versus a control group (Godfrey et al. 2014); and a comparison of conventional CLTS to CLTS plus training natural leaders in Ghana (Crocker 2016a). The quasi-experimental study compared conventional CLTS in Ethiopia facilitated by Health Extension Workers (HEWs) to teacher-facilitated CLTS (Crocker 2016b). Of the two single-group evaluations, one was a baseline to end-line evaluation of the Philippines Phased Approach to Total Sanitation (PhATS) (UNICEF 2016), and the other was a baseline to end-line evaluation of CLTS and other WaSH components in Kenya (Schlegelmilch et al. 2016). Finally, of the two comparative cross-sectional studies, one evaluated CLTS and Hygiene (CLTSH) in Ethiopia to a control group (BDS-Center for Development Research 2016), and the other assessed health outcomes in a CLTS group versus a control group in Kenya (Makotsi et al. 2016).

Latrine ownership, use, and quality indicators were identified in most of the 200 documents, but diverse measures were used. A few documents contained definitions of the types of latrine that would be acceptable, and others outlined latrine quality indicators such as a cover, superstructure, handwashing facility with soap, and evidence of use. Of the 14 quantitative evaluations, all but two measured either private or household latrine ownership or latrine use after CLTS, and four evaluations also reported some measure of latrine quality such as the presence of a cover, concrete slab, superstructure, or availability of handwashing materials. Overall, the quantitative evaluations reported a statistically significant increase in private or shared latrine construction in intervention groups compared to comparison groups. The Mali CLTS evaluation reported a 32 percentage-point (pp) increase in latrine use in intervention villages and no statistically significant increase in the control group (Pickering et al. 2015). In Orissa, India, a 29 pp increase in ownership was attributed due to the subsidy-and-behavior-change intervention, with two-thirds of the overall treatment effect due to the CLTS-like component compared to the subsidy component of the intervention (Pattanayak et al. 2009). The CLTS studies from Ghana and Ethiopia differed slightly from other included studies in that they compared changes in sanitation outcomes between conventional CLTS in that country and a modification of the approach. The Ghana study reported an increase in private latrine ownership of 18.3 pp from training natural leaders (Crocker et al. 2016a), and the Ethiopia study reported that latrine ownership increased by 9 pp more where health extension workers facilitated CLTS than where teachers facilitated CLTS (Crocker et al. 2016b).

Declaration or certification of ODF status was the second most common indicator in the literature after latrine access, but no consistent definition was reported for ODF. Status is measured at the community level, most often by CLTS facilitators or local government. Most documents that attempted to define ODF wrote about the absence of open defecation in the environment, but few described criteria or frequency for verifying this observation. There was some recognition that “the process of maintaining an open defecation free community is not

static and communities cannot simply be checked off and assumed to be ODF, without systems in place that monitor and assist households to repair / replace / rebuild their latrines” (Haq and Bode 2009, p.6). Latrine coverage was also used as a measure of ODF status. In one program in the Philippines, ODF included the “enactment of local legislation at the village level supporting CLTS activities” and the “implementation of other local government activities that supported the maintenance of ODF status” (Belizario et al. 2015, p.18). Of the 14 quantitative evaluations, two reported the status of ODF certification conducted by the government. In Ethiopia, four of the six kebeles (sub-governmental unit) were certified as ODF in the first year and the remaining two were certified during the follow-up stage (Crocker et al. 2016b). In Mali, 97% of 60 villages in the treatment group were certified as ODF (Pickering et al. 2015).

Two other indicators relating to open defecation identified in the literature were the number of people practicing open defecation (n=31, 16%) in a community, and the number reverting to open defecation after a community had achieved ODF status (n=14, 7%). Change in open defecation practice was reported in ten quantitative evaluations, measured at the household or individual level. Results varied considerably, from no statistically significant change between baseline and end-line (15.2%) in the Philippines (UNICEF 2016), to a statistically significant six pp (17%) decrease in open defecation by non-poor households in Indonesia (Cameron et al. 2013), to a 23–24 pp (71%) decrease in open defecation by adults in Mali (Pickering et al. 2015). The study from Maharashtra reported a 9–10 pp decrease in open defecation by adults; reductions were greater in below-poverty-line households or households that did not have latrines at baseline compared to wealthier households or those with latrines at baseline (Patil et al. 2014).

Fifty-one (26%) documents reported some measure of change in health status in communities after CLTS, often comprising anecdotal reports of changes in diarrhea after achieving ODF status. Nine quantitative evaluations measured health impact through self-

reported changes in diarrhea prevalence or anthropometric measures in children. The study from Mali reported no differences in childhood diarrheal prevalence between CLTS and comparison villages, but reported modest statistically significant improvements in child height, stunting, and weight (Pickering et al 2015). One study from Indonesia reported a 1.4 pp (30%) reduction in diarrhea in CLTS communities, decreases in the intensity of parasitic infection, and increases in height and weight among non-poor households that had no sanitation at baseline (Cameron et al. 2015). A comparative cross-sectional study from Kenya reported lower diarrhea prevalence in the CLTS group versus a control group (Makotsi et al. 2016). Four other studies did not find statistically significant evidence of health impacts due to the intervention (Borja-Vega 2014; Briceño and Chase 2015; Patil et al. 2014; Dickinson et al. 2015), and one evaluation did not report statistically significant health outcomes (BDS-Center for Development Research 2016).

In addition to quantitative sanitation and health indicators, some documents described qualitative measures of CLTS success such as influence on sanitation policy (n=15, 8%); gender-specific effects (n=13, 7%); diffusion of CLTS messages to other communities (n=24, 13%); and the extent of non-sanitation effects in communities due to CLTS, such as community mobilization for other development activities (n=27, 14%).

Table 3. Quantitative evaluation studies or reports with a comparison group

Country	Intervention Description	Reference	Intervention Timeframe	Study Design	Main outcomes			
					Latrine ownership	Latrine quality	Open defecation practice	Health impacts
Tanzania	CLTS vs. CLTS + handwashing vs. control group	Briceño et al. 2015	2009-2011	RCT, longitudinal	+12.4 pp (+33%) vs. control	No difference across groups	-12 pp (-52%)	No significant impacts
Mali	CLTS vs. control group	Pickering et al. 2015	NR	RCT, longitudinal	+32 pp vs. control group	CLTS latrines >2 times more likely to have cover, less likely to have flies	-23 pp among adult women (-71%); -24 pp (-71%) among adult men; -43 pp (-49%) among children 5–10 years; -43 pp (-51%) among children <5 years	No difference in diarrheal prevalence; +0.18 height-for-age Z score; lower likelihood of childhood stunting (35% vs. 41%); 22% children underweight vs. 26% control
Ghana	CLTS + training natural leaders vs. CLTS	Crocker et al. 2016a	2012-2014	RCT, longitudinal	+18.3 pp vs. conventional CLTS	Latrines in both CLTS groups less durable than pre-existing latrines	-19.9 pp in CLTS + training natural leaders group	
Indonesia	CLTS + sanitation marketing (sub-group analysis) vs. control	Borja-Vega 2014	2008-2011	RCT, longitudinal			-20.6% in some ethnic groups; not significant among female-headed households	-5.8% diarrhea (<5 years) in female-headed households; significant increase, height-for-age, head circumference in Madurese group; other impacts not significant

Table 3 (continued)

Country	Intervention Description	Reference	Intervention Timeframe	Study Design	Main outcomes			
					Latrine ownership	Latrine quality	Open defecation practice	Health impacts
Indonesia	CLTS + sanitation marketing vs. control	Cameron et al. 2013	2008-2011	RCT, longitudinal	+4.0 pp vs. baseline; +31% vs. control		-6 pp (-17%) in non-poor households	-1.4 pp (-30%) in diarrhea; decrease in parasitic infection; increases in height and weight among non-poor households without sanitation at baseline
Mozambique	CLTS + safe water vs. control	Godfrey et al. 2009	2008-2013	RCT, longitudinal	1 million new users			-29% self-reported water-related diseases between 2008-2010 due to CATS
India	TSC with IEC vs. control	Patil et al. 2014	NR	RCT, longitudinal	+19 pp vs control (41% vs. 23% control)		-9-10 pp among adults	No significant difference in diarrhea, HCGI, anemia or growth outcomes
India	TSC with IEC vs. control	Dickinson et al. 2015	2006	RCT, longitudinal	+27 pp (35% vs. 15% control)			Reduction in self-reported diarrhea not significant
India	TSC with IEC vs. control	Pattanayak et al. 2009	2006	RCT, longitudinal	+29%; +34% for subsidy group and +21% for no-subsidy group vs. control			

Table 3 (continued)

Country	Intervention Description	Reference	Intervention Timeframe	Study Design	Main outcomes			
					Latrine ownership	Latrine quality	Open defecation practice	Health impacts
Ethiopia	Teacher-facilitated- vs. health worker-facilitated-CLTS	Crocker et al. 2016b	2012-2014	Quasi-experimental, longitudinal	+9.0 pp in conventional CLTS vs. teacher-facilitated CLTS	Both interventions improved floors, structure, cleanliness, handwashing materials	-9.2 pp in teacher-facilitated CLTS	
Kenya	CLTS + other WaSH components	Schlegelmilch et al. 2016	2007-2010	Single group, baseline vs. end-line	+24 pp (43% vs. 19% baseline)			
Philippines	PhATS	UNICEF 2016	2014-2016	Single group, baseline vs. end-line	+12.6 pp (76.3% end-line vs. 63.7% baseline) using improved non-shared facility		No significant change vs. baseline (15.2%)	
Ethiopia	CLTSH vs. control	BDS-Center for Development Research 2016	2012-2015	Comparative cross-sectional	60.8% latrine use in intervention vs. 58% in control		27.4% in intervention vs. 33.0% in control	24.8% self-reported diarrhea prevalence in children in intervention vs. 30% in control
Kenya	CLTS vs. control	Makotsi et al. 2016	NR	Comparative cross-sectional			6.7% in intervention vs. 74.6% in control	11.1% two-week diarrhea prevalence in intervention vs. 21.6% in control

Table 4. Indicators measured in Community-led Total Sanitation programs

Indicator	n = 200 (%)
WaSH outcomes	
No. (%) of people with access to latrines	124 (62%)
No. of communities declared/certified ODF	113 (57%)
No. (%) of people using latrines	52 (26%)
Quality of latrine (various measures)	52 (26%)
Health outcomes/impact (various measures)	51 (26%)
Type of latrine constructed	44 (22%)
Change in environmental sanitation (various measures)	44 (22%)
Presence of handwashing station	41 (21%)
No. (%) of people with access to water	34 (17%)
No. of beneficiaries affected by intervention	31 (16%)
No. (%) of people practicing open defecation	31 (16%)
No. (%) of people reverting to open defecation	14 (7%)
Presence of cleaning materials near latrine (soap or ash)	10 (5%)
Distance from latrine to water source	3 (2%)
Water quality	1 (1%)
Distance from latrine to home	1 (1%)
CLTS process	
No. of training events held / people trained	63 (32%)
No. of communities triggered	52 (26%)
Costs of CLTS activities and/or latrine hardware	36 (18%)
Presence of WaSH/CLTS Committee	35 (18%)
Collection of baseline data	33 (17%)
Provision of community rewards for ODF	19 (10%)
Presence of government champions	17 (9%)
No. of follow-up visits	17 (9%)
Attendance at triggering events	16 (8%)
Presence of sanctions/enforcement mechanisms	14 (7%)
Observation of latrine upgrading during post-triggering	13 (7%)
Sustainability of ODF status	11 (6%)
No. of natural leaders identified	10 (5%)
Provision of incentives or rewards to volunteers	9 (5%)
Behavioral outcomes	
Awareness of consequences of OD	38 (19%)
Change in handwashing behavior	35 (18%)
Satisfaction with latrine (including time savings)	17 (9%)
Change in social norms	14 (7%)
Child feces disposal practices	4 (2%)

Table 4 (continued)

Indicator	n = 200 (%)
Extended impact	
Non-sanitation externalities in community due to CLTS intervention	27 (14%)
Diffusion of CLTS message to neighboring communities	24 (12%)
Influence of intervention on sanitation policy	15 (8%)
Intervention effect on gender issues	13 (7%)
No. of natural leaders that became CLTS facilitators themselves	8 (4%)
Sense of ownership	5 (3%)
Motivators for behavior change	
Improved health	35 (18%)
Dignity or pride	29 (15%)
Shame or embarrassment	16 (8%)
Safety	14 (7%)
Privacy	12 (6%)
Empowerment	11 (6%)
Convenience	11 (6%)
Upgraded social status	5 (3%)

Factors affecting CLTS implementation and outcomes

The factors identified from the qualitative analysis, and the stage of CLTS in which they occur, are presented in Table 5. The 21 implementation-related factors fall under three domains: policy environment, implementation quality, and administrative context. The 22 community-related factors fall under four domains: environment, capacity, participation patterns, and behavior.

Policy environment

Eighty-four (42%) documents referred to the influence of the policy environment on CLTS activities, often about policies regarding latrine subsidies and latrine quality. The national sanitation policy (n=37, 19%) was reported more often as a constraint than as an enabler. Policy that promoted specific national latrine standards was perceived to conflict with the CLTS message of building a latrine with whatever means available. Policy that encouraged hardware subsidies—most often targeted to the poor—often conflicted with the no-subsidy approach of many CLTS projects. A history of latrine subsidies in communities that were to be triggered with

CLTS, or current provision of subsidies near CLTS communities, were cited as constraints, and were often a result of decisions beyond the control of CLTS implementers.

A few documents mentioned latrine subsidy policy being used to the advantage of CLTS, such as in Nigeria, where WaterAid Nigeria prioritized follow-up activities on households that had hardware available from previous subsidy programs “as these households are easiest targets” (Bawa and Ziyok 2013, p.3). They reported that this approach led to faster latrine construction because households did not need to think about technology options or financing. A study in Cambodia also reported that “ODF has been reached regularly in the dry season” in villages with subsidy programs, although they also reported that “proximity to on-going subsidized programmes erodes the effectiveness of CLTS” (Kunthy and Catalla 2009, p.5).

Setting national targets for sanitation was described in 26 (13%) documents as a constraint in all but one case, where it created an incentive for local government officers in Kenya (Musyoki 2010). Most documents that referred to this factor noted that setting targets created a sense of “top-down” policymaking that conflicted with the community-led nature of CLTS (Crocker 2016c; Davis 2012; DeSilva 2013; UNICEF WCARO 2011); led to a focus on rapid latrine construction rather than behavior change (AAN Associates 2013; Dyalchand et al. 2008; Haq and Bode 2009; Jha 2007; Kar and Bongartz 2006; Pardeshi et al. 2008; USAID n.d.); led to community triggering outpacing capacity to follow-up (Toft and Onabolu 2012; UNICEF 2014); and created an incentive for implementers to misrepresent data (Mukherjee et al. 2012).

Implementation quality

Factors relating to implementation quality were reported in 149 (75%) documents. Adequate preparation and planning in the pre-triggering stage, including the importance of systematic community selection, was emphasized in 30 (15%) documents. Some mentioned the need to target specific types of communities rather than using CLTS everywhere (Burton 2007; Crocker et al. 2016b; Evans et al. 2009; Global Sanitation Fund 2015; Kunthy and Catalla 2009),

but one suggested that targeting certain communities leaves behind those communities with unfavorable conditions (Bawa and Ziyok 2013).

The importance of the facilitators' skills (n=45, 23%) and quality of triggering events (n=80, 40%) were identified as determinants of CLTS success, with an underlying theme of adaptation. A practitioner account from Zimbabwe emphasized the “need to be culturally insensitive during facilitation”—by not being afraid to use bold terminology—and to prioritize creative adaptations of triggering tools based on the context, with the aim to “create a sense of shame, fear and disgust” without “teaching, preaching or prescribing” (Chimhowa 2010, p.71). On the other hand, a study critical of CLTS in Indonesia concludes that “the use of shaming and taunting both disqualifies it as an empowerment approach and is likely to undermine its effectiveness in promoting long-term behaviour change. Even if shaming were shown to be effective, the morality of punishing the poor for their circumstances requires deeper consideration” (Engel and Susilo 2014, p.174).

Eight of the ten implementation quality factors were referred to primarily in the context of post-triggering activities. Fifty-four (27%) documents provided examples of frequent follow-up activities by NGOs or local government helping, or poor follow-up hurting CLTS outcomes. As part of follow-up, the theme of improving monitoring and evaluation of programs was mentioned in 48% of the literature. Many expressed a need for more systematic evaluations of CLTS projects, and better use of data that are already being collected by practitioners. In one study, authors observe: “Several non-government organizations in the WASH sector worldwide have developed different protocols for defining, declaring, and certifying ODF status in communities, yet no protocol has been recognized as the global standard” (Belizario et al. 2015, p.23). Based on their experience with CLTS in Indonesia, authors from the Water and Sanitation Program of the World Bank recommended that “post-triggering processes should be given a verifiable structure by establishing and periodically checking for desired progress quality

indicators/milestones for success in triggered communities in order to improve institutional accountability for and the quality of follow-up” (Mukherjee et al. 2012, p.15). This need for a reporting structure was echoed in reports from Kenya (Tiwari 2011) and Ghana (Magala and Roberts 2009), among others.

Technical support (n=44, 22%) was often cited as an enabler in projects that provided guidance directly to communities on latrine construction or trained masons to improve toilet design (Evans et al. 2009; Huda 2009; Kalimuthu 2008; Magala and Roberts 2009; SEED Madagascar 2016; Shayamal et al. 2008; WaterAid India 2008). Technical support and subsidies were both contentious in the literature, with several practitioner accounts defending a strictly no-subsidy implementation of CLTS, whereas others advocated for greater flexibility, such as this evaluation of a UNICEF program: “Many implementers share the opinion that more work on the technical standards together with targeted subsidies are unavoidable to help reach the households build latrines and reach the ODF status in such areas” (Hydroconseil 2014, p.46).

The presence of enforcement mechanisms or sanctions on open defecation or latrine construction was described in 39 (20%) documents. One study in Nepal reported that “coercive methods...did not always bring out tangible results” (Jha 2007, p.28), and in Bangladesh, enforcement led some people to “construct toilets out of fear of being fined without understanding the reasoning for doing so or the best methods for construction. This in turn leads to poor use of the latrines” (Kar and Bongartz 2006, p.5). An evaluation of CLTS in West Africa claimed that “such punitive measures seem out of line with the CLTS spirit of self-help and dignity. However, community enforcement may be considered as an appropriate additional measure [if] it is implemented in a real participatory and community-based way, with a collective decision” (UNICEF WCARO 2011, p.17). Local by-laws were described as effective in several settings; an evaluation of CATS reported that “in many countries, the strongest evidence

of a change in social norms is the genuine adoption and the enforcement of formal and informal rules / bylaws at the level of the community, accepted by all the community members and recognized as collective rules which cannot be transgressed without consequences” (Hydroconseil 2014, p.65).

Administrative context

Over half of the literature (n=112, 56%) contained factors relating to the administrative context. This domain included institutional capacity to implement CLTS (n=66, 33%), administrative or financial arrangements (n=60, 30%), and coordination between implementing organizations (n=37, 19%). Concerns were documented relating to time availability, technical experience, skilled human resources, and the capacity to plan, budget and allocate resources for CLTS. Some adaptations were also documented, such as peer-to-peer accountability mechanisms for government Health Surveillance Assistants in Malawi (Kennedy and Meek 2013), and village-level microplanning exercises for local government in Kenya (Singh and Balfour 2015). More documents described existing administrative and financial arrangements as constraints rather than enablers of CLTS activities.

Eighty-four (42%) documents cited local government ownership of CLTS as an important factor for success, scale-up, or sustainability. The most effective level and type of local government involvement was unclear. In an evaluation from Zambia, authors state: “The level of support given to CLTS in certain districts is obvious, with a high level of involvement from everyone from Town Clerks and Chiefs to government representatives across sectors, knowing and understanding what the CLTS approach means. This level of understanding surely forms the basis for sustainability in an institutional sense” (Morris-Iveson and Siantumbu 2011, p.34). On the other hand, in Moroto, Uganda, “support for better sanitation and hygiene from political leadership was reported as lacking or weak in most respects ... and served to undermine efforts of the extension staff as the latter strive to promote ODF villages” (Asingwire 2012, p.49). Local

government ownership was often related to decentralization as well. For example, in Cambodia, decentralization helped transfer financial responsibility to the local government, creating a local source of funds for district and commune activities (Kunthy and Catalla 2009). On the other hand, it created uncertainty in Kenya (Crocker et al. 2016c), and was not matched with sufficient institutional capacity in Indonesia (Engel and Susilo 2014).

Community environment

Across 66 (33%) documents, environmental, geographical, and climate-related factors were cited, such as poor soil conditions and floods destroying latrines. However, remoteness of a village (n=13, 7%) was sometimes an enabler, as remote villages were less likely to have been exposed to subsidy projects and might therefore be more receptive to the CLTS message. Access to clean water in triggered communities (n=23, 12%) was described as an enabler in several documents. For example: “one of the key entry processes is access to water. In the project communities water points were rehabilitated and in few cases new ones were installed. Communities clearly associated the effectiveness of CLTS to availability of water” (Burton 2007, p.12). Adeyeye also noted that WaterAid Nigeria “holds that access to water is a necessary prerequisite to access to adequate sanitation” (Adeyeye 2011, p.21).

Community capacity

Ninety-seven documents (49%) cited at least one community capacity factor. The most frequently identified factors related to building latrines were access to supply of latrine hardware (n=62, 31%); availability of financial resources (n=54, 27%); and technical knowledge of latrine construction (n=24, 12%). Studies often reported community members’ desire for more guidance from implementers on how to build a high-quality latrine to avoid costly maintenance and repairs that could result in reversion to open defecation. There were examples of local mechanisms to address financial constraints, such as creating access to credit through village savings and loans associations (Adhikari et al. 2008; DeSilva 2013; Global Sanitation

Fund 2015; Magala and Roberts 2009; Mwanzia and Misati 2013; Tremolet et al. 2015), or collective community efforts to build latrines (Mukherjee et al. 2012; Priyono n.d.). Nevertheless, poor latrine quality and resulting sustainability challenges emerged as important themes.

Community participation patterns

A key participant in CLTS is the “natural leader,” typically a community member who emerges in the triggering process as someone particularly motivated to improve sanitation. Eighty-two (41%) documents broadly referred to natural leaders. Twenty-nine (15%) documents specifically noted the initiative of natural leaders as an enabler or barrier to CLTS, but only a few gave concrete examples, such as the challenge in identifying natural leaders, or how training natural leaders in latrine construction or mobilization techniques proved to be effective. One study reported that training led to greater participation and better sanitation outcomes in Ghana (Crocker et al. 2016a), and practitioners in Madagascar reported that training helped motivate natural leaders to be more active in their communities (SEED Madagascar 2016).

Broader mobilization, participation, and motivation of community members in triggering and post-triggering activities was reported in 82 (41%) documents as an important reason for success or failure of CLTS. A sense of community responsibility (n=25, 13%) and social cohesion (n=27, 14%) emerged in several documents. Smaller, homogeneous communities tended to be more successful (e.g. Evans et al. 2009; Haq and Bode 2009; Mukherjee et al. 2012; Tyndale-Biscoe et al. 2013; USAID n.d.; Venkataramanan 2016), and greater cohesion was also connected with greater likelihood of self-help initiatives, for example, gotong rayong in Indonesia (Mukherjee et al. 2012).

Community behavior

Expectation of subsidies for latrine construction was the most commonly cited behavioral constraint in the literature (n=29, 15%). Preference for open defecation was also an important behavioral factor (n=20, 10%) that related to slow progress or no change in sanitation behavior after triggering. Part of this was reported to be due to cultural and religious beliefs regarding open defecation or latrine use, which were often cited as either enablers and barriers to CLTS. For example, speaking about defecation was considered to be a private matter in several settings (Dittmer 2009; Evans et al. 2009; Shayamal et al. 2008). There are also taboos around different members of the household using or sharing a latrine (Bulaya et al. 2015; Burton 2007; Kappauf 2011; Mukherjee et al. 2012; Zombo 2010) or superstitions around latrine use (Dittmer 2009). Dittmer gave an example of an ethnic group in Burkina Faso with the tradition that “if someone gives you food, you are expected to defecate in his field (and fertilize the crops), as the act of giving entitles the giver to receive something in return” (Dittmer 2009, p.7). These traditional beliefs were used to adapt triggering in several programs (n=19, 10%) by engaging religious leaders or using passages from the Bible or Quran during triggering events.

Fourteen (7%) documents noted that priorities other than sanitation can affect the response to CLTS. For example, Engel and Susilo document one village chief's observation in Indonesia that “despite the supposedly participatory approach of the CLTS, the villagers did not want a sanitation project and would have preferred an adequate irrigation system for their farmland and a programme for replanting an area of cleared forest located near their farmland” (Engel and Susilo 2014, p.171).

Table 5. Factors affecting implementation by stage of Community-led Total Sanitation

Implementation and Community-related Factors	n (%)	Stage of CLTS		
		Pre-Triggering	Triggering	Post-triggering
<i>Policy environment</i>				
National government awareness and buy-in for CLTS	41 (21%)	X	X	X
National sanitation policy vis-à-vis CLTS implementation	37 (19%)	X		X
Ambitious national sanitation targets	26 (13%)	X		X
History of latrine subsidy provision in the country	21 (11%)	X	X	X
Ongoing latrine subsidy programs near triggered communities	20 (10%)			X
<i>Implementation quality</i>				
Triggering Quality	80 (40%)		X	
Frequency and effectiveness of follow-up activities in villages	54 (27%)			X
Facilitator Skill	45 (23%)	X	X	
Provision of technical support on latrine construction	44 (22%)			X
Community enforcement measures for non-compliance	39 (20%)			X
Provision of incentives or rewards to villages for ODF status	32 (16%)			X
Planning	30 (15%)	X	X	X
Provision of latrine subsidies in triggered communities	25 (13%)			X
Provision of incentives to community volunteers	13 (7%)		X	X
Presence of exchange visits between community leaders	12 (6%)			X
<i>Administrative context</i>				
Local government ownership of CLTS	84 (42%)		X	X
Institutional capacity of implementers	66 (33%)	X	X	X
Administrative and financial arrangements	60 (30%)	X	X	X
Presence and functioning of monitoring and evaluation system	42 (21%)			X
Coordination between implementing organizations	37 (19%)	X	X	X
Presence/functioning of sanitation working groups	14 (7%)			X
<i>Community environment</i>				
Climate conditions	33 (17%)	X		X
Soil or groundwater conditions	28 (14%)	X		X
Access to water in community	23 (12%)	X		X
Remoteness of community	13 (7%)	X		X

Table 5 (continued)

Implementation and Community-related Factors	n (%)	Stage of CLTS		
		Pre-Triggering	Triggering	Post-triggering
<i>Community capacity</i>				
Access to supply of latrine hardware	62 (31%)			X
Availability of financial resources	54 (27%)			X
Technical knowledge of latrine construction	24 (12%)			X
Availability of land or land ownership	18 (9%)	X		X
Availability of time to construct latrines	11 (6%)			X
Awareness of benefits of stopping open defecation	10 (5%)	X	X	X
<i>Community participation</i>				
Community participation in CLTS	82 (41%)		X	X
Presence of village-level leadership	50 (25%)	X	X	X
Initiative of 'natural leaders'	29 (15%)			X
Social cohesion	27 (14%)	X	X	X
Sense of community responsibility	25 (13%)		X	X
Traditional beliefs about women and children's role in society	9 (5%)		X	X
<i>Community behavior</i>				
Expectation of subsidy for latrines	29 (15%)			X
Preference for open defecation	20 (10%)		X	X
Traditional beliefs regarding open defecation	19 (10%)		X	X
Alternative priorities (other than sanitation)	14 (7%)	X	X	X
Community's trust in implementers' motives	11 (6%)		X	X
Preference for a better latrine	10 (5%)			X

Discussion

In this systematic review of CLTS and related interventions, I comprehensively characterize the state of evidence through a detailed quality appraisal, summary of quantitative outcomes, and qualitative analysis of factors affecting CLTS implementation and outcomes.

Quality of the literature

The quality appraisal indicates that evidence available to practitioners and policymakers is of variable quality, particularly regarding the ability to estimate the impact of CLTS on sanitation, health, or other community outcomes. Overall, I found that the journal-published literature was of higher quality than gray literature. I show that case studies and project reports—primarily in the gray literature—did not adequately describe their study design, data collection, or data analysis. Poor reporting of study characteristics makes it difficult to judge the objectivity and quality of information presented. Minimizing risk of bias was the weakest link in the quality of CLTS literature across all study types, but particularly in the case of qualitative studies, and case studies and project reports, which rarely described sampling methods, quality control in data collection, or analysis appropriate for the respective study design. Nearly two-thirds of all literature lacked independent data collection; improving this metric alone would reduce the risk of bias of all study types. Although nearly all documents gave context for their findings, there were large gaps in the description of limitations, preventing the reader from understanding the extent to which findings may be generalized. Furthermore, more than one-fourth of the literature overstated conclusions, by attributing outcomes to their intervention without an appropriate study design, or by making claims about impact using unverified data sources or anecdotes.

CLTS is one of the most common rural sanitation behavior change approaches. It is increasingly being tested in urban settings as well (Murigi et al. 2015; Mwanzia and Misati 2013; Myers 2016; Prabhakaran et al. 2016). Therefore, there is an urgent need to better understand

its effectiveness by improving the rigor of the evidence base. By reviewing the literature as a whole, the quality of different study types can be compared, and specific areas for improvement can be identified. Case studies and project reports—which have the potential to detail processes and share lessons learned—can be improved through more systematic data collection and analysis, and more thorough reporting to determine the extent of generalizability. Quantitative cross-sectional designs—a subset of studies classified as case studies and project reports—have the ability to describe outcomes on a large scale, but can be improved through more detailed descriptions of context and intervention processes. Qualitative studies can provide rich contextual descriptions, perceptions of different stakeholders, and reasons for success or failure, but researchers and implementers using these methods must improve the rigor of data collection and analytical techniques in order for findings to have sound policy and practice implications. Finally, well-designed quantitative evaluations have the potential to attribute outcomes and impact to interventions, but the quality of quantitative evaluations can be improved through more rigorous data collection methods, and better descriptions of context, process, and study limitations.

Measuring the effectiveness of CLTS

I found few rigorous quantitative evaluations of sanitation and health impacts of CLTS and related interventions. The 14 evaluations included evaluated interventions from nine countries, whereas CLTS is now practiced in at least 53 countries. These studies reported increases in latrine ownership and decreases in open defecation, but did not corroborate the widespread claims of ODF villages reported in case studies and project reports. As Evans et al. note: “Like many terms in development, [ODF] has become de-linked from its true semantic meaning and become more of a milestone or marker in programme development” (Evans et al. 2009, p.33). The term ODF may serve as a motivator for communities to improve sanitation behavior but is a poor indicator to compare across studies, programs, or countries given the

variety of definitions (see Thomas and Bevan 2014 for a review of various ODF protocols in Sub-Saharan Africa). Household-level latrine outcomes—while imperfect—are a better measure of sanitation progress. For research purposes, pairing these with more robust measures of the defecation practices of individual people is a further improvement. To avoid the pitfall of simply “counting latrines”, programs can add routine measures of open defecation behavior, latrine use and cleanliness through community monitoring initiatives (Coombes 2011).

One of the primary aims of sanitation is improved health, but measuring these changes is difficult under any circumstances, and especially if the sanitation intervention did not result in a sufficient reduction in open defecation or exposure to fecal contamination. The synthesis of health outcomes from CLTS and related interventions supports findings of previous reviews (Garn et al. 2016; Sclar et al. 2016; Taylor et al. 2015; Wolf et al. 2014), and underscores the challenge of attributing health impacts to sanitation, particularly over a short follow-up. Furthermore, the review supports prior observations that self-reported diarrhea is an unreliable measure of impact (Schmidt 2014). While more studies that consider a variety of sanitation-related health outcomes, including measures of nutritional status, may be beneficial, they tend to be expensive, require the intervention itself to be sufficiently successful to change sanitation outcomes, and require a long enough follow-up period to observe a noticeable change in health outcomes (Cairncross et al. 2010; Gertler et al. 2015).

Many programs are unlikely to have the resources or technical expertise to incorporate health impact into monitoring and evaluation systems or to commission such studies. Nevertheless, the review reveals an opportunity for researchers and practitioners to work together to address more immediate implementation and operational research questions by leveraging a variety of study designs. Given the participatory nature of CLTS activities and emphasis on sustained behavior change, such research would be strengthened by the use of

mixed methods, including qualitative indicators of participation and perceptions and better measures of social norms, for a thorough picture of CLTS effectiveness and impact.

Factors affecting CLTS implementation and outcomes

I identified 43 implementation and community-related factors from the literature affecting CLTS. Many were context-specific enablers or constraints to CLTS implementation and outcomes. Other factors, such as local government ownership of CLTS, institutional capacity, importance of facilitators' skills, and community participation in CLTS, were described in a similar manner across much of the literature. I suggest four important considerations from this qualitative analysis of the literature.

First, the review confirms the narrative of CLTS as a highly adaptable approach. Like Sigler et al.'s (2015) finding that multiple behavior change frameworks are employed in CLTS, I found that shame and disgust, although popular, were not reported as universal motivators that triggered communities; instead, improved health, dignity, and pride were cited more often. Skilled facilitators adapted their triggering techniques based on cultural considerations. However, finding such facilitators was described in the literature as an important constraint. Less-skilled facilitators resorted to either lecturing communities on health benefits or falling back on conventional shaming or disgust-inducing triggering techniques regardless of their appropriateness in that context (Venkataramanan 2016). I did not find any studies in the review that evaluated the relative effectiveness of different triggering adaptations, despite calls for a closer analysis of the potential human rights implications of CLTS and related techniques (Bardosh 2015; Bartram et al. 2012; Engel and Susilo 2014; Galvin 2015).

Second, although a high degree of flexibility is expected during triggering, lack of structure in post-triggering activities may be less beneficial. The Handbook on CLTS—the de facto manual that most CLTS programs use as a starting point—does not detail the structure of the post-triggering stage, acknowledging that activities are likely to depend on the context and

characteristics of the specific community (Kar and Chambers 2008). The analysis suggests, however, that certain elements of post-triggering activities routinely challenge programs around the world. For example, there was no clear evidence on the effectiveness or appropriateness of providing incentives or subsidies to some communities, or on the role of enforcement and sanctions for non-compliance. The review confirms Bartram et al.'s observation that there continues to be minimal debate or critical review of the effectiveness or humans rights consequences of post-triggering punitive measures (Bartram et al. 2012).

Another set of post-triggering challenges relates to the supply of durable and affordable latrine hardware and technical support on latrine construction. Notably, I identified a debate over the nature of technical support that should be provided to communities for latrine construction. CLTS programs do not follow uniform guidance on technical support, as communities are supposed to identify their own solutions to stop open defecation. Whereas some programs provided detailed technical support on latrine options, trained masons, or attempted to improve the supply chain for hardware, follow-up in other programs simply meant monitoring latrine construction. However, the analysis of the literature suggests a need for additional guidance, as substantive concerns were expressed from both community and implementer perspectives about the quality of latrines built because of CLTS, potentially discouraging sustained behavior change and possibly explaining the minimal effects seen in health impact studies (Papafilippou et al. 2011). I argue that programs should routinely incorporate technical support into the post-triggering stage, particularly when communities prefer durable latrines and express a need for this kind of support. An eight-country evaluation of CLTS in Africa similarly recommended that in the absence of a sanitation marketing program, “the post-ODF approach should include a set of ‘second-phase’ interventions designed to provide advice on how to upgrade and improve sanitation and handwashing facilities using local materials” (Robinson 2016, p.65).

Third, I suggest that communities should be selected for triggering based on community characteristics and resources available to maintain routine follow-up activities, including local government ownership. I reveal conflicting views on the scope for application of CLTS, with practitioners often suggesting that it is appropriate in all rural settings, whereas evaluations and studies of CLTS pointing to more deliberate targeting. This is particularly relevant when community members express priorities other than sanitation.

What interventions should be implemented, then, in places where CLTS is not likely to be successful? While there are some settings where CLTS is never going to be an appropriate intervention, it is also likely that there are settings where CLTS may not be successful on its own, but can result in sustained changes when combined or sequenced with other demand-generating or demand-fulfilling approaches such as sanitation marketing or other WaSH interventions. Further research is needed to understand the most effective combination and sequencing of WaSH interventions. The review revealed that several programs install water supply projects simultaneously with or following CLTS projects to try to ensure that gains from sanitation behavior change were not lost due to limited water supply. Several programs also measured “total sanitation” practices in their CLTS programs such as handwashing, water and food safety, and garbage disposal as opposed to focusing solely on open defecation. Some practitioners consider this lack of standardization of CLTS as a problem for scalability and sustainability (see SNV 2014), but I suggest that it can instead be viewed as an opportunity to expand the conversation to consider CLTS as part of a “total WaSH” strategy to achieve the WaSH Sustainable Development Goals by 2030 (United Nations General Assembly 2015).

Limitations

Although findings are presented from 53 countries, non-English documents were not specifically searched and experiences from some countries may have thus been missed. Because gray literature is, by definition, not published in peer-reviewed journals, and because it is

produced so rapidly, I may not have captured all the available literature. However, I believe the review reached saturation and has captured the vast majority of the CLTS evidence base through the scanning of 5884 documents from diverse sources and reviewing 200 in detail. Finally, although the content analysis was conducted systematically in two stages by the author and a fellow researcher, it is possible that the frequency counts were slightly underestimated and I was unable to capture every factor and indicator presented across all documents.

Conclusion

This is the first comprehensive systematic review of the state of the CLTS evidence base. Most literature on CLTS is on websites and knowledge bases rather than in peer-reviewed journals; this gray literature is more extensive and more accessible. Therefore, the large and inclusive scope of this review offers one of the first aggregate views of the evidence currently available for decision makers as they consider whether and how to scale-up CLTS worldwide. By including a variety of literature types (journal-published and gray) and study designs (quantitative, qualitative, and case studies and project reports), I identified their strengths of weaknesses and compare their relative contribution to the evidence base.

The quality appraisal framework I developed serves as a practical tool for assessing the quality of evidence from sources as varied as NGO reports, qualitative studies, and randomized controlled trials. To my knowledge, this is the first tool of its kind that enables a combined assessment of such literature on water and sanitation to develop specific recommendations for improving the evidence base.

The mixed methods analysis of the quality and content of literature enabled us to pool together findings in a much richer way than a meta-analysis of one particular study type would have allowed. By and large, there is substantive room for improvement in the quality of evidence on CLTS. I found that CLTS has been rolled-out with minimal rigorous evidence on its effectiveness and impact on sanitation and health outcomes. While quantitative evaluations

show reductions in open defecation and increases in latrine coverage, they do not mirror practitioner accounts of widespread elimination of open defecation. There is little evidence for sustained sanitation behavior change as a result of CLTS, and there has been minimal systematic research of the CLTS implementation process and its adaptations. I also provide evidence for the need to improve the structure of CLTS activities, and the need to consider CLTS as part of a larger WaSH strategy rather than as a singular solution to changing sanitation behavior.

The research-practice gap can be narrowed if researchers work more closely with implementers to design implementation and operational research studies to address specific challenges relating to sustainable behavior change and change in social norms, as well combining and sequencing of different sanitation or WaSH approaches. Donor agencies and national governments should support researcher-practitioner initiatives to improve the evidence base and provide policymakers opportunities to make more informed decisions to improve sanitation outcomes.

CHAPTER 3: A COMPARATIVE CASE STUDY OF THE IMPLEMENTATION PROCESS OF COMMUNITY-LED TOTAL SANITATION IN SEVEN COUNTRIES

Background

Community-led total sanitation (CLTS) is a sanitation behavior change approach that was initially piloted in Bangladesh in 2000. In 17 years, it has spread to over 50 countries, adopted as the primary sanitation strategy of many international organizations, and has become part of the national sanitation policy of many countries. Such rapid and widespread diffusion of this approach merits a closer look at its implementation process to better understand its effectiveness in, and applicability to different settings and contexts.

“Complex interventions” are defined as interventions with multiple interactions between different organizational levels, program components, behaviors required by implementers and end users, outcome measures, and degrees of “flexibility or tailoring of the intervention” (Craig et al. 2006, p.7). As such, most sanitation interventions, particularly CLTS, can be considered as highly complex, requiring the participation of various actors to influence complex individual behavior and social norms, and to ensure that infrastructure is functional and sustainable.

Another layer of complexity in CLTS is that it is described as a participatory, community-led intervention. In the Handbook on CLTS, Kar and Chambers describe the approach as empowering communities to change sanitation behavior “through a process of social awakening that is stimulated by facilitators from within or outside the community. [...] People decide together how they will create a clean and hygienic environment that benefits everyone” (Kar and

Chambers 2008, p.8). CLTS aims to trigger collective behavior change by motivating people to analyze the impact of open defecation in their communities and identify solutions on their own.

Frame of reference on community-level development and community participation

I use two concepts to set the frame of reference in this paper. The first concerns the initiating actor of the intervention, and the second concerns the role of the community in the intervention.

First, complex participatory projects or interventions can either be “organic” or “induced” (Mansuri and Rao 2013). Organic participation occurs from within, often independently of government or external agencies. On the other hand, induced participation “refers to participation promoted through policy actions of the state and implemented by bureaucracies (the “state” can include external governments working through bilateral and multilateral agencies, which usually operate with the consent of the sovereign state)” (Mansuri and Rao 2013, p.32). Mansuri and Rao consider external agencies or NGOs that implement participatory interventions to be inducing participation, as the effort necessarily requires a presence external to the community to initiate the intervention. I apply this frame of reference to CLTS as an externally-initiated intervention with community members as the target group.

Second, the terms “community-based”, “community-driven”, and “community-led” are often used synonymously when describing interventions that involve community participation. However, the terms can vary in the degree to which community members initiate, invest in, or lead intervention efforts. While community-based development refers broadly to “projects which actively include beneficiaries in their design and management,” community-driven development refers more specifically to projects where communities have more agency over decision-making and management of funds (Mansuri and Rao 2004, p.1). In contrast to short-term projects, community-led development can refer to a longer-term process to “set vision and priorities by the people who live in that geographic community, put local voices in the lead, build

on local strengths (rather than focus on problems), collaborate across sectors, is intentional and adaptable, and works to achieve systemic change” (Defining Community-led Development 2017).

Zakus and Lysack define community participation as a collective process by which communities can develop “the sense that they can solve their problems through careful reflection and collective action”; “develop the capability to assume responsibility” for their developmental needs; and “plan and then act to implement their solutions” (Zakus and Lysack 1998, p.2). Israel et al. suggest that communities should also feel empowered to “influence decisions and changes in the larger social system” without the explicit dependency on external institutions (Israel et al. 1994, p.153). Similarly, Ball and Thornley identify one of the core principles of community-led development as “communities determine their own development priorities and the outcomes they want to achieve” (Ball and Thornley 2015, p.8). The role of facilitators is to empower community members to address these community-defined challenges in an effective manner (Torjman and Makhoul 2012).

Based on this background on community participation, I suggest that CLTS is an externally-initiated intervention that aims to induce participation in rural communities. It is best defined as “community-driven” rather than “community-led” because rather than identifying community priorities, facilitators enter communities with a pre-determined problem (open defecation) as well as an end goal (ODF status), and then try to give community members the agency to decide how to address the problem.

This definition determines which actors should be studied as part of the implementation process. Therefore, the analysis of CLTS implementation presented in this paper is primarily concerned with the steps taken by actors such as NGOs, government officers, other facilitators, and key community leaders. Leadership in implementation is likely to vary depending on the case. Household members within communities are the ultimate target of the intervention, and

although their action is required for success, they are not considered as implementation actors within this frame of reference.

Backward mapping approach

Policy implementation research provides a particularly useful foundation for understanding complex interventions such as CLTS. Public policy theorists have suggested various theories to explain how policies are implemented and what factors lend themselves to success or failure of the intended goals. This paper draws on the methodology of “backward mapping,” proposed by Richard Elmore (Elmore 1979).

A forward mapping approach assumes a relatively linear path for implementation and studies the process in a top-down manner (Dyer 1999). Any change in the implementation process is viewed then as a deviation, or error, to be corrected. Therefore, any CLTS project that is not implemented per the guidelines found in the Handbook on CLTS would be considered a deviation to CLTS.

On the other hand, theorists such as Richard Elmore and Michael Lipsky proposed that implementation should be viewed from the bottom-up, with the perspectives and actions of front-line implementers, also known as “street-level bureaucrats” (Lipsky 2010). In CLTS, street-level bureaucrats are those who visit communities on a routine basis, conduct triggering events, and monitor progress. By first analyzing the experiences of these actors, backward mapping allows one to acknowledge that policy relies heavily on what happens on the ground rather than what is articulated on paper, and that street-level bureaucrats have discretion in shaping implementation. If there is a change to a written policy, the questions to be asked are, “Who is changing what and why?” and “How should these changes influence the written policy or program design?”

Rationale

The systematic literature review presented in Chapter 2 found that, although there is widespread recognition amongst implementers that CLTS is an adaptable and context-specific approach, no studies systematically characterize or evaluate different adaptations. Recent CLTS evaluations have revealed its effectiveness at improving latrine coverage and use under certain conditions (Crocker et al. 2016a; Crocker et al. 2016b; Pickering et al. 2015), but what is less clear is how best to structure and adapt programs to improve their effectiveness in various settings. The interaction between different actors and institutions during the implementation process, and the ways in which these interactions influence implementation has not been sufficiently understood in CLTS. A better understanding of these dynamics would facilitate more effective adaptations to the local context.

In a synthesis of implementation literature, Fixsen et al. suggest asking the following question when studying implementation processes and outcomes: “Are they doing the program as intended?” (Fixsen et al. 2005, p.4). For complex interventions such as CLTS, I propose adding nuance to this question, which in its current form is essentially a question of fidelity. I reframe the question as, “In what ways was the program done in practice?” Just as an evaluation of an ineffective program does not improve our understanding of the program itself, a study of a faithfully executed program that was ultimately ineffective only tells part of the story.

In this paper, I explore variations in CLTS implementation across seven cases through an analysis of the roles of different actors, informed by the backward mapping approach. The aims of the paper are to identify a) how CLTS implementation varies across different contexts and settings; b) advantages and disadvantages to different variations; and c) implications for practitioners and policymakers. I draw on field work from seven case studies of CLTS implemented by one international non-governmental organization (INGO), Plan International: Haiti, Niger, Lao PDR, Cambodia, Uganda, Indonesia, and Nepal.

Methods

Study design

A qualitative, multiple-case study design (Yin 2003) was used to compare CLTS programs in seven countries. The multiple case study process begins with developing research questions, selecting cases, and developing a data collection protocol or framework. As individual cases are analyzed and written as case study reports, hypotheses may be refined prior to data collection in subsequent case studies. This iterative process accounts for the uncertainties and adaptations that occur during data collection, building towards a holistic understanding of CLTS implementation.

Case selection

Plan International was one of the first INGOs to expand implementation of CLTS. Seven of Plan's CLTS projects were studied to assess variations in implementation across one organization with multiple autonomous country offices. As part of a larger implementation research project on CLTS, Plan country offices submitted proposals to be included in the case study research. Project managers from this larger research project at UNC and Plan USA selected the seven cases following validation by a Technical Advisory Group of sanitation experts set up for the larger research project. To be included, implementation of the selected projects must have begun at least one year prior to the research and no more than seven years prior, to ensure that sufficient evidence would be available for the case studies, but that recall would not be a substantive constraint. Case selection was also at times driven by logistical, time, and safety or civil unrest considerations.

Data collection

Data collection comprised qualitative, semi-structured in-depth interviews with various actors implicated in CLTS; gathering of policy, monitoring, and programmatic documents

relevant to CLTS implementation in the country; and observations of triggering events where possible. Data were collected over two to three weeks in each country between May 2013 and June 2014.

Purposive sampling was used to identify key informants at the national, provincial, district, and village levels who could describe experiences with CLTS. The author provided each Plan country office with a list of the types of key informants to interview based on a review of CLTS documents from each country. Country office staff identified respondents and arranged meetings for the author to request participation and conduct interviews.

In each country, the aim was to visit at least two ODF and two non-ODF communities where CLTS was implemented. Based on guidance from the author, Plan staff selected communities and arranged field visits; selections had to be approved by the author before the visits. In total, 34 communities were visited, 44% of which were either declared or certified as ODF at the time of the study (see Table 6).

Triggering events were observed in Cambodia, Nepal, Haiti, and Uganda. Extensive observational field notes were taken during triggering events to document attendance at the event, timing of activities, and reactions of participants to the facilitators' messages. Notes were also taken on participants' reactions towards the author to document whether and how her presence may have affected the event (Emerson et al. 2011).

Participants

In total, 293 people were interviewed through 185 individual and group interviews (Table 7). At the national level, interviews were conducted with government officials responsible for water and sanitation, Plan program managers, and other international or national NGOs or donor organizations implementing CLTS. At the provincial and district levels, local government officers, local Plan staff, and field-level facilitators of CLTS were interviewed. Community

leaders involved in triggering and follow-up activities were then interviewed in their respective triggered communities. More than half of the respondents were community leaders (57%), followed by local government officers (17%), other INGOs or local NGOs involved in CLTS (12%), Plan CLTS staff (9%), and national government officials (4%).

Table 6. Description of seven Community-led Total Sanitation case study sites

Country	Districts or provinces within country	Field visit date	Community visits	
			ODF	Not ODF
Haiti	Sud-Est and Ouest	June 2014	0	7
Niger	Dosso and Tillaberi	April 2014	1	3
Lao PDR	Meung and Paktha	July 2013	2	2
Cambodia	Svay Rieng and Kampong Cham	May 2013	2	2
Uganda	Tororo	November 2013	4	1
Indonesia	Grobogan	August 2013	3	1
Nepal	Makwanpur, Morang, and Banke	August 2013	3	3
			15	19

Interview process

Separate interview guides were developed for policymakers, implementers, and community participants (Appendix 4). Interview questions were loosely structured around the following lines of inquiry: overall water, sanitation, and hygiene (WaSH) situation; sanitation policy; experience with CLTS implementation during training, pre-triggering, triggering, and follow-up stages; opinions on CLTS; and overall philosophy on external support. As these interviews were semi-structured, questions were not always asked in the same order or using the same wording, per accepted qualitative data collection practices (Charmaz 2006).

Data collection began in Cambodia. The author conducted in-depth interviews and was observed by a fellow UNC researcher, so he could provide feedback on the interview process and enable refinement of interview guides. Interviews were conducted by the author in all countries except Indonesia, where due to logistical reasons, the fellow UNC researcher collected data on the author's behalf. Preparatory work, village selection, and broad selection of participants was

organized by the author through close coordination with the Plan country office, and the fellow researcher followed all data collection procedures set forth by the author. Furthermore, typed or recorded field notes were emailed to the author with observations or challenges during the field study in case course-correction was necessary.

Interviews were conducted in 17 languages with the help of independent interpreters when necessary. Interview guides were translated into the local language to assist interpreters. Prior to data collection, the author familiarized interpreters with data collection guides, trained them in the basics of providing direct translations without editorializing responses, and practiced mock interviews with a third party. Eight interpreters assisted with the study.

In the case of government officials and field-level facilitators, interviews were conducted at their offices in a private environment. Interviews with community leaders were conducted in various locations within villages, including meeting rooms, school grounds or classrooms, or in respondents' homes. Every attempt was made to keep the setting private and confidential at the time of the interview; Plan staff or local government officers would often accompany the author to communities, but they were not allowed to observe interviews to ensure respondents' privacy and confidentiality of responses.

Interviews lasted between thirty minutes and two-and-a-half hours, and were audio-recorded, transcribed, and translated to English for analysis. Detailed notes were taken during interviews to supplement transcripts. Transcription of the English translation in the audio recordings was conducted by interpreters, external transcription agencies, and the author herself; the author cleaned and edited all transcripts based on recordings and field notes.

Informed consent

All respondents were provided an information sheet on the study and informed consent process in the appropriate language. Considerable time was spent prior to obtaining consent to

verbally explain the study aims and consent procedures; emphasis was placed on the independent nature of the research from Plan's work, and the benefits and risks of participating in the study. Interviews were not voice-recorded if the respondent expressed reluctance with recording. Verbal consent was obtained prior to all interviews. No potential respondent refused to be interviewed after study aims and the consent process were explained to them.

Ethical review

This study was approved by the Office of Human Research Ethics and Institutional Review Board of UNC (Study ID 13-1540) and the following national entities: Ministry of Rural Development; Royal Government of Cambodia, Centre for Environmental Health and Water Supply (2013); Ministry of Health, Lao PDR (2013); Ministry of Urban Development, Government of Nepal (2013); Ministry of Health, Government of Indonesia (2013); Uganda National Council for Science and Technology (2013); Ministry of Water and Sanitation and Ministry of Public Health, Republic of Niger (2014); Ministry of Public Health and Population, Republic of Haiti (2014).

Analysis

Atlas.ti Version 7.0 was used to manage and code data. Two levels of analysis were conducted: at the country case level, and across country cases. Interview transcripts were coded inductively, in that no codebook was developed beforehand (Gibbs 2008; Saldanha 2012). The aims were to a) characterize roles of different actors at different stages of CLTS (pre-triggering, triggering, post-triggering), and b) identify enablers and barriers to CLTS implementation by stage of CLTS. Therefore, codes were grouped under actors, CLTS stages, enablers, and barriers. Additional themes were also coded as they emerged.

The backward mapping approach informed data analysis. First, transcripts of interviews with street-level bureaucrats—those who triggered and monitored communities—were analyzed.

Then, transcripts of interviews with district-level managers from Plan or local government were analyzed, followed by those of national level actors. In this manner, enablers and barriers to implementation were identified from the bottom-up and triangulated from different perspectives.

At the country case level, analytic matrices were populated for each transcript by stage of CLTS. For the cross-case analysis, matrices at the case level, rather than transcript level, helped aggregate and compare data from the seven country cases. Country policy and strategy documents were reviewed to describe the policy context and enabling environment for CLTS, and descriptive statistics of monitoring data were analyzed for all seven programs.

Drafts of case study reports were shared with the respective Plan country offices to review the accuracy and relevance of findings. This served as one method of member checking for increased analytical rigor (Cho and Trent 2006). Although reports were edited for accuracy and to improve implications and recommendations, findings that related to perspectives of respondents that the Plan staff did not agree with were not modified. Detailed findings of individual cases and cross-case thematic findings are reported elsewhere (Venkataramanan 2014a; 2014b; 2015a; 2015b; 2015c; 2015d; 2015e; 2016).

Limitations

Limitations of this study include potential bias due to sample size and case selection; quality of quantitative monitoring data provided by Plan; potential bias in participants' responses due to the researchers' background or Plan's role in the research; recall bias; and potential errors in interpretation.

Despite the broad scope of this study, it will not have captured all variations in CLTS implementation. Field work was limited to Plan's CLTS projects, which may limit the spectrum of approaches considered. Furthermore, only 34 communities were visited across the seven

countries—using purposive sampling techniques—out of nearly 1000 communities that had been triggered by Plan across the seven cases. It is also possible that selection bias on the part of Plan affected representativeness of these communities. Monitoring data provided by Plan were not independently verified and were of variable quality, making it impossible to compare CLTS outcomes between cases. Given the qualitative nature of this study, findings on the implementation process cannot be correlated with these quantitative data, but can be used to generate hypotheses to test in the future.

Cases were not selected by the author, and they were not selected to specifically gain diversity in geography, socio-political context, or developmental context. Selection criteria instead related to programmatic and logistical considerations, and the selection resulted by chance in three Southeast Asian countries, one South Asian country, two sub-Saharan African countries, and one Caribbean country. When classifying these countries into implementation modalities (presented in the Results section), there may appear to be a pattern relating to historical or developmental capacity factors. However, as this was not part of the selection process, I explicitly do not analyze these factors in this paper. Such elements of the context are important, and explored elsewhere for individual country cases (see Venkataramanan 2014a; 2014b; 2015a; 2015b; 2015c; 2015d; 2015e).

Despite efforts to convey to all respondents the independent nature of this research from Plan, it is possible that some respondents still biased their answers to be more favorable towards Plan, either out of courtesy or the expectation of future benefits—it is not possible to ascertain the motive or extent of this potential bias. It is also possible that the researchers' outsider presence influenced some respondents to emphasize the benefits of implementation and others to emphasize the challenges. Furthermore, it is likely that the perspectives shared by implementers and community leaders in this study do not always reflect the opinions and perceptions about CLTS of all residents in triggered communities.

Recall bias is a potential limitation to this study, especially with regard to recalling training and triggering events, because communities that were visited had been triggered anywhere from one day to seven years before the visit. Although every effort was made to train interpreters, clarify doubts in real-time in the field, and double-check translations during the transcription stage, it is nevertheless possible that some data were also lost in translation. Finally, although team work in the qualitative analysis process generally provides richer analytical rigor (Cho and Trent 2006), analysis had to be conducted individually for this study.

Results

First, I provide an overview of the three stage of CLTS. Second, I briefly describe the seven cases and the policy environment for CLTS in the seven countries. Third, I describe variations in the implementation process through a cross-case analysis of the roles of different actors in the three stages of CLTS. The seven cases are compared based on three broad implementation modalities: NGO-led CLTS, government-led CLTS, and mixed leadership of CLTS.

Stages of CLTS

CLTS implementation broadly consists of three stages: pre-triggering, triggering, and post-triggering. The main activities in the planning and pre-triggering stage can be divided into financing activities, training facilitators, and selecting communities for triggering, including gaining community entry.

The triggering stage comprises the main event, where residents of a community are gathered to a meeting place and facilitators conduct a series of participatory activities. Typically, the NGO or local government representative meets in advance with the village head for permission. The village head then notifies residents that a general meeting is to be held about sanitation or hygiene. Triggering activities that a facilitator may conduct include:

- a village mapping exercise to identify key village landmarks, as well as households with latrines;
- a transect walk or “walk of shame” around the village to identify open defecation sites;
- a visceral demonstration where feces is mixed into a bottle of clean water to show contamination;
- a “shit calculation” to calculate the amount of feces present around the village due to open defecation;
- a medical cost calculation of diseases caused by open defecation or poor hygiene;
- a discussion of disease transmission; and
- the development of an action plan to end open defecation.

Facilitators are encouraged to use the crude term for feces, a local translation of the word *shit*. A core component of triggering is to encourage an analysis of practices in way that “shocks, disgusts and shames people. This style is provocative and fun, and is hands-off in leaving decisions and action to the community” (Kar and Chambers 2008, p.7). The Handbook on CLTS teaches facilitators not to “interrupt when charged up community members start shaming their own people for open defecation practices or other hygiene behavior,” and not to “discourage members of the community from arguing amongst themselves or shaming each other, or quickly conclude that the ‘shaming’ element between community members should be avoided as culturally insensitive” (Kar and Chambers 2008, p.10). Although the Handbook was widely used across the seven cases presented in this paper, it is important to note that CLTS implementation by other organizations or in other contexts may emphasize disgust over shame, or emphasize generating a sense of pride.

Typically, “natural leaders” are identified as a result of triggering events, although they were not always present across the seven cases presented in this paper. Most of the triggering tools described earlier were identified in the five triggering events observed in this study in four

countries, and each case had adapted certain components of the triggering process. Where triggering events were not observed (Lao PDR, Indonesia, and Niger), perceptions of triggering techniques were inferred through interviews with implementers and community leaders.

There is no standard structure recommended for post-triggering activities other than routine community visits to monitor progress on latrine construction and declare the community ODF. Based on analysis of the post-triggering stage in these cases, I divided post-triggering into the following activities: follow-up visits, routine monitoring, technical support, and ODF declaration and verification.

Case descriptions

Figure 5 shows a timeline of when CLTS was first introduced to each country as well as the years that Plan began implementing the cases in this study. In Nepal, Cambodia, Uganda, and Haiti, Plan helped introduce CLTS to the country, whereas other organizations had previously piloted the approach in Indonesia, Lao PDR, and Niger. Nepal had been implementing CLTS the longest of the seven cases. Plan began implementing CLTS in Cambodia and Uganda in 2006 and 2007, respectively. Although Plan only began implementing CLTS in Indonesia in 2010, the Indonesian government had already adopted the approach as the basis of its national sanitation policy in 2008. The Plan CLTS cases in Lao PDR and Niger had moved past the pilot stage at the time of this study but were still implemented at a smaller scale than in other countries in this dataset. In Haiti, Plan Haiti attempted CLTS on a small scale following the 2010 earthquake, but with limited success. The first non-emergency CLTS program there began at the time of data collection in 2013.

Figure 5. Timeline of Community-led Total Sanitation activities in seven case study countries

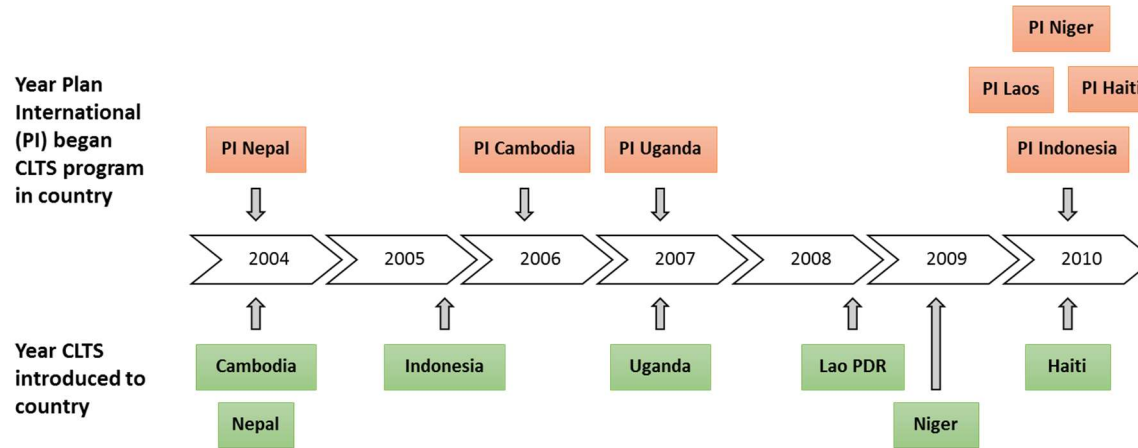
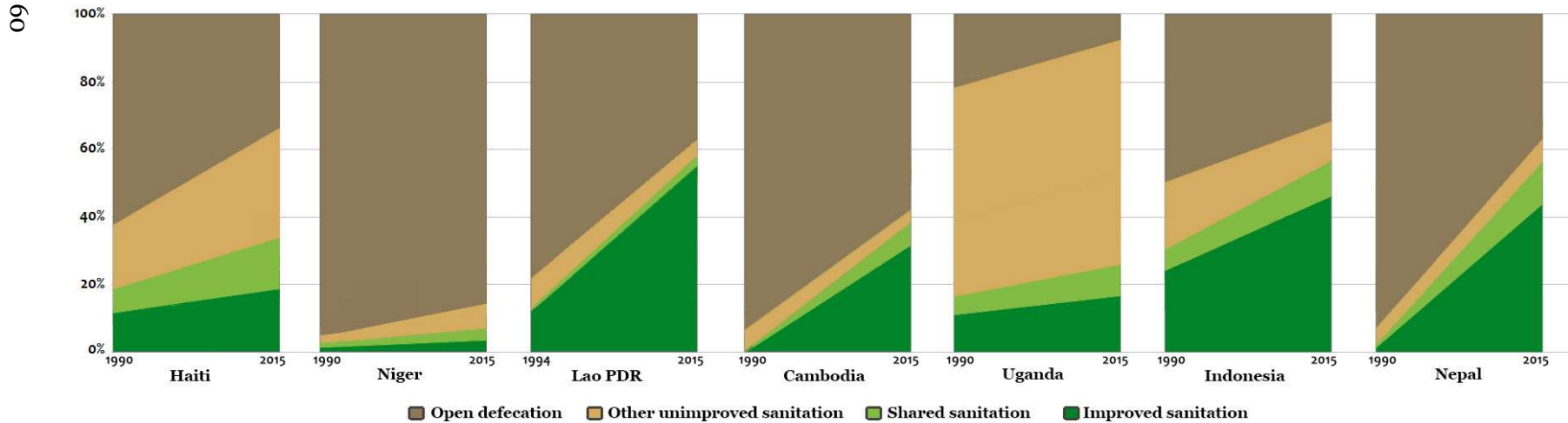


Figure 6. Rural sanitation coverage trends in seven case study countries, 1990-2015



Note: Adapted from WHO/UNICEF 2015

Table 7. Case study participants across seven Community-led Total Sanitation cases

Country	Respondent Categories					Total
	National government	Local government	Plan International	Other NGOs	Community leaders	
Haiti	2	3	6	3	27	41
Niger	1	7	3	8	20	39
Lao PDR	2	3	5	5	16	31
Cambodia	2	10	3	5	9	29
Uganda	1	8	2	1	25	37
Indonesia	2	7	4	1	14	28
Nepal	2	13	3	13	57	88
Total	12	51	26	36	168	293

Table 8. Plan International's Community-led Total Sanitation project outcomes in seven cases, 2013-2015

Country	No. of communities triggered	No. of households	Mean households / community	Mean baseline latrine coverage	Mean end-line latrine coverage	Increase in latrine coverage (percentage points)	No. (%) ODF communities
Haiti	83	NA	NA	NA	NA	NA	5 (6%)
Niger	87	10,968	126	8%	33%	25%	31 (36%)
Lao PDR	46	4,027	88	48%	74%	26%	17 (37%)
Cambodia	356	64,562	181	NA	40%	NA	38 (11%)
Uganda	152	14,284	94	51%	95%	44%	67 (44%)
Indonesia	153	174,426	1140	NA	97%	NA	149 (97%)
Nepal	105	171,212	1631	32%	59%	27%	29 (28%)

Note: Data represent Plan International program areas in that country only.

Table 9. Selected characteristics of the national policy environment relating to Community-led Total Sanitation in seven case study countries

Country	Sanitation policy document	Responsibility for sanitation	Perspective on CLTS	National CLTS guidelines	National CLTS working groups	Public financing for CLTS
Haiti	Strategic Guidance Document for Sanitation in Haiti (2015; pending approval)	National Directorate of Drinking Water and Sanitation; Ministry of Public Health and Population	Welcomes evidence-based, no-subsidy approaches	In progress	WASH cluster	None
Niger	2011-2015 National Plan on Drinking Water Supply and Sanitation (2011); 2014-2018 Operational Strategy for Hygiene and Basic Sanitation (2014)	Department of Sanitation, Ministry of Water and Sanitation	Mentions CLTS alongside other approaches; allows hardware subsidies	Yes	“Cluster WASH”	None
Lao	National Plan of Action for Rural Water Supply Sanitation and Hygiene (2012)	Centre for Environmental Health and Water Supply, Ministry of Health	Mentions CLTS alongside other approaches; allows targeted hardware subsidies	In progress	Technical Working Group	None
Cambodia	National Strategy for Rural Water Supply, Sanitation, and Hygiene 2011-2025 (2011)	Department of Rural Health Care, Ministry of Rural Development	Mentions CLTS alongside other approaches; allows targeted hardware subsidies	None	Technical Working Group	Allocated primarily for training local government facilitators
Uganda	10-year Improved Sanitation and Hygiene Promotion Financing Strategy (2006)	Ministry of Water and Environment; Ministry of Health	Mentions CLTS alongside other no-subsidy approaches	Yes	National Sanitation Working Group	Allocated to district government for salaries, travel, per-diem

Table 9. (continued)

Country	Sanitation policy document	Responsibility for sanitation	Perspective on CLTS	National CLTS guidelines	National CLTS working groups	Public financing for CLTS
Indonesia	National Strategy for Community Based Total Sanitation (2008)	Ministry of Health; State Ministry of National Development Planning	Based on principles of CLTS; allows hardware subsidies for public facilities	Yes	Working/Networking Groups for Water and Environmental Sanitation	Allocated to provincial/district government for training, salaries, <i>per diem</i>
Nepal	Sanitation and Hygiene Master Plan (2011)	Department of Water Supply and Sewerage, Ministry of Federal Affairs and Local Development	Based on principles of CLTS; allows locally designated hardware subsidies	Yes	National Sanitation and Hygiene Steering and Coordination Committees	Allocated to district government for training, triggering, and post-triggering

To trigger and monitor activities in communities, Plan in Cambodia, Niger, and Nepal sub-contracted activities to local NGOs and worked closely with local government. In Lao PDR and Uganda, Plan primarily worked with local government, and in Haiti, the organization worked largely on its own. Appendix 5 shows institutional maps of the seven cases.

Table 8 displays main intervention outcomes from these seven cases, as defined and measured by the projects. Across all seven cases, 982 communities of various sizes were triggered. The largest programs were in Indonesia, Nepal, and Cambodia, with respect to number of households reached. Programs had different definitions of what constituted an “ODF” community; some country offices collected data on the number of communities self-declared as ODF, and others collected data only those formally certified as ODF. Furthermore, not all programs collected data on the time taken to achieve ODF status; data provided to the author showed ODF status being achieved anywhere from one month to several years after triggering. Because of this variability in the quality of data and type of indicators collected by Plan country offices, it is not useful to directly compare the indicators across cases as measures of impact. It is also not appropriate to correlate factors associated with the implementation process with these outcomes. Despite data quality limitations, Table 8 shows that there was a wide range in “success,” measured either by ODF status or by latrine coverage.

Policy context

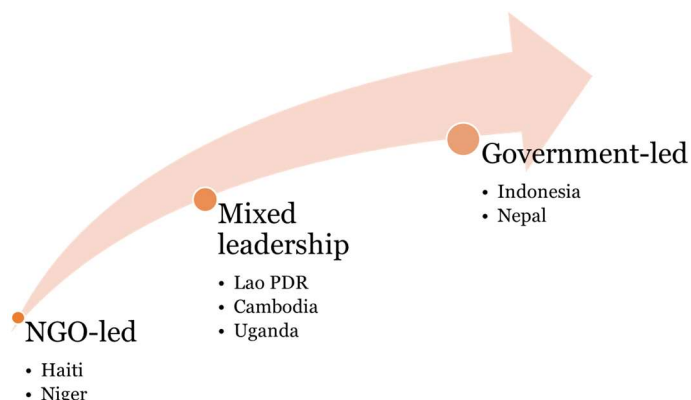
Table 9 summarizes characteristics of each country’s national sanitation policy that pertain to CLTS, and Figure 6 compares rural sanitation coverage in each country at the time of each case study. The policy environment in all seven cases was largely favorable towards CLTS. Written national policies in all seven countries describe the need for demand-led sanitation. All except Haiti’s policy mention CLTS as a viable approach for rural sanitation. Uganda and Haiti were the only countries where the national policy did not mention hardware subsidies as an option for rural sanitation. In the five other cases, targeted hardware subsidies in some manner

were allowed. Nepal and Indonesia’s sanitation policies are based largely on the principles of CLTS and thus were the most favorable policy environments. Government support for CLTS was strongest where CLTS had been implemented for several years: Cambodia, Nepal, Indonesia, and Uganda. These governments directly invested in CLTS activities, with funds allocated to train staff and support local government CLTS activities. A decentralized structure for implementing sanitation was found in all seven countries, but it was in these four countries that there was public financing for CLTS and local government was explicitly responsible for engaging in CLTS.

Implementation leadership modalities

This section explores the implementation process and roles of different actors in the seven cases. I categorize them into three broad implementation modalities, which emerged from analysis: NGO-led CLTS (Haiti, Niger); government-led CLTS (Indonesia, Nepal); and mixed leadership of CLTS (Lao PDR, Cambodia, and Uganda). The cases are snapshots of programs at a certain point in their evolution, and reflect a spectrum of scale (illustrated in Figure 7). The NGO-led programs are the newest and smallest in scale. Over time, given certain conditions, they expand into government-led programs on a large, national scale. The analysis of leadership roles of actors is structured under these three modalities.

Figure 7. Implementation modalities reflecting time and scale



The five main actors involved in CLTS across the seven cases are: Plan International, hereafter referred to as the INGO; national government; local government, which can be a provincial, district, or commune government; local NGOs where relevant; and community leaders or volunteers. As explained earlier, the frame of reference I use considers the actions of household members as vital to the intervention. However, given the externally-initiated nature of CLTS, household members are the target of implementation, rather than key implementation actors.

Table 10, Table 11, and Table 12 guide the discussion. Large icons in each cell of the table indicate primary leadership of that actor in the respective activity, and smaller icons below them indicate a supporting role. This visual map of stakeholder involvement in CLTS implementation can be used to identify several patterns: within and across the seven cases, and within and across the three implementation modalities.

NGO-led modality: Haiti and Niger

As the newest of the seven cases, the CLTS programs in Haiti and Niger were classified as largely led by the INGO itself, with minimal involvement of other actors.

Pre-triggering
























In cases in this modality, the INGO financed all CLTS activities in its working areas, including training, triggering events, follow-up visits, workshops, communication materials, and staff salaries. Training of facilitators was also the primary responsibility of the INGO, although in Niger, where the national Operational Strategy called for all commune and department technical services officers to be trained in CLTS, there were signs of increasing government ownership compared to Haiti.






Table 10. Primary and secondary roles of actors in the pre-triggering stage of Community-led Total Sanitation

Modality:	NGO-led			Mixed leadership			Government-led	
Case:	Haiti	Niger	Lao PDR	Cambodia	Uganda	Indonesia	Nepal	
Financing				 	 	 	 	
Training			 	 	 	 	 	
Community selection		 	 	 	 	 	 	
	Implementing NGO	National government		Local government	Local NGO	Community-level volunteer		

Note: Larger icons indicate the primary leadership role of that actor. Smaller icons indicate a supporting role.

Table 11. Primary and secondary roles of actors in the triggering stage of Community-led Total Sanitation

Modality:	NGO-led		Mixed leadership			Government-led	
Case:	Haiti	Niger	Lao PDR	Cambodia	Uganda	Indonesia	Nepal
Facilitation of triggering meetings	 	 	  	  	 	 	  
Oversight only	---	 	---				

 Implementing NGO
  National government
  Local government
  Local NGO
  Community-level volunteer

88 **Note:** Larger icons indicate the primary leadership role of that actor. Smaller icons indicate a supporting role.

Actors providing oversight were not necessarily present at triggering events.

Table 12. Primary and secondary roles of actors in the post-triggering stage of Community-led Total Sanitation

Modality:	NGO-led		Mixed leadership			Government-led	
Case:	Haiti	Niger	Lao PDR	Cambodia	Uganda	Indonesia	Nepal
Follow-up visits		 	 	 	 	 	
Routine monitoring							
Technical support		 	 	 	 	 	
ODF verification		 	 	 	 	 	

Implementing NGO
 National government
 Local government
 Local NGO
 Community-level volunteer

Note: Larger icons indicate the primary leadership role of that actor. Smaller icons indicate a supporting role.

Communities were selected for triggering in an unsystematic fashion by the INGO in Haiti. Interviews conducted soon after a triggering event also indicated that participants may have been triggered from multiple localities attached to a school, and may not necessarily have belonged to the same “community.” Given the challenges they faced in their CLTS projects, it is possible that they triggered large groups of households that may not have felt strong social cohesion.

In Niger, on the other hand, considerable time was spent in selecting communities that were likely to be more receptive to the messages of triggering events. Communities were selected jointly by the INGO and district government. Those communities that were not interested were not triggered at first, but several respondents noted that these communities often came back to the INGO for assistance after seeing progress in neighboring triggered communities. One INGO staff member said that starting with easier villages allowed them to gain experience in the CLTS approach before tackling more challenging villages.

In both the NGO-led cases, community leader involvement in pre-triggering was minimal. In Haiti, as part of other hygiene promotion work, children, youth, mother, and father hygiene clubs were formed; members were trained on hygiene and sanitation messages prior to triggering communities with CLTS. These clubs had the potential to address some issues of social cohesion by creating bonds around WaSH activities, but the actual nature of their participation in CLTS was not apparent through interviews and community visits.

Triggering

In Haiti, triggering teams typically consisted of two to three facilitators and a hygiene promotion officer, all INGO staff. In Niger, responsibility for triggering was sub-contracted to local NGOs trained in the approach by the INGO. Each triggering team had a lead facilitator and a co-facilitator, accompanied by people responsible for note-taking and crowd control.

Community leaders did not appear to participate in conducting the triggering event in either case in this modality.

Interviews and observations of triggering events suggested that, in both cases, triggering was conducted in a participatory manner by skilled facilitators. In Niger, community leaders recalled the CLTS approach as empowering. For example, when asked about the support they received from facilitators, one natural leader noted: *“They brought us support in the sense that [they explained that] we should work for our own benefit.”* Another natural leader from a different village said, *“People understood that if you build a latrine, you are building it for yourself, you are not building it for anyone else.”*

A two-hour triggering event observed in Haiti also provided evidence that triggering events were facilitated in a highly participatory manner. When a cup with feces was placed in the middle of the meeting room to elicit disgust, several participants left the room, remarking that it was *“disrespectful.”* However, they later returned to the meeting room, without prompting from facilitators, and participated for the remainder of the triggering. The event concluded with identifying those who were now willing to build latrines, as well as the selection of eight CLTS committee members who volunteered themselves or were encouraged by the community.

In both Haiti and Niger, triggering had been adapted in similar ways. First, although CLTS guidelines do not emphasize the health implications of sanitation, facilitators incorporated this into triggering. Community-level interviews in both cases indicated poor baseline knowledge of the harms of open defecation, particularly in Niger. One natural leader from an ODF village observed that, *“Even if we were aware that [open defecation] was not good, it was with the arrival of Plan that we have seen the real dangers. [Initially] we felt that if you defecate in the open air, maybe you would be ashamed that someone will see you, [...] but when Plan came, we understood that the danger was more than shame but regarding your own health.”* In both countries, many communities had also been affected by a cholera outbreak,

which allowed people to easily form connections between open defecation and diarrheal disease; several respondents said the outbreak motivated them to dig pits and even build latrines, both with and without external support. Therefore, in these contexts, it is possible that the focus on health benefits made it less necessary for more provocative methods.

Second, the use of shame-inducing or disgust-inducing methods were contentious in both cases. In Niger, for example, several facilitators suggested that it was not culturally or religiously appropriate to talk openly about open defecation, so they would not use the crude word for feces until later in the triggering. Facilitators often engaged with religious leaders, and used Islam as a means of promoting the idea of cleanliness. One district government officer described how the meeting would have to begin respectfully: *“First, we tell them, ‘We have come for a project. We want you to forgive us for everything that you will see.’”* In this manner, they could adhere to the basic approach of CLTS and respect community members at the same time.

In Haiti, although the INGO facilitators adhered to CLTS guidelines and succeeded in inciting disgust and even anger in the participants, interviews with national government officials revealed that greater government ownership of the approach would likely result in such tools being modified considerably. As one government official noted: *“Haitians are very proud. If you try to shame them, you might lose all the benefits that you could have gotten with the sensitization. Because not only are they proud, but they don’t like to feel reduced as a person.”* This indicates a basic clash between the fundamentals of CLTS as described in the Handbook (Kar and Chambers 2008) and the government’s view of participatory programs.

Post-triggering

The INGO—or local NGOs in Niger—would periodically follow-up with communities to check on progress. Community leaders were identified and mobilized to conduct monitoring activities. For example, in Haiti, CLTS committees consisting of natural leaders were informally trained to encourage residents to build and use latrines. The INGO also tried to encourage the

Haitian concept of *kombit*, which refers to a community working together towards a common goal. For example, during a visit to one community that had recently been triggered, many people had gathered with shovels to dig a pit for a latrine for an elderly couple. However, a government official noted that for *kombit* to work successfully, it has to come from within: “*You can say to people, ‘You could use kombit to [build] your toilet,’ but you cannot come and say, ‘You are going to make a kombit!’*” In other words, the government official believed that an external organization cannot engender a sense of social cohesion and community engagement through *kombit*; it must exist in a community beforehand to be leveraged effectively.

In Niger, engagement of community leaders and natural leaders in post-triggering was more structured and intentional. Natural leaders and other community leaders all mentioned that they had been trained by the INGO after triggering; they were taught “how to approach the community,” about the importance of latrines and environmental sanitation, and how to monitor progress. Exchange visits were also organized between communities to share progress and lessons learned. These visits were described as a powerful motivational tool for communities. One religious leader observed that the meetings created a sense of competition: “*When we came back to our village, we would say, ‘Be careful, the next village has gone ahead of us so we should make a greater effort, so that that village does not pass us.’*”

For communities to be able to act on the CLTS message after triggering, the INGO in both cases attempted to provide technical support. In Haiti, INGOs including Plan had fostered a strong preference for cement latrines through a long history of subsidy projects. One natural leader noted, “*People nowadays do not build latrines with wood anymore.*” However, the weak supply chain in rural Haiti meant that access to hardware was limited and expensive unless brought to communities by INGOs. As a response, the INGO in Haiti subsidized material to communities after triggering to build latrine platforms and seats, but many households then did not build a superstructure and the latrines remained unused.

In Niger, the INGO trained masons to build latrines using locally available materials. However, as in Haiti, a natural leader in Niger revealed that the wood-lined pits that masons were taught to build were not in high demand because they were not of the same quality as the cement latrines that had previously been subsidized. One community leader said, *“The latrines that we build ourselves [...] are not as good, beautiful or resistant as the ones that would be built by people who come and build it for us,”* revealing demand for higher quality latrines.

Regarding the ODF verification process, monitoring mechanisms and definitions were found to be vague in the Haitian case. One INGO staff member defined ODF in the following manner: *“[It is the difference] in the life of the community. Not only can you see it but you can feel it in the communities’ atmosphere that they are ready to take themselves in charge. So you can certify this community because the risk is very low that they would go back to open air defecation...What’s important to me is what they have learned, the knowledge they have accumulated, to take themselves in charge. It’s just not a matter of number of latrines, it’s a dynamic aspect. If you want zero [open defecation], it’s not going to happen. It’s the attitude that must be certified.”*

In Niger, where the district government was put in charge of ODF certification by the INGO, the definitions were just as vague as in Haiti. One district government officer described the process of certification in the following manner: *“We do not have in our criteria a specific number of latrines or a percentage. When we go to a village or a household that does not have latrines, we ask them, ‘Where do you defecate?’ and they would tell us, ‘We defecate at this place [household].’ If there are three households in between [your household and] the household where you go to defecate, we understand that it is not possible. You are probably still defecating outside.”* In this manner, the government officer would attempt to ascertain in a general sense whether any household members were practicing open defecation in a community,

as opposed to systematically surveying the percentage of households owning and using their own latrines in a community.

Summary

Cases classified as NGO-led were characterized by small-scale implementation and modest outcomes (see Table 8). INGOs relied exclusively on donor, project-based funding and were therefore constrained by short implementation timelines. Both cases had high quality triggering and adapted the approach when needed based on the local context. While the INGO in Niger selected communities carefully, communities were poorly defined and identified for triggering in Haiti.

The INGO was more effective in Niger than in Haiti at engaging communities through training natural leaders and organizing exchange visits between community leaders. In both cases, the INGO struggled to define its role in technical support to effectively help communities act on the CLTS message; this was particularly challenging given community preference for better latrines in settings with poor access to affordable materials. There is clear potential for more structured technical support in the post-triggering stage. Finally, in both cases, “ODF” was the main measure of success but was defined vaguely, as were monitoring and verification structures.

The small scale of activities in the NGO-led modality allows the opportunity for course correction and room for reflection. However, the cases from Niger and Haiti suggest that basic community characteristics and priorities must be present for the intervention to be appropriate, and more structured post-triggering activities need to be designed for greater probability of success.

Mixed leadership modality: Lao PDR, Cambodia, and Uganda

Pre-triggering

Cases of mixed leadership had different financing approaches. In Lao PDR, the INGO was financially responsible for all activities in its program areas. In Cambodia, there was some government contribution through nationwide training events. In Uganda, financial responsibility for CLTS was shared between the INGO, which funded training, triggering events, and monitoring visits, and the national government, which allocated funds to the district government for salaries, travel, and *per-diem* allowances.

In Lao PDR and Uganda, the INGO organized CLTS training events, whereas in Cambodia, the national government organized training for provincial and district facilitators on CLTS, who would then train district and commune officials. All three countries aimed to have “master trainers” to decentralize training through a cascading approach; this was a challenge in Lao PDR, where there were only four CLTS “master trainers” in the country for all CLTS training activities.

A unique adaptation amongst the seven cases was of systematic and routine baseline data collection by the INGO in Lao PDR; interviews revealed that the term pre-triggering was synonymous with the term “survey.” Monitoring reports showed that district government officers gathered census data on baseline latrine coverage as well as indicators relating to handwashing, household water treatment and storage, and environmental sanitation. In this manner, the INGO could measure changes in the community following triggering and potentially identify areas for improvement.

However, baseline data were not used to select communities in Lao PDR, as the INGO was obliged to trigger communities that were in the district government’s list of target communities for development. In Uganda and Cambodia, planning meetings between the INGO

and district government were held to select communities and finalize work plans, but here too, selection criteria for communities appeared to be overridden by the district government's desire for scale; all villages in selected districts were typically triggered. It is possible that communities that were triggered were not always appropriate candidates for CLTS, either due to community priorities, a history of latrine subsidies, income levels of residents, or other barriers.

Community leader engagement in the pre-triggering stage was minimal. In Cambodia, some provincial government officers reported selecting community leaders to assist with triggering activities, but their involvement was not apparent in the triggering event observed in this study. Uganda had the strongest community leader involvement, through Village Health Teams (VHTs). These community volunteers were enlisted as part of the national health strategy to promote health and wellbeing, and were identified by the INGO and local government in the pre-triggering stage.

Triggering

Government participation in triggering was more prevalent in the mixed leadership cases. In Uganda, the local government worked closely with the INGO and VHTs to trigger communities in a participatory manner. Neither local government staff nor VHTs described CLTS as an added burden, as WaSH was already part of their portfolio. Facilitators here often described “*guiding*” communities towards behavior change. One VHT explained, “*Our approach was very soft. We used soft words. We did not go harassing them, so everybody accepted to come.*”

In contrast, in Cambodia and Lao PDR, local government officers were tasked with triggering communities but did not always have the skills necessary to conduct the events in a participatory manner to generate community analysis of the sanitation situation. In Lao PDR, the INGO formed district WaSH teams (DWTs) comprising district government officers, and jointly conducted triggering events with them. In Cambodia, the provincial government had

been trained by master trainers, but as with Lao PDR, these officers were selected due to their position rather than their ability to skillfully conduct participatory exercises. Observation of a triggering event in Cambodia and interviews from both Cambodia and Lao PDR revealed that facilitators were viewed primarily as educators or trainers. A CLTS master trainer in Lao PDR explained why this perception and behavior is likely to exist: *“Most of the facilitators from the government are used to reading announcements or orders. When they would go to the communities, they would say, ‘Build the latrine! This is the order from the governor. This village has to build.’ They would just say that, give the agreement from the governor, and ask them to read it. [...] Because they are used to this, sometimes even after the training, they still [do it this way]. So that’s why I say, we train many [people], but only a few are good facilitators.”*

Interviews with community leaders in Cambodia supported this observation, as four of five natural leaders who were interviewed described triggering as educational, saying facilitators were there to *“teach”* and *“explain.”* One natural leader recalled CLTS as the following experience: *“I remember the first time they came, they only told us to wash our hands properly and to use latrines. And then the next month they came for the second time and asked us if we have practiced all the sanitation activities that they told us the first time.”* This suggests that the most memorable aspect of CLTS in this natural leader’s recollection was WASH-related education rather than participatory techniques to elicit community behavior change.

However, this tendency to educate communities was not only driven by local government. Community leaders also wanted the local government and INGO to play a strong role as hygiene educator, possibly reflective of a cultural deference to authority or political history in both countries. A village chief in Lao PDR wanted the INGO and DWTs to *“go around the village and go to each household and point out the things that are not good hygiene practice [...] and make them feel ashamed in front of the others. Then compare that with the*

other people that already have good practices. It might help a lot.” In Cambodia, a village chief explained, *“I prefer [provincial government facilitators] to come and raise awareness about sanitation in this village because when the villagers see someone in a high position come to their village, they feel like they want to join, they want to participate in the meeting and listen to what they’re being told.”* These community leaders depended on the INGO and local government to continually reinforce hygiene messages in both Cambodia and Lao PDR. However, CLTS implementers expect community-driven change, which can be a challenge in such contexts where deference to authority may be cultural and political.

Another adaptation in both Lao and Cambodia was deemphasizing shame or disgust-inducing triggering techniques. An INGO staff member in Lao PDR noted that *“from the beginning, [CLTS] was adapted to put less stress on shame because of cultural issues.”* However, unlike in Niger, interviews and observations in Cambodia and Lao PDR suggested that these “cultural issues” may have been more of a reflection of facilitators’ logistical constraints or discomfort with conducting the steps as intended. For example, in Lao PDR, the “walk of shame,” arguably a key step in CLTS, was sometimes skipped because of logistical reasons rather than its shock value. DWT members recalled: *“In some villages, if we go along together [on the walk of shame], they just leave and we cannot gather them again.”* They also felt that if they had a larger triggering team, they could better “control” the group during this activity. In Cambodia, an INGO staff member explained that community members reacted aggressively to traditional triggering techniques:

Normally the work you see in CLTS, they use [...] impolite words like ‘shit.’ [...] But sometimes they’re very aggressive in the community [...] when we use that word in an impolite way. They say, ‘Why do you say like that? I’m not eating shit.’ So we [tell our facilitators], ‘Okay. Don’t use it first. Let people say it by themselves first.’ When people start saying it, we can use it. That’s okay.

While implementers considered some triggering techniques to be too aggressive, they were nevertheless comfortable with involving children from the community in triggering events

to “trigger” adults. In an observation of a triggering event in Cambodia, children marched to the adult meeting with banners, chanting through loudspeakers that they wanted latrines. The parent of each child was then asked to step forward as the child held a microphone, bowed down, and requested their parents to build them a latrine. A local NGO implementer cited this step as the most effective way to get adults to volunteer to build latrines, which my observation supported, as the number of volunteers increased rapidly following the children’s requests. What is unclear is whether this approach leads to actual behavior change in the adults and community wide changes in social norms.

Post-triggering

In the mixed leadership modality, post-triggering activities were primarily the responsibility of local government. The INGO now played a role of oversight. In all three cases, implementers described continuing follow-up activities until ODF status was achieved or project funding expired.

In Lao PDR, district government officers described funding for follow-up activities as a substantive barrier, and thus, devised their own system of prioritizing communities. Most implementers said they prioritized communities showing more promise towards achieving ODF status; according to one respondent, communities that were not receptive after the first follow-up visit were not likely to change anyway.

Of the three mixed leadership cases, community-leader engagement in post-triggering activities was strongest in Uganda. VHTs and natural leaders were responsible for collecting data on latrine construction status on a weekly basis after triggering, and sending reports to the district government. VHTs relied on natural leaders to actively persuade members of their community to stop open defecation and build latrines. Interviews indicated that the relationship between VHTs and natural leaders was strong, and that they recognized and valued each other’s contributions toward ODF progress.

Community engagement in Lao PDR was not as strong as in Uganda, but implementers did attempt to form CLTS committees in each community. They trained existing community leaders on hygiene, latrine construction, water protection, and environmental management, and it was up to this committee to set rules and deadlines. One DWT member explained the formal nature of this process:

When we go to the community, we have a form for them to fill up [detailing their roles]. Then within one month, they have to lead that activity based on a list of tasks to do in the paper. In the paper, it identifies what is their exact role. Every activity that is under their role and responsibility has to get their approval.

CLTS Committee rules were approved and signed by the community chief and by the district governor. In this manner, “*CLTS kind of becomes enshrined into the rules that the villagers have come up with,*” according to one INGO staff member.

In Cambodia, community engagement was less formal, with natural leaders and other community leaders gathering and reporting data on latrine construction status to village chiefs, who in turn reported these data to the local government.

As with cases in the NGO-led modality, cases of mixed leadership also shared the challenge of poor access to supply of latrine hardware. A major role of the INGO and local government was to provide technical support to communities on latrine construction options. In Lao PDR and Cambodia, a history of latrine subsidy projects by different organizations had engendered a strong preference for pour-flush latrines. This meant that CLTS facilitators had to adjust to the communities’ preference for more expensive latrines. In Lao PDR, INGO and DWT members in one district offered to transport materials for communities if they were willing to pay them in advance for the transportation costs. In Cambodia and Uganda, the INGO and local government trained masons and piloted sanitation marketing projects as a way of providing access to higher quality latrines.

In all three cases, the local government was tasked with verifying ODF status. In Cambodia, the process was described as “informal” because national guidelines did not specify an ODF definition or verification process. This “informal” system might explain why communities with 85% latrine coverage and no data on shared latrines were declared ODF, whereas other communities with 89% latrine coverage were not yet ODF. In Lao PDR, the process was more formal, where the DWT would invite other district government staff to verify the status, and the district governor officially declared the community as ODF. The INGO here had a strong monitoring system, from baseline surveys to monthly and quarterly monitoring of progress in communities. They measured ODF by first assessing 100% access to latrines, and then by 80% fulfillment of other WaSH indicators, including self-reports of latrine use and handwashing, safe water practices, and the presence of a CLTS Committee. At the time of this study, there was no standardized definition or verification criteria for ODF in Lao PDR, nor was there such a definition in Cambodia. In contrast, in Uganda there were national definitions and verification criteria, but they were not consistent across different national documents, creating the potential for confusion at the local level.

Summary

The mixed leadership modality was characterized by greater partnership and participation of local government as well as increasing scale of activities. Local government was responsible for triggering and post-triggering activities in all three cases. In Uganda, community leader participation was much stronger in triggering and post-triggering through VHT and natural leader participation compared to Lao PDR and Cambodia, where there appeared to be greater deference to authority.

CLTS is based on the premise of community-driven change, but this was challenging in a context where community leaders depended on the INGO and DWTs to continually reinforce hygiene messages. Government facilitators were also less participatory in their approach than in

Uganda, and deemphasized shaming and disgust-inducing triggering steps. Existing socio-political norms will affect the style and manner of government-led facilitation of CLTS; if the aim is to transfer responsibility for CLTS from the INGO to the government, it is likely that facilitation will become less participatory than anticipated in these contexts.

In all three cases, greater government involvement correlated with community selection criteria becoming less relevant, because the focus was now on increasing the scale at the district level. This was a particular challenge in Lao PDR where, combined with challenges relating to turnover and transfers in district government departments, implementers had to prioritize follow-up visits to communities and preferred to visit those that showed more promise. This attempt to troubleshoot challenges in CLTS implementation at the post-triggering stage rather than the pre-triggering stage is inefficient.

As in the NGO-led modality, mixed leadership cases had issues relating to latrine quality and access to durable hardware. There was more intentional provision of technical support, particularly in Cambodia and Uganda, and interviews revealed a high demand for more training and sanitation marketing programs. Monitoring efforts were more codified in this modality as well, but definitions of success and types of indicators measured still varied considerably.

Government-led modality: Indonesia and Nepal

Pre-triggering

In Nepal and Indonesia, the government had a dedicated budget and financing mechanisms for CLTS activities. Decentralization also resulted in local government having decision-making authority in the disbursement of sanitation funds. The local government assigned program areas for INGO implementation to ensure that there was no overlap in approaches between sub-district units.

Community leaders were recruited in both the Nepal and Indonesia cases in the pre-triggering stage to help trigger communities. In Indonesia, they were known as “village facilitators,” and in Nepal they were called “community triggerers.” Although they were volunteers, they reported receiving rewards or *per diem* allowances in both settings. The national CLTS strategy in Indonesia aimed to have village facilitators lead triggering activities, with support from sub-district sanitarians. At the time of this study, they had yet to take a leadership role, and were instead assisting local government in triggering. In Nepal, the community triggerers were explicitly responsible to assist local NGO triggerers with community mobilization and monitoring efforts after triggering. These community leaders were trained in CLTS in the pre-triggering stage using a cascading training approach.

Triggering

Interviews in Indonesia suggested that, while facilitators used typical triggering tools, there was also a widespread tendency to want to educate community members, as in Cambodia and Lao PDR. For example, one village facilitator described triggering as follows: *“At first we explained about the benefits of having the latrine, and the risks and the side effects of doing open defecation. Because if we don’t use the latrine, we will have poor health. And also it’s not really good for the environment.”* There was no indication from interviews with community leaders that people were unaware of the health effects of open defecation. Facilitators commonly recalled involving religious leaders and using religious justification for ending open defecation. One sanitarian felt that it was best to use a few tools rather than all of them: *“Rather than shooting so many bullets, we effectively just used one [religion].”*

In Nepal, triggerers reported using a combination of shaming and pride-inducing techniques; this was corroborated by observations of two triggering events. Here, rather than viewing triggering as a singular event, the government aimed to spread sanitation messages throughout the district through a combination of triggering events, media campaigns, and

frequent reminders. Community triggerers were responsible for door-to-door campaigning to “trigger” behavior change in people who may not have attended a triggering event. Furthermore, government officials often spoke of “sector triggering” or district sanitation conferences that involved convincing government, media, political parties, and social service organizations on the importance of achieving ODF status in their districts. In this manner, those in influential positions in the district were triggered by the government, while the INGO and their local NGO partners prioritized triggering communities.

Despite these adaptations, some local NGO facilitators in Nepal felt that the INGO did not provide them with sufficient funding to innovate in communities where CLTS was not effective. One facilitator was candid about the challenge of implementing CLTS in the Terai (plains) region of Nepal:

Those that are pretending to sleep, no matter how hard we try to wake them up, they will never wake up. So no matter how much PRA [participatory rural appraisal, or triggering] we do, how much training we give them, we can't wake them up. So we need a new approach. The CLTS approach is good, it's worked elsewhere, but in our Madhesi [Terai] belt, it has failed. That's my opinion.

These facilitators highlight an important need for identifying alternative approaches where CLTS has not worked, as well as the need to target CLTS to communities where the approach is more likely to be effective.

Post-triggering

As in the mixed leadership modality, follow-up and monitoring activities in the government-led modality were primarily the responsibility of local government and village facilitators or community triggerers. The process in both Indonesia and Nepal was structured, and involved community leaders reporting progress routinely to village and sub-district governments and the INGO. While community triggerers in Nepal were highly motivated, several village facilitators interviewed in Indonesia did not seem to have a sense of ownership

for the approach. One facilitator directly remarked, *“Give us some money so it will make us more motivated.”*

In Nepal, local NGOs in all three districts conducted small-scale, ad-hoc training on how to build toilets or how to pool funds to hire masons, but only if requested by village government. One facilitator wanted to provide more routine practical training to communities after triggering, but felt constrained to implement these activities because it was not in their work plan.

In Indonesia, the local government provided technical support for latrine breakdowns, but they did not have the capacity to routinely follow-up in all villages. The INGO instead developed a sanitation marketing project to follow CLTS, and helped create an association of entrepreneurs. This project is likely to have had an impact on latrine quality in the cases studied, since water-sealed toilets with septic tanks—which require technological expertise and access to sanitation hardware—were the most common type of latrine reported. As in Nepal, one Indonesian INGO staff member remarked that they wanted to include technical training latrine construction as part of the triggering itself, but were unable to do so because of national CLTS guidelines. This person thought it would be more effective to introduce latrine options to people during triggering, especially the cheaper options, rather than wait for them to request technical support after triggering.

In both government-led cases, there were several examples of village government subsidizing latrine hardware for residents or devising local financing mechanisms. While some CLTS practitioners would call these subsidies, an INGO staff member remarked that this approach does not conflict with CLTS because the village government and community leaders were deciding how to allocate their resources.

Monitoring mechanisms for CLTS were also driven by the government. In Indonesia, the national ODF definition required universal access to basic sanitation, but did not specify latrine

type or ownership. The Ministry of Health established an ODF verification system in 2012, which requires the head of the village to formally request the district government and the sub-district health center to visit the village for ODF verification. Verification teams at the village, sub-district and district levels are required to visit all households to verify ODF status.

In Nepal, the national ODF definition requires all toilets to be water-sealed and permanent up to the base level. Typically, CLTS facilitators encourage the end of open defecation without preference for type of toilet, but simple pit latrines are not counted by the government towards ODF status. Some facilitators feared that this stringent definition was delaying the ODF verification process and weakening momentum. For example, one VDC that was visited achieved 100% toilet coverage in May 2013, but not all toilets were water-sealed; as of July 2014, this VDC had not been declared as ODF by the district. When interviewed, the VDC Secretary claimed that this national ODF definition was immoral:

So as per directives of government and as per what we perceive, it's different. [...] For example, if somebody has a water-sealed toilet, the person must be of good means. But most of the people in this village are daily wage workers. So it's immoral for us to demand water-sealed toilets from those communities.

Furthermore, ODF targets in Nepal were highly ambitious given the trendline for sanitation progress in the country. Some INGO staff worried that local government might feel pressured to accelerate the ODF process through enforcement mechanisms and expanded hardware subsidies to meet deadlines. For example, one national government official remarked:

We have very little time because by 2017, we have to make the whole country ODF [...] This is why we don't care about what is CLTS and what is SLTS (School-led Total Sanitation) and we don't distinguish. [...] We are not waiting for 2017. We are declaring ODF by 2016, and one year will be required for any necessary modifications.

Potentially because of this line of thinking, in both Indonesia and Nepal, examples were identified of government sanctions for noncompliance. Such approaches were described as threats rather than enforceable actions, but could preclude true behavior change in some communities.

Summary

In the government-led modality, CLTS was implemented at a national scale; community selection criteria were no longer relevant. The role of the INGO was one of capacity building and technical support. Triggering quality varied, with some indication of educational approaches in Indonesia, and an expanded definition of triggering and community mobilization in Nepal. In both cases, implementers wanted to provide more structured technical support, but were hampered by the perception that CLTS must be hands-off in the post-triggering stage.

Community leader engagement varied to some extent in this modality, with less of a sense of ownership in Indonesia compared to Nepal. Monitoring and ODF verification mechanisms were largely determined by the government. In Nepal, local governments were rushing to meet ambitious targets, resulting in a push for village government-funded latrine subsidies as well as threatening communities with penalties for non-compliance.

Discussion

In this paper, I described variations in the CLTS implementation process in seven countries through a qualitative case-study analysis approach. As stated at the outset, I defined CLTS as an externally-initiated, “community-driven” intervention rather than a “community-led” intervention, which raised the question of who leads implementation in different settings and contexts. I identified three broad implementation leadership modalities that follow a pattern of increasing complexity and scale: NGO-led CLTS, mixed leadership of CLTS, and government-led CLTS.

A path of increasing complexity and scale

The NGO-led modality—illustrated through cases from Niger and Haiti—functions at a small scale. Cases in this modality are more likely to have space for course correction and reflection. The cases from Haiti and Niger also had strong, participatory facilitation of CLTS.

However, these cases also struggled with tight project timelines and funding constraints, which does not allow for true, long-term civic engagement to be fostered (Mansuri and Rao 2013).

While the two NGO-led cases in this study happened to be implemented in countries that rank towards the bottom of most development indicators, it does not preclude them from moving into a different modality. Greater government involvement in CLTS and sanitation in both Haiti and Niger indicate the potential for the INGO's implementation efforts to take the form of mixed leadership in the next several years.

The mixed leadership modality—illustrated in this study by cases from Lao PDR, Cambodia, and Uganda—reveals a middle ground in the spectrum of complexity and scale. While greater government participation allows more communities to be triggered, the targeting and contextualization of CLTS may reduce in the attempt to “scale-up” the approach. Chambers emphasizes that good facilitators are key to implementation success (Chambers 2009), but in Lao PDR and Cambodia, participatory activities appeared to be hampered due to poor government facilitation of CLTS. The cases in this modality also reveal the importance of understanding local context and existing socio-political norms when scaling up a community-driven intervention.

The government-led modality is an illustration of the end goal of many interventions: universal application at “scale.” The role of INGO in this modality is redefined from direct implementer to capacity-builder. The case from Nepal shows that government leadership can enable a campaign mode or movement for sanitation. The case from Indonesia shows that greater structure in monitoring and evaluation can occur with increased government leadership. However, key disadvantages of this modality are that the approach is viewed as universally applicable, and does not allow for innovation outside of CLTS. Government ownership of a community-driven approach also increases the risk of losing the fundamental, bottom-up nature of CLTS. With scale comes the desire to standardize definitions, structures, and processes and to

establish ambitious targets. A challenge is to make sure that implementation can remain localized and bottom-up, and can encourage context-responsive adaptations.

Value of backward mapping

The backward mapping approach revealed that most adaptations are determined by street-level bureaucrats, and are not always heard by program managers at higher levels. A linear, top-down analysis of CLTS would have viewed changes to the policy or program design by field implementers as errors to be corrected. However, backward mapping revealed three types of field-level adaptations:

- First, some adaptations, such as the emphasis on health education in Niger or the hierarchical approach in Lao PDR and Cambodia, were in response to community characteristics or preferences, and are likely to be most appropriate in that context.
- Second, some adaptations reflected ways in which street-level bureaucrats used discretion to troubleshoot logistical, administrative, or capacity constraints, such as skipping some triggering tools or prioritizing follow-up in communities that showed more promise.
- Third, some changes labeled as adaptations perhaps reflected facilitators' lack of buy-in for the approach, such as reducing the emphasis on shame or disgust.

The backward mapping analysis suggests that program managers at the district or national level need to be attuned to these field-level modifications of CLTS and listen to street-level bureaucrats to a) encourage useful adaptations; b) identify and address capacity issues where present; and c) course-correct where implementation is at odds with program design and evidence on effectiveness.

Conclusion

The analysis confirms that CLTS implementation varies considerably across different settings and contexts, even in the activities of one international organization. Practitioners recognize the adaptability of the approach (Kar and Chambers 2008; Chambers 2009), but to truly capitalize on the potential of CLTS to improve sanitation outcomes, I propose that multilateral donors, national governments, and program managers will need to be more flexible on five counts.

First, they must recognize that no single intervention, including CLTS, is likely to be a silver bullet that works universally. CLTS is one of several powerful approaches for sanitation, and broadly, for community development. Where one decides to implement CLTS depends on the available resources, local context, community priorities, and community willingness to participate. Governments and INGOs faced with “scale-up” need to particularly consider the advantages and disadvantages in their own contexts before expanding the scope of CLTS. This recognition can lead to better targeting of CLTS, an attempt to combine it with other approaches such as market-development, or consideration of other approaches altogether.

Second, multilateral donors, governments, and program managers must recognize that attempts to “harmonize” and “standardize” CLTS (e.g. Galbraith 2009; Musyoki 2010; Ryan 2014) inherently contradict the nature of a dynamic community-driven intervention. This can create confusion and conflict between front-line implementers—who are directly responsible for effective implementation—and higher up program managers or policymakers—who may be attempting to standardize and codify a set of guidelines. As shown through the analysis of implementation modalities, CLTS interventions require flexibility in implementation arrangements, particularly as they increase in complexity and scale.

Third, flexibility is also needed in project timelines and financing. Complex, participatory interventions that target behavior change and social norms cannot be expected to follow a simple trajectory over a short timeline. Mansuri and Rao note:

Effective civic engagement does not develop within a predictable trajectory. Instead, it is likely to proceed along a ‘punctuated equilibrium,’ in which long periods of seeming quietude are followed by intense, and often turbulent, change. Donor-driven participatory projects often assume a far less contentious trajectory. (Mansuri and Rao 2013, p.12)

To truly allow an approach such as CLTS to lead to sustainable behavior change, a paradigm shift is required in the mindset of those in control of project and program funds from short-term, to longer-term, flexible program design.

Fourth, there must be greater flexibility in targeted outcomes. The pre-determined goal of achieving community-wide ODF status elevates the conversation to a binary status (ODF versus not ODF). While ODF may serve as a powerful motivational tool for communities, it can artificially lead to a push for overly ambitious target-setting at the expense of actual behavior change, particularly when scaling up CLTS to the national level, as evidenced in the case from Nepal. ODF status is also compared across projects that use different implementation arrangements, different definitions, and occur in varying socio-cultural contexts. For example, an educational and instructional approach to triggering communities—as observed in cases from Cambodia and Lao PDR—has the potential to produce vastly different outcomes from a highly participatory triggering approach seen in cases in Uganda and Haiti. Instead, in the spirit of a community-driven intervention, donors and program managers should consider giving community members the flexibility and agency to determine their desired end goals.

Finally, the analysis reveals the importance of street-level bureaucrats in shaping CLTS implementation and outcomes. A large-scale review of participatory development projects reported that success was driven mostly by the influence of these “external agents,” who “have the most proximate impact on outcomes, because they are the people who deal with

communities on a day-to-day basis” (Mansuri and Rao 2013, p.97). They have an important role to play in understanding community needs and priorities and communicating this upwards throughout the course of implementation. Flexibility on the part of donors, governments, and program managers extends to the need to listen and learn from these front-line implementers.

It has been suggested that participatory initiatives are “still driven more by ideology and optimism than by systematic analysis, either theoretical or empirical” (Mansuri and Rao 2013, p.3). To address this gap, this paper presents a systematic exploration variations in CLTS and relevant implications to encourage more evidence-based discussions to improve implementation of rural sanitation behavior change programs in different contexts and settings

CHAPTER 4: CHARACTERIZING THE IMPLEMENTATION CONTEXT AND PROCESS OF COMMUNITY-LED TOTAL SANITATION USING THE CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH

Background

Community-led total sanitation (CLTS) is a popular rural sanitation intervention that attempts to trigger collective behavior change at the community level to end open defecation. It is widely implemented in lower-income countries, where open defecation continues to be a substantive environmental health and developmental challenge (Chapter 2). The approach is predominantly implemented by international non-governmental organizations (INGOs), local NGOs, and ministries of health or water and sanitation.

In Chapter 2, the systematic review of CLTS documented 43 community and implementation-related factors from the literature that were said to affect the CLTS process and outcomes. This literature largely consisted of practitioner accounts of lessons learned from implementation in different settings. However, there was no systematic analysis of the components of implementation, specifically the context and process, to help determine whether these lessons were relevant and could be transferred to other settings. This is also an underexplored area of research more broadly in water, sanitation, and hygiene (WaSH). Only a few studies have attempted to make sense of implementation strategies and policy (Allison 2002; Bardosh 2015; Garbarino et al. 2011; Hueso and Bell 2013; Ide 2015; O'Reilly and Louis 2014; Priyono nd).

Implementation research

Implementation research can be defined as “the scientific study of the processes used in the implementation of initiatives as well as the contextual factors that affect these processes” (Peters et al. 2013, p.9). This field of research highlights the importance of understanding context and process in order to improve intervention outcomes (Dyer 1999; Elmore 1979; Nilsen et al. 2013; Walker and Koroloff 2007).

Implementation research is described as an attempt to bridge the gap “between what is known as effective practices (i.e. theory and science) and what is actually done (i.e. policy and practice)” (Fixsen et al. 2005, p.2). In the case of a complex intervention like CLTS, I find that there is also a gap between what is envisioned (policy) and what happens on the ground (practice) (see Chapter 2). This makes it even more important and relevant to unpack implementation from the bottom-up.

Conceptual Framework

Several conceptual frameworks and methods are available to analyze implementation. The Consolidated Framework for Implementation Research (CFIR) is one such framework that attempts to comprehensively pool together constructs identified from a number of implementation theories from different academic disciplines (Damschroder et al. 2009). Thirty-nine common constructs are organized under five domains: outer setting, inner setting, implementation process, intervention characteristics, and individual characteristics. Constructs within these domains are theorized to positively or negatively influence implementation. The CFIR has been used to study interventions in public health, education, behavioral science, and public policy (Center for Clinical Management Research 2016), and can be a valuable diagnostic tool to qualitatively analyze implementation factors and identify areas for improvement (Breimaier et al. 2015). The CFIR can also be used to hypothesize “specific mechanisms of

change, and interactions can be developed and tested empirically” (Damschroder et al. 2009, p.3).

In this paper, I adapted the CFIR to demonstrate the utility of a conceptual framework to characterize the implementation context and process of CLTS, and to identify factors that influence implementation. I apply the framework to seven case studies of CLTS under the three broad implementation modalities identified in Chapter 3: NGO-led CLTS, government-led CLTS, and mixed leadership of CLTS. The aim is to offer a framework that can be used by implementers and researchers alike to diagnose the implementation context and process, identify areas for improvement, and generate testable hypotheses to evaluate and improve implementation effectiveness.

Methods

Case selection

This paper draws on case studies of CLTS implementation by Plan International, hereafter referred to as the INGO, from the following seven countries: Haiti, Niger, Lao PDR, Cambodia, Uganda, Indonesia, and Nepal. A multiple-case study design guided data collection and analysis (Yin 2003). Cases had to be least one year old so that sufficient evidence would be available to conduct the case studies, but no more than seven years old to ensure that recall would not be a constraint. This study was part of a larger four-year, 10-country implementation research project on CLTS.

Data collection

In-depth interviews were conducted in each country with a variety of purposively selected stakeholders including: Plan International staff; other international or national NGOs or donor organizations implementing CLTS; national and local government; local facilitators; and community leaders involved in triggering and follow-up activities (see Table 6 and Table 7

in Chapter 3). CLTS triggering events were observed by the author in Cambodia, Nepal, Haiti, and Uganda. Thirty-four previously triggered communities were also visited, 44% of which had been declared or certified as ODF at the time of the study. Project and policy documents were collected for content analysis as part of the case studies. Additional details on sample recruitment, data collection procedures and the interview process were reported in Chapter 3.

Informed consent

All respondents were provided an information sheet on the study and informed consent process in the appropriate language. Considerable time was spent to verbally explain the study aims and consent procedures; emphasis was placed on the independent nature of the research from the INGO's work, and the benefits and risk of participating in the study. Verbal consent was obtained prior to interviews.

Ethical Review

This study was approved by the Office of Human Research Ethics and Institutional Review Board of UNC (Study ID 13-1540) and the following national entities: Ministry of Rural Development; Royal Government of Cambodia, Centre for Environmental Health and Water Supply (2013); Ministry of Health, Lao PDR (2013); Ministry of Urban Development, Government of Nepal (2013); Ministry of Health, Government of Indonesia (2013); Uganda National Council for Science and Technology (2013); Ministry of Water and Sanitation and Ministry of Public Health, Republic of Niger (2014); Ministry of Public Health and Population, Republic of Haiti (2014).

Coding, framework modification, and analysis

In Chapter 3, I detail the process of inductively coding interview transcripts to produce the seven case reports that form the basis of the analysis in this paper (Venkataramanan 2014a; 2014b; 2015a; 2015b; 2015c; 2015d; 2015e). Each case report had a similar results structure:

policy environment for CLTS; description of CLTS implementation and institutional arrangements; roles of actors at each stage of CLTS (pre-triggering, triggering, post-triggering); and enablers and barriers of CLTS with related implications at each stage of CLTS.

Atlas.ti Version 7.0 was used to manage and code data. The seven case reports were coded deductively using a codebook of the 39 CFIR constructs under five domains. As I coded each case report, I iteratively refined the codebook by merging several constructs that appeared to capture the same idea in the dataset. For example, I merged the construct labeled “leadership engagement,” originally under the Inner Setting domain, with “engaging with external change agents,” under the Implementation Process domain. I also renamed constructs to make them more accessible and relevant to the CLTS context. For example, I renamed “reflecting and evaluating” as “monitoring and evaluation.”

After coding all seven case reports, I generated code reports with relevant quotations from the documents to analyze the role of each construct in that case. I rated each construct as having a positive, negative, mixed, or neutral influence on implementation in that case, as inferred from interviews and observations. Some constructs—namely “evidence strength and quality” and “costs”—were relevant to understanding CLTS implementation but did not appear in my dataset. I retained these constructs in the framework and noted that they were “not described.”

Limitations

Several limitations must be noted. First, the CFIR was also not used explicitly to design data collection instruments and was instead applied to data analysis. Therefore, some constructs such as costs, evidence strength and quality, and some individual characteristics do not have sufficient data to discern patterns; I have nevertheless retained these in the framework to highlight their importance in understanding context and process.

The aim here is to identify patterns and provide actionable output for practitioners. However, condensing data from 185 interview transcripts into a framework such as the CFIR is essentially a reductionist exercise through which much of the richness of qualitative data can be reduced; findings must be viewed with this limitation in mind. The study was also limited in its ability to correlate qualitative findings on the implementation context and process with quantitative outcome data from implementers to comment on determinants of success of CLTS programs, particularly because these monitoring data were not independently verified and were of variable quality.

On generalizability, although there were attempts to triangulate information through interviews with various stakeholders, reviews of documents and monitoring data, observations of triggering events, and community visits, this study is not necessarily representative of the breadth of variations in CLTS implementation that occur in each setting. It is also likely that all the complex institutional arrangements for sanitation in each setting were not thoroughly captured. The perspectives of implementers and community leaders in this study may also not always reflect the opinions and perceptions about CLTS of all community members in triggered communities. There is the possibility of recall bias, particularly at the community level, regarding training and triggering events, because communities that were visited had been triggered anywhere from one day to several years before the visit. It is also possible that some data were lost in translation despite the author's efforts to train interpreters and audit translations at various stages.

An important source of potential bias is that, despite the author selecting the types of respondents for interviews, the INGO arranged interviews and field visits. Therefore, it is possible that some respondents presented their experience as more favorable towards the INGO, while other respondents over-emphasized challenges in their communities in the hope that the researchers or the INGO would provide additional assistance. The author made every effort to

convey to all respondents the independent nature of this research from the INGO before, during, and after interviews. Finally, although rigor in qualitative analysis is strengthened by a team effort (Cho and Trent 2006), this process had to be conducted individually for this study.

Results

The adapted CFIR framework presented in this paper comprises 20 constructs under five domains (Figure 8). Table 13 provides an overview of implementer roles in the seven cases. Table 14 presents the analysis of factors influencing implementation in each of the seven cases. All factors were analyzed from the perspective of those labeled as “implementers” in that setting. For example, in Haiti, Niger, and Lao PDR, national government is considered external to CLTS implementation even though they are involved in sanitation overall, whereas in the other cases, they are considered as implementers given their role in CLTS. As described in Chapter 3, household members within communities are considered the ultimate target of the intervention; their actions are necessary for success, but they are not considered “implementers” when defining CLTS as an externally initiated intervention that aims to induce community participation (see Chapter 3 for a more detailed explanation).

Table 13. Implementing actors in seven case studies

Case	Implementers
Haiti	INGO
Niger	INGO, Local NGO, Local government
Lao PDR	INGO, Local government
Cambodia	INGO, Local NGO, Local government, National government
Uganda	INGO, Local government, National government, Village volunteers
Indonesia	INGO, Local government, National government, Village volunteers
Nepal	INGO, Local NGO, Local government, National government, Village volunteers

Note: Although several types of village actors are involved in the post-triggering stage, village volunteers were considered “implementers” if they conducted activities in the pre-triggering and triggering stages, as they received training and played a direct role in the triggering process.

INGO = International Non-Governmental Organization

NGO = Non-Governmental Organization

Figure 8. Conceptual Framework for Implementation Research, adapted to Community-led Total Sanitation

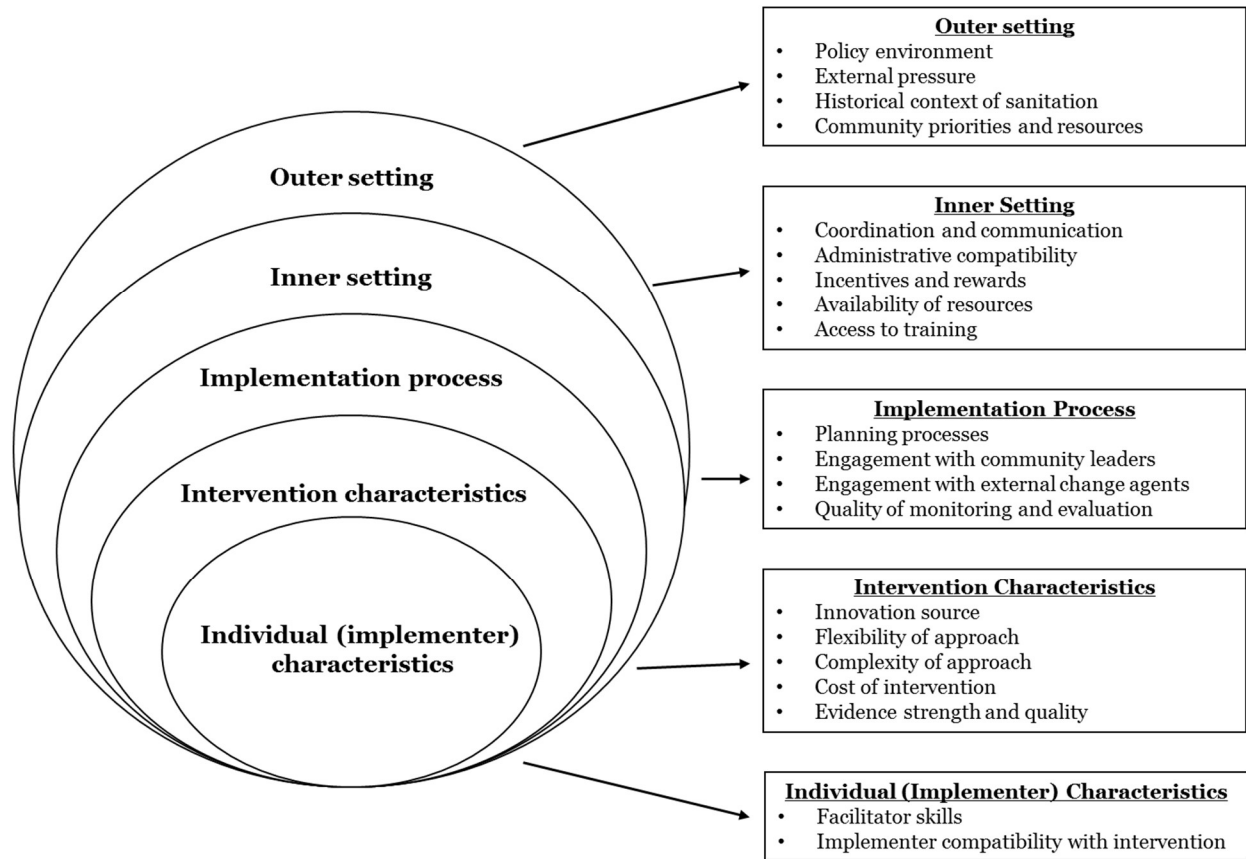


Table 14. Influence of implementation constructs on Community-led Total Sanitation implementation across seven case studies

Implementation modality: CLTS case study location:	NGO-led		Mixed leadership			Government-led	
	Haiti	Niger	Lao	Cambodia	Uganda	Indonesia	Nepal
Domain: Outer setting							
Policy environment	≈	neutral	neutral	neutral	✓	✓	✓
External pressure	X	neutral	neutral	X	✓	X	X
History of sanitation	X	X	X	X	✓	X	X
Community priorities and resources	X	X	X	X	X	X	X
Domain: Inner setting							
Administrative compatibility	neutral	≈	X	≈	✓	✓	✓
Coordination and communication	neutral	✓	X	≈	≈	✓	✓
Availability of resources	X	X	X	X	≈	≈	≈
Access to training	neutral	neutral	X	✓	≈	✓	✓
Incentives and rewards (to implementers)	not described	not described	X	neutral	≈	≈	≈
Domain: Implementation process							
Planning processes	X	≈	≈	≈	✓	✓	✓
Engagement with community leaders	X	✓	≈	neutral	≈	≈	≈
Engagement with external change agents	X	≈	not described	not described	not described	not described	✓
Quality of monitoring and evaluation	X	≈	✓	X	≈	≈	≈

Table 14 (continued)

Implementation modality: CLTS case study location	NGO-led		Mixed leadership			Government-led	
	Haiti	Niger	Lao	Cambodia	Uganda	Indonesia	Nepal
Domain: Intervention characteristics							
Innovation source	neutral	≈	≈	≈	✓	✓	✓
Flexibility of approach	X	✓	≈	≈	neutral	neutral	≈
Complexity of approach	≈	≈	≈	≈	≈	≈	≈
Cost of intervention	not described	not described	not described	not described	not described	not described	not described
Evidence strength and quality	not described	not described	not described	not described	not described	not described	not described
Domain: Individual (implementer) characteristics							
Facilitator skills	✓	✓	X	X	✓	✓	✓
Implementer compatibility with intervention	≈	≈	≈	≈	≈	≈	≈
	✓	Positive influence	X	Negative influence			
	≈	Mixed influence	neutral	Neutral influence			

Note: “Not described” does not necessarily indicate absence of that construct, but rather that information on the construct was not directly elicited in interviews.

Outer setting domain

The outer setting refers to the influence of context on implementation. The constructs I consider here are the policy environment, external pressure, historical context of sanitation, and community priorities and resources.

Policy environment

The policy environment was largely favorable for CLTS in the seven cases, particularly in Uganda, Indonesia, and Nepal, where CLTS was either a distinct component of the national rural sanitation policy or comprised the entire policy. This construct was rated as a neutral influence in Lao, Niger, and Cambodia because although the policies mentioned CLTS as one possible approach, the simultaneous stipulation for latrine subsidies often led to overlap in latrine construction projects and CLTS interventions in the same communities. In Haiti, although the government aimed to enforce a strict no-subsidy policy, they were not convinced about CLTS as an appropriate approach in the country at the time of this study, and therefore it was rated as a mixed influence.

External pressure

This construct is defined as “pressure to implement an intervention, typically because most or other key peer or competing organizations have already implemented” CLTS (Damschroder et al. 2009). In all seven cases, implementers were obliged to implement the intervention based on requirements from either an external donor or the national government. In the NGO-led and mixed leadership cases, external funding for sanitation was still the most prevalent mechanism, and therefore the approach was determined largely by donors. In Haiti, donor requirements did not give the INGO flexibility to define and select communities appropriately. There was also growing pressure from the national government to modify triggering tools for reasons justified by one government official: “*Haitians are very proud. If*

you try to shame them, you might lose all the benefits that you could have gotten with the sensitization. Because not only are they proud, but they don't like to feel reduced as a person."

In the mixed-leadership modality, INGOs in Cambodia and Uganda had to work with local government to facilitate CLTS; while this arrangement enabled activities in Uganda due to engaged government facilitators, it negatively influenced activities in Cambodia, where local government facilitators were not skilled enough to implement a participatory intervention.

In Nepal and Indonesia, pressure on the INGO came entirely from the government, which determined that all organizations had to implement CLTS in a specific manner. In Indonesia, the INGO wanted to be able to provide more structured technical support but felt they could not because of the government guidelines, and in Nepal, ambitious government targets put pressure on local government and therefore made it more challenging for the INGO to influence outcomes in their program areas. One INGO staff member expressed their frustration by asking, *"Should we have a community [based] target or have the community run with our [government] target?"*

Historical context of sanitation

Regarding the history of infrastructure projects that provided latrine subsidies to households in these countries, this construct had a negative influence on CLTS implementation in all cases except in Uganda, which did not have such a history. In Uganda, the historical context was instead one of enforcement through the Public Health Act of 1964. One natural leader recalled that building a latrine *"was an obligation. They would threaten to arrest those who do not have latrines ... They used to send askaris (police). People would feel timid and run away leaving their families."* In contrast, the CLTS approach was much more appealing to rural communities and they were less likely to have expectations of external financial or material support.

In the six other cases, a long history of subsidized latrine construction projects was cited as a considerable barrier to implementation as communities expected external support, and often preferred to wait for free or subsidized latrines from other organizations rather than building poor quality latrines on their own.

Community priorities and resources

This construct measures the extent to which community priorities and needs affect CLTS implementation, and the extent to which enablers and barriers are “accurately known and prioritized by the organization” (Damschroder et al. 2009, p.7). This factor negatively influenced all seven cases because, as CLTS is theoretically a community-driven intervention, the construct necessarily plays a vital role, but it was never adequately used in program design. Some cases attempted to tailor triggering approaches to the community context (e.g. Niger), but the targeting of communities based on their own perceived developmental priorities was absent in all cases. For example, in all communities visited in Niger, people described more urgent priorities of water supply and food over sanitation. One natural leader said: *“If you are not fed properly, you will not be fit enough to properly think about cleanliness or sanitation.”* A district government officer in Niger officer remarked, *“We cannot talk about CLTS without water. You cannot go to ease yourself without water.”* Yet, such needs were not considered as prerequisites for implementing CLTS in any of the seven cases. Unsystematic targeting of communities affected post-triggering activities and probability of success. For example, in Lao PDR, because funding for follow-up activities was limited, facilitators prioritized communities that showed more promise towards achieving ODF status. More systematic targeting in the pre-triggering stage may have increased the likelihood of identifying communities that expressed sanitation as a priority they wanted to address.

Inner setting domain

This domain analyzes the internal context, implementation climate, and readiness for implementation. The constructs included are: compatibility, degree of coordination and communication, availability of resources; access to training; and provisions for incentives and rewards.

Administrative compatibility

This construct refers specifically to how compatible the intervention is—in the manner that implementers expect to implement it—with existing administrative processes in the organizations. In Haiti, this construct was rated as neutral because there was no indication of the INGO's administrative processes having a particularly enabling or constraining influence on CLTS. In Niger, on the other hand, effective implementation relied on the INGO's ability to enable the locally contracted NGO and local government to conduct activities efficiently. Challenges with the INGO's administrative systems resulted in backlogs in financial disbursement, which halted post-triggering activities in several communities, delaying ODF verification enough to potentially demotivate communities.

There was variation in the mixed leadership cases as well. In Cambodia and Lao PDR, although local government was heavily involved in implementation, CLTS did not seem to be highly compatible with their existing arrangements. For example, in Lao PDR, there was no Memorandum of Understanding for CLTS between the INGO and the provincial government, which made it more difficult to gain district government acceptance for CLTS. District facilitators struggled to decide whether to prioritize the INGO's CLTS activities or other government responsibilities, as they did not have a direct mandate to assist with CLTS. In Uganda, the INGO harnessed existing decentralized government entities, including Village Health Teams (VHTs)—community volunteers were enlisted as part of the national health strategy—to implement CLTS.

Coordination and communication

In the NGO-led modality, simpler institutional arrangements meant that coordination was less of a concern. In Haiti, the INGO did not indicate any internal coordination challenges, but this was also not identified as a particularly enabling factor either. In Niger, the INGO aimed to strengthen local government capacity by engaging them from the initial stages of CLTS; despite the INGO's administrative challenges described earlier, interviews with both types of implementers suggested that the partnership was strong, and efforts were underway to form district government officers into a formal committee with set roles and responsibilities.

Coordination was a challenge in the mixed leadership modality. This construct was a negative influence in Lao PDR, where the INGO worked with district government. Local government facilitators struggled to coordinate follow-up activities as a team, and there were coordination issues with respect to overlap of CLTS and subsidy projects overseen by local government in triggered communities. This created confusion in communities about who was providing support and could have led to expectations that the CLTS intervention would support communities with hardware after triggering. In Cambodia, despite a strong working relationship between the INGO and local government through regular planning meetings, the INGO was not aware of adaptations occurring at the field level, suggesting a disconnect between national level program planning and local level implementation of CLTS. Therefore, it is possible that CLTS was sometimes implemented in communities in a manner that did not accurately reflect the national level approach to behavior change. In Uganda, although there was a strong relationship between implementers at the local level (INGO, sub-county government, VHTs, and natural leaders), two national ministries were responsible for sanitation activities, leading to confusion in CLTS implementation.

Both cases in the government-led modality had strong coordination mechanisms at different levels of government. In Indonesia, government departments and NGOs met

frequently through national and district sanitation working groups, which provided an opportunity for joint decision-making and consolidation of resources. In Nepal, district government allocation of village development committees (VDCs) to different NGOs and government departments prevented overlap of different implementation strategies.

Availability of resources

Resources in this construct refer to implementers' capacity to conduct activities with sufficient finances, personnel, and transportation. Uganda and Nepal were the only two cases where funding was not described as a barrier. However, implementers in all cases frequently cited the challenge of sending staff to communities for follow-up visits. For example, in the case in Nepal, local NGO facilitators were each responsible for training and triggering five to seven VDCs, which on average had 1,534 households each. They described such a large working area as beyond the means of one person.

In all cases, but particularly where there were high levels of community engagement (e.g. Niger, Uganda, Indonesia, Nepal), interviews indicated that volunteer retention was also an important challenge. A sub-county health inspector in Uganda noted that “*just a few [VHTs] who are active*” usually follow through on reports, and health assistants often have to follow-up more routinely.

Access to training

Access to training was largely a positive influence in the government-led modality. In Indonesia and Nepal—and to a large extent in Cambodia—the national government had the capacity, in partnership with NGOs, to conduct training nationwide using a pool of master trainers.

There was more variation in the influence of training in the mixed leadership modality. In Lao PDR, implementers noted insufficient capacity to train people on CLTS as there were

only four master trainers in the country at the time of the study. In Uganda, training was largely described as an enabling factor, as the cascading government-led training model resulted in several types of training for local government and village-level actors.

Incentives and rewards to implementers

As this construct was not explored explicitly in the interviews in the context of rewards for implementers, there was less information available to rate its influence. The strongest examples emerged from Uganda, Indonesia, and Nepal where village-level facilitators were identified and trained to help implement CLTS. In all three cases, these volunteers did report receiving some type of *per diem* allowance, or reward for progress towards ODF. However, these efforts were neither systematic nor sufficient. In Uganda, a natural leader suggested that VHTs could be given free concrete latrine slabs as “*recognition for the work they are doing. It would also encourage people to volunteer in the future.*” VHTs here also wanted exchange visits to learn: “*You will find that we don’t experience these exchange visits. Other people come here, keep visiting us, interviewing us, but we have nowhere to go and learn.*”

Implementation process domain

This domain analyzes the overall quality of implementation through the influence of planning processes, stakeholder engagement with community leaders and external change agents, and monitoring and evaluation.

Planning processes

In the government-led modality and in Uganda, this construct was largely a positive influence on implementation; strategic plans enabled mass mobilization towards a clear goal. In Lao PDR and Cambodia, the influence was mixed. While extensive surveys enabled the INGO in Lao PDR to understand communities’ baseline situations, they were unable to use these data to select specific communities as the district government already had a list of targeted

communities for development. In the case in Cambodia, planning meetings were held to select communities, but the process was described as unsystematic and led to all communities within selected districts to be triggered regardless of their appropriateness. In Niger, poor financial planning described earlier led to challenges in the post-triggering stage.

Engagement with community leaders

Engagement with community leaders in planning and implementation was strongest in Nepal and Uganda, and to a lesser extent in Indonesia and Lao PDR. The influence was said to be mixed because, as described earlier in relation to the incentives and rewards construct, greater engagement also raised the challenge of sustaining volunteer commitment. In Haiti, while there was some engagement with community leaders, it was not strong and routine enough to mobilize communities in any noticeable manner. In Niger, as community leaders were only engaged with in the post-triggering stage, formal training of natural leaders and routine exchange visits enabled their participation in community mobilization. No examples of negative influence emerged here.

Engagement with external change agents

External change agents in this paper are defined as government officials not directly involved in CLTS, other organizations, or members of the civil society that may be influential, but are not directly part of the implementation efforts. This construct was described in three of the seven cases, but was not explicitly explored through interviews. In Nepal, the national ODF campaign reached out to all sectors of society including the media, politicians, and civil society organizations, and was therefore a positive influence. In the words of one national government official: *“All who defecate are stakeholders.”*

On the other hand, in Haiti, lack of engagement with stakeholders outside of the INGO's implementation efforts was described as a barrier by some respondents. The INGO did not

appear to engage closely with the national government or local government on their CLTS activities at the time of this study. In Niger, although the INGO's engagement with the media and community radio was described as having a positive influence, national government officials not directly involved in CLTS wanted to see increased participation by the INGO at the national level. For example, some national government officials responsible for sanitation were not even aware of the INGO's current CLTS activities.

Quality of monitoring and evaluation

According to the Handbook on CLTS, the end goal of CLTS is to achieve and sustain ODF status, which is defined as a condition where “no feces are openly exposed to the air” in a community (Kar and Chambers 2008, p.4). Across the seven cases, various monitoring strategies, definitions, and actors were found to be implicated in the process. Of all cases, Lao PDR's quarterly monitoring system was the most robust, with indicators on latrine use and cleanliness, handwashing, safe water practices, and environmental sanitation. This enabled the program to better understand community characteristics and monitor progress.

Most programs had simple monitoring systems that did not systematically capture sufficient data to enable cross-country comparisons; this also constrained their ability to measure change or appropriately analyze the effectiveness of their CLTS activities. Even where processes were more structured, as in Uganda, Nepal, and Indonesia, definitions were not clear; this inconsistency led to different interpretations of ODF in the same program, making it challenging to compare results across communities. Furthermore, variations in ODF verification processes risked either pre-emptive declaration of ODF status, creating a false sense of achievement, or conversely, delayed verification of ODF status, thereby demotivating communities.

Intervention characteristics domain

This domain includes constructs that relate to various characteristics or features of CLTS itself that might influence implementation of the approach. These include: perceptions of the source of the innovation as internal or external; flexibility of the approach; complexity of the approach; costs; and evidence strength and quality.

Innovation source

This construct illustrates the degree of ownership for CLTS by analyzing whether the intervention was perceived as internal to the organization or externally developed. The theory is that an internalized perception is more likely to lead to implementation success (Damschroder et al. 2009). In Niger, Lao PDR, and Cambodia, the INGO was actively working to foster government ownership of CLTS. Although several local government officers and local NGOs in Niger described CLTS in favorable terms, their reaction to funding gaps from the INGO revealed that they still perceived CLTS as an external development project that they were getting paid to implement. For example, in Niger, a local government officer, *“We are giving more than what we get [financially].”* In Lao PDR, district government facilitators described being reprimanded by their supervisors: *“[My boss asks me], ‘Are you government staff or are you project staff? Why do you go to work with the project more than spending time with government projects? You still get your salary from the government.’”* These respondents viewed their participation in CLTS as transactional and independent of the local government’s development activities, as opposed to an intervention introduced by an INGO to improve the lives of communities in their district.

In contrast, in Nepal and Indonesia, the intervention was perceived as internal due to government ownership and modification of the approach, as exemplified by national campaigns in both countries. Financial responsibility for CLTS was another indicator of internalization of the process. For example, joint ownership of funding for CLTS in Nepal, Indonesia, and Uganda

enabled the INGO in these countries to leverage resources from the government, and the government could harness the capacity building and technical expertise of the INGO.

Flexibility of approach

CLTS was perceived as flexible and context-specific, and adaptations were evident in all seven cases, as documented extensively in Chapter 3. However, this perception had mixed influences on implementation. In Niger, for example, the influence of this construct was largely positive because implementers knew how to adapt triggering to suit the community's baseline understanding of health. In Lao PDR and Cambodia, and to a lesser extent in Indonesia, implementers felt comfortable "softening" the triggering approach, but it also led to poorer quality of triggering by local government facilitators (see Chapter 3). Implementers in Nepal, Haiti and Uganda adhered more strictly to triggering guidelines, and conducted these activities in a participatory manner.

Perceived flexibility in the post-triggering stage also had a mixed influence on implementation. In all cases, this allowed for innovative methods of technical support in the post-triggering phase. However, in Haiti, this flexibility resulted in the INGO deviating far from the principles of CLTS. When they were not seeing sufficient progress in triggered communities, the INGO provided pipes, cement, and iron bars to some households to build latrine platforms and seats, conditional on them digging pits by themselves. Because of the short project timeline, all who dug pits did not necessarily receive support, and the remaining pits were left untouched. Furthermore, because the INGO only provided material for the latrine, many households did not build a superstructure, and therefore did not use the latrines.

Perceived complexity

Implementers in all cases viewed CLTS as a complex intervention, as it requires participation of various actors with different motivations, skill sets, and resources. Cases

increased in complexity by modality, with Haiti having the simplest arrangements and Nepal having the most complex arrangements. Each degree of complexity had its own advantages and disadvantages. For example, NGO-led cases coped with the challenge of implementing a complex intervention with few actors and limited resources by keeping activities at a smaller scale. Mixed leadership cases, while encouraging greater local government involvement struggled with ensuring a decent quality of facilitation. In the government-led modality, the INGO stepped back and redefined its role into one of capacity building to allow the government to implement complex arrangements at a larger scale, but as a result, lost control over implementation quality.

Cost of the intervention

There was insufficient information to rate the influence of this construct, as interview guides did not contain questions about the cost-effectiveness of the approach.

Evidence strength and quality

This construct is described as “stakeholders’ perceptions of the quality and validity of evidence supporting the belief that the innovation will have desired outcomes” (Damschroder et al. 2009). Respondents were not directly asked about knowledge, quality, or use of evidence as part of their implementation process, nor did this topic organically emerge in interviews. However, the passionate language many implementers used to describe CLTS suggested that they were convinced of its effectiveness through training events and exchange visits.

Individual (implementer) characteristics domain

Facilitator skills

In all cases except Cambodia and Lao PDR, strong facilitation skills enabled triggering activities to be conducted in a participatory manner. In Cambodia and Lao PDR, local government facilitators were unable to conduct triggering in a participatory manner, and

appeared to have modified the approach based on their own comfort with triggering tools. In Cambodia, quality of facilitation was a considerable barrier even though access to training was not of particular concern. An INGO staff member in Lao PDR observed that *“In some cases, the people who were chosen were perhaps not the best for the job.”*

Implementer compatibility with intervention

This construct is closely linked to the “innovation source” construct in the Intervention Characteristics domain and the “administrative compatibility” construct in the Inner Setting domain. The focus here is on the influence of implementers’ opinions of the intervention on intervention effectiveness. There was strong implementer acceptance of CLTS at all levels in Uganda, Nepal, and Niger, from natural leaders up to national government. In Niger, for example, one local government officer remarked: *“Instead of spending millions making latrines that have remained unused, the only method is to raise the awareness of people.”*

Most implementers perceived CLTS to be universal in rural communities (see Table 15 for illustrative quotes). This was particularly apparent when they compared CLTS to previous subsidy-based or educational approaches. However, the construct was rated as having a mixed influence in all seven cases because such widespread conviction meant that even in challenging environments, alternatives to CLTS were not considered. This reflects the training given to practitioners, as the Handbook on CLTS emphasizes that “challenging conditions are simply what they are called – challenging. The challenges can be confronted and overcome” with CLTS (Kar and Chambers 2008, p.16), suggesting that CLTS can work everywhere.

Table 15. Quotes illustrating implementers' belief in the universal scope of Community-led Total Sanitation

Location	Respondent	Quote
Haiti	INGO staff	<i>“To me, the main constraint is not in the method, it’s rather the doubt that exists at all levels in the system. [...] And if in the whole system there is doubt, since the community depends on how you present the information, we cannot take away this doubt from the community itself.”</i>
Niger	District government official	<i>“In these communities, in a few hours, we have done things—positive things—that in years the authorities have not been able to do.”</i>
Lao PDR	INGO staff	<i>“Based on my observation of our working area, even some villages where we have slow progress, at least when our CLTS work comes, it has a little bit of progress. Better than not going there.”</i>
Cambodia	National government official	<i>“For me I think it's possible in every community. There's no discrimination that CLTS should not be implemented in any area... Maybe a context where there's a subsidy already there, then maybe [but]... It's not really impossible, but maybe it's hard. But for me, in terms of possibility, I think there's a possibility.”</i>
Uganda	Village Health Team facilitator	<i>“I want to assure you that I have not seen that CLTS approach is not the right approach in a community. Instead it is giving wide coverage. I would suggest that CLTS extend to other places that it has not been.”</i>
Indonesia	INGO staff	<i>“[If CLTS is not] proceeding well...you can do the triggering two or three times in the village...When a community makes slow progress, we just ask the sanitarian to come many times to the village.”</i>
Nepal	National government official	<i>“If the principle of CLTS is tied up with the local level planning process...then definitely the CLTS contribution will be great.”</i>

Discussion

This paper illustrates the utility of a conceptual framework to analyze the implementation context and process of CLTS by drawing on seven case studies implemented by one INGO. The adapted CFIR has 20 constructs, or factors, under five inter-related domains. Each factor was rated as having a positive, negative, mixed, or neutral influence on implementation.

The CFIR can be used by both practitioners and researchers to better understand and unpack the complexity and diversity of implementing CLTS. Multiple levels of comparisons are

possible. I propose three specific ways that practitioners can use the CFIR to help identify improvements in their implementation strategy.

First, practitioners can infer patterns can also be inferred by comparing constructs across domains. For example, although access to training (Inner Setting domain) was largely a positive or neutral influence in most cases, it was not sufficient to guarantee facilitator skills in triggering communities (Individual Characteristics domain). This would warrant closer analysis of the training process, as well as understanding what other factors are affecting facilitators' ability to effectively trigger communities.

Second, practitioners can use the framework to compare constructs within individual domains. Considering the Outer Setting domain, this analysis revealed that even if the policy environment was largely neutral or favorable to CLTS across the seven cases, history of sanitation projects or external pressure from donors or government on implementers is likely to have hindered innovation and effectiveness. This calls for advocacy to governments and donors to offer greater flexibility to field implementers. The domain also shows that for an intervention labeled as "community-led," the priorities and resources of the community were not sufficiently considered before deciding to implement CLTS, highlighting a major concern for community development efforts and sustainability of intervention outcomes.

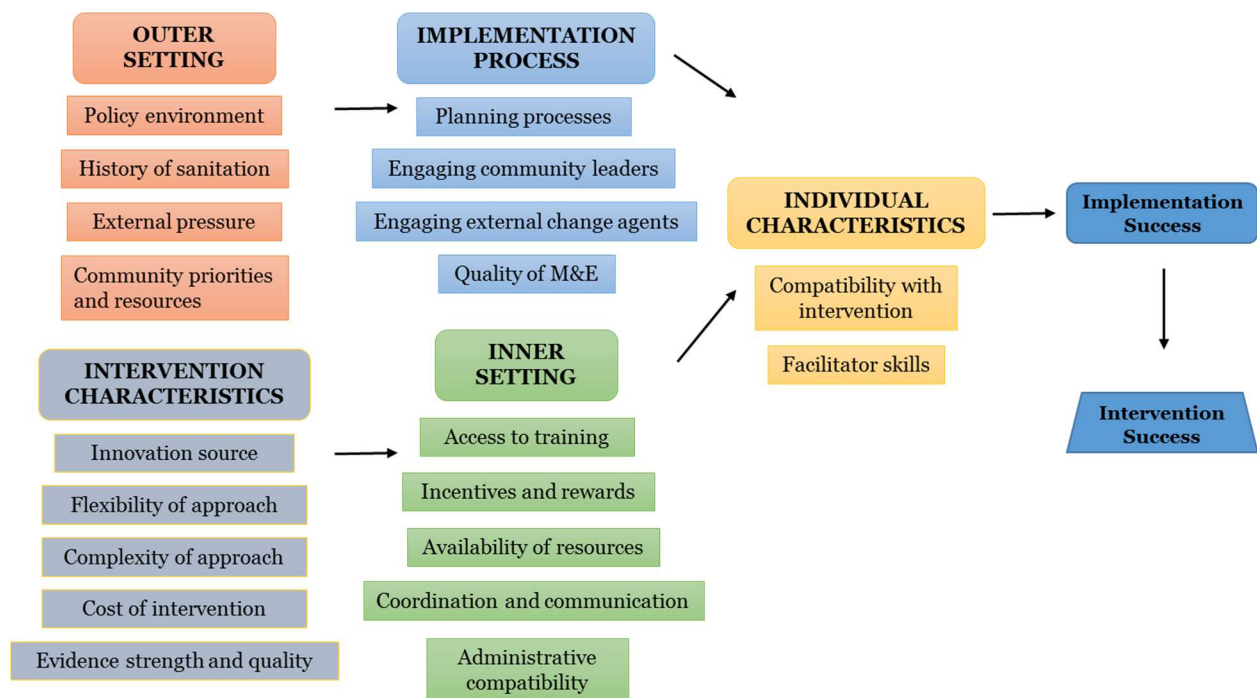
Third, the framework can serve as a diagnostic tool for practitioners to analyze and identify strengths and weaknesses of their specific implementation approach. For example, if CLTS were truly a "community-led" process, as its label suggests, one might recommend greater community mobilization and leadership to improve implementation, regardless of the implementation context. However, close analysis of the case in Niger shows that, although community engagement was already described as a positive influence, aspects of the outer setting, planning, and engaging with external actors all made CLTS challenging to implement. Here, the recommendation might be to target improvements in domains that are not directly

related to the community at all. In the case in Haiti, the INGO may want to first target constructs in the Implementation Process domain, while the INGO in Lao PDR may want to prioritize the Inner Setting domain.

Of note, despite covering a wide breadth of topics during data collection across seven countries, none of the interviews resulted in discussions about cost-effectiveness or evidence strength and quality; these are two constructs that need to be deliberately explored in future work, as they may help identify recommendations for developing more evidence-based programming.

From a research perspective, the adapted CFIR can be used to theorize associations between factors, as suggested by a simple schematic presented in Figure 9.

Figure 9. Sample schematic of constructs to explore relationships in implementation context and process



There are several interrelationships within and between constructs that are not featured in this figure; future quantitative and qualitative research studies can explore these

relationships in different cases to identify the ones that are more relevant or less relevant to that specific setting. Research of this kind can then be translated to practice to help improve implementation effectiveness.

Conclusion

In conclusion, this paper adds to the small body of literature that attempts to make sense of variations in implementation in WaSH interventions. Researchers can use the adapted CFIR to theorize and test relationships in the context and process of implementation, and ideally, to translate these findings into practice. Practitioners can use the adapted CFIR to learn from cross-case comparisons as well as to diagnose their own programs. As donors, governments, and program managers consider introducing CLTS, expanding the scope to new settings, or scaling up to a national level, they can use this framework to understand which factors of the context and process they will need to modify to improve implementation efforts.

CHAPTER 5: CONCLUSIONS

CLTS has mobilized sanitation practitioners worldwide and helped put sanitation at the forefront of development agendas in many countries. The conversation has expanded from one about incremental improvements in latrine coverage to one about open-defecation free (ODF) communities, and even ODF countries. Given that CLTS has become the predominant sanitation behavior change approach for rural communities, the challenge to improve the effectiveness of the intervention requires a systematic study of its implementation. CLTS is recognized widely by practitioners and policymakers as a flexible and context-specific approach, yet its adaptations are not well understood. It was in this context that my dissertation set out to better understand variations in CLTS implementation.

Contribution to evidence base

There are three main contributions of this dissertation to the CLTS evidence base. First, the systematic literature review provides a comprehensive picture of the state of the evidence. Rigorous evidence on CLTS was minimal, and the little evidence of CLTS success varied across settings, but the reasons for this variation are not well understood. Although researchers reported reductions in open defecation and increases in latrine coverage, this did not corroborate widespread claims by practitioners of open-defecation free villages. This disconnect partly indicates a need for practitioners to be more rigorous in their evidence-gathering processes, but also for researchers to better understand the implementation process that resulted in particular quantitative outcomes.

Second, qualitative case studies and an in-depth examination of the roles of actors in CLTS illustrated how, rather than being a “community-led” approach, CLTS is a “community-driven” approach that is externally initiated and induces participation with a preset agenda, methods, and end goal. Community members participate and are expected to act on their own to meet the end goal of ODF, not a goal determined by the community itself. There is nothing inherently wrong with this approach; it can still be empowering, but cannot be argued to be community-led. An honest discussion about CLTS is more likely to help identify areas for improvement. As such, I identified three implementation leadership modalities: NGO-led CLTS, mixed leadership of CLTS, and government-led CLTS, which fall on a spectrum of complexity and scale. The cases I studied ranged from small-scale implementation in Haiti to a national government ODF campaign in Nepal. This analysis enables a more systematic identification of areas for improvement in implementation.

Finally, I suggest that the variations in CLTS reflect a strong need for flexibility on the part of multilateral donors, national and local governments, and NGOs, when implementing bottom-up community-driven interventions such as CLTS. I propose that donors of CLTS projects provide greater flexibility to project timelines and funding mechanisms; that targeted outcomes (ODF) are at least partly determined by community goals; that CLTS not be considered a universally applicable strategy for sanitation behavior change; that policymakers recognize the incongruity in calling for a bottom-up intervention to be harmonized or standardized; and that street-level bureaucrats be heard and provided the capacity and flexibility they need to adapt CLTS effectively.

Methodological contribution

There are three methodological contributions from this research.

First, as part of the systematic review, the quality appraisal tool I developed can be used to assess the quality of evidence from sources as varied as NGO reports, qualitative studies, and

randomized controlled trials. To my knowledge, it is the first tool that enables a combined assessment of such literature on water and sanitation to develop recommendations for improving the evidence base.

Second, the seven case studies illustrate the value of qualitative methods for assessing implementation in an inductive and exploratory manner. By borrowing the backward mapping approach from policy implementation research, I was able to identify three types of adaptations at the field level that, at times, were made in response to community characteristics or preferences, but were more often a reflection of poor facilitation skills or a reflection of field-level troubleshooting of logistical, administrative, or capacity constraints. This understanding of field-level adaptations is crucial to improve implementation effectiveness.

Finally, the conceptual framework I adapted to assess context and process factors serves as a tool for researchers and practitioners alike. From a researcher perspective, it can be used to theorize and test associations between different factors. From a practitioner's perspective, the framework serves as a diagnostic tool to identify strengths and weaknesses of a specific implementation approach. In this manner, it provides a common framework for policymakers, researchers, and practitioners to discuss implementation.

Both the quality appraisal framework and the conceptual framework will benefit from further validation in CLTS or other interventions.

Complex interventions, particularly those that study human and social behavior, need to look beyond randomized controlled trials (RCTs) as the gold standard. These interventions require a variety of research methods to better understand process and effectiveness. RCTs in sanitation have arguably struggled to identify large-scale statistically significant impacts; this is likely due to the nature of complex interventions that cannot always be standardized sufficiently for experimental designs to detect impacts (Schmidt 2014). This matters because, as Fixsen et al. suggest, inadequately measuring program implementation can lead to an “incorrect conclusion

that an intervention was ineffective,” if the intervention in practice was not was not sufficiently implemented, was not appropriate for that setting, or was implemented in a “nonstandard, uncontrolled” manner (Fixsen et al. 2005, p.5).

Future research

Implementation of any program is unlikely to follow a linear path, and will change given local context and resources; therefore, it is important to be able to analyze the factors that enable or constrain effective implementation and how best to structure the implementation of programs (Peters et al. 2013). My work in this dissertation serves as a first step to better understanding the influence of factors and determinants of effectiveness. However, as much of this work was exploratory, I was limited by my ability to link my findings to outcomes or effectiveness. Further research is needed to understand whether and how the different implementation modalities I identified determine CLTS outcomes. My research helps identify factors that can be assessed using methods that are designed to provide more generalizable evidence. This would require better quantitative measures of process, outcomes and impact.

Concluding thoughts

Practitioners, policymakers, and program managers in sanitation often rely on anecdotes and programmatic reports to “scale-up” approaches without a clear understanding of their effectiveness and appropriateness in different settings. A key challenge noted by early policy implementation analysts was that by not paying attention to the implementation process, “cumulative and comparative knowledge of successful and less successful implementation experience is not used in the design of new innovations.” (Dyer 1999). While sanitation as a field has slowly learned from past failures and adapted its approaches—the result of which was the trialing and acceptance of CLTS—the same cannot be said of CLTS itself.

Complex problems often require complex solutions. Complex interventions to address these problems will necessarily require the willingness to adapt. CLTS practitioners have shown that they are willing to adapt, but largely within the boundaries of CLTS. Throughout this dissertation, I have suggested that it is time to expand those boundaries and think of CLTS as part of a larger sanitation and WaSH strategy as opposed to a “silver bullet.”

I would conclude by suggesting that this flexibility needs to be considered not just in CLTS or sanitation or WaSH, but with regard to community development as a whole. If we take a step back to the original goal driving this field, it would be to improve sanitation in order to improve public health, environment, dignity, and well-being of people. Should we not then start by asking people what they believe would improve their well-being?

CLTS implementers must reflect on how responsive their intervention is to community priorities, needs, and resources. If implementers take this into consideration in the planning stages of CLTS, it is likely that they may decide not to implement CLTS in settings where communities have other more urgent needs or priorities. Systematic targeting of CLTS is likely to yield more promising results, and would leave the door open for other approaches to be tested in communities where CLTS is less likely to be appropriate.

APPENDIX 1: SYSTEMATIC REVIEW SEARCH STRATEGY

Database or website	Search strategy
PubMed	("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free") OR (sanitation AND subsid*) OR ((Sanitation[Mesh] OR "Sanitation"[Title/Abstract]) AND ((demand OR participat*) AND behavior AND (communit* OR village OR locality OR hamlet OR collective OR neighborhood OR township)))
Web of Science	TOPIC: (("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free")) OR TOPIC: ((sanitation AND subsid*)) OR TOPIC: (("hygiene" AND "sanitation" AND "behavior")) OR TITLE: (Sanitation) Refined by: TOPIC: (behavior)
Scopus	TITLE-ABS ("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free") OR TITLE-ABS (sanitation AND behavior AND communit*) OR TITLE-ABS-KEY (sanitation AND subsid*) OR TITLE-ABS-KEY((demand OR participat*) AND (community OR village OR locality OR hamlet OR collective OR neighborhood OR township) AND sanitation AND behavior)
Proquest	community led total sanitation OR "open defecation free"
Cochrane	(sanitation AND ((demand OR participat*) AND behavior AND (communit* OR village OR locality OR hamlet OR collective OR neighborhood OR township))) OR ("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free") OR (sanitation AND subsid*)
Global Health	(sanitation:ab OR sanitation:ti AND ((demand OR participat*) AND behavior AND (communit* OR village OR locality OR hamlet OR collective OR neighborhood OR township))) OR ("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free") OR (sanitation AND subsid*)
Embase	(sanitation:ab OR sanitation:ti AND ((demand OR participat*) AND behavior AND (communit* OR village OR locality OR hamlet OR collective OR neighborhood OR township))) OR ("Community led total sanitation" OR "total sanitation" OR "open defecation" OR "defecation free") OR (sanitation AND subsid*)
Water Engineering and Development Centre (WEDC) Knowledge Base	"community-led total sanitation" OR "CLTS" OR "total sanitation"
Water Supply and Sanitation Collaborative Council (WSSCC)	Separate searches for: CLTS total sanitation global sanitation fund
Water and Sanitation Program of the World Bank (WSP)	"Topics" → "Scaling up Rural Sanitation and Hygiene" → "Publications and Tools" → search for "total sanitation"
SNV World	"CLTS" (Filter by: "Explore more" AND "Focus areas") Explore more → Sector: Water, Sanitation & Hygiene; Topic: Sanitation AND rural
BMGF WaterAid Concern Worldwide	Separate searches for: CLTS "total sanitation"

World Vision CARE SuSanA Knowledge Base World Health Organization (WHO) IRC Wash	
Plan International	Priorities: Water and Sanitation; Tag: Community-Led Total Sanitation; Publisher: All Publishers
Google Scholar (first 200 results)	"community led total sanitation" OR CLTS -"central limit" Exclude patents and citations
UNICEF Evaluation Database	"Reports by Theme" → "Water and Environmental Sanitation" → CLTS OR CATS OR total
communityledtotalsanitation.org	Reviewed all documents of the following types: case studies, country papers, and research

APPENDIX 2: SYSTEMATIC REVIEW QUALITY APPRAISAL FRAMEWORK

For quantitative evaluations:

Topic	Criteria	Questions	Notes on scoring
Quality of Reporting	Objectives	1. Were the objectives and purpose of the study described?	
	Context	2. Was sufficient detail provided on the context and setting of the study?	<ul style="list-style-type: none"> • 0.5 - relevant aspects of the broader context/setting described (e.g. economics, policy, history, culture) • 0.5 - descriptive statistics of the study sample (non-WaSH indicators)
	Process	3. Was the process of the program or intervention described thoroughly?	<ul style="list-style-type: none"> • 0.5 if at least two of the points below are included: <ul style="list-style-type: none"> • overall approach • activities • dates and duration • implementing organization or actors
	Study design	4. Was sufficient detail provided on how households or individuals were assigned to interventions?	
	Data collection	5. Was sufficient detail provided on data collection methods and procedures?	<ul style="list-style-type: none"> • 0.5 - sampling strategy described (including sample size) • 0.5 - data collection process described (who conducted it, tools used, etc.)
	Analysis	6. Was sufficient detail provided on analytical methods used in the study?	<ul style="list-style-type: none"> • 0.5 if partially complete information described: <ul style="list-style-type: none"> • statistical analysis described (estimator used, regression type) • method for calculating effect estimates described • estimates of error reported (confidence interval, p-value, t-statistic)
Risk of Bias	Assignment to intervention	7. Indicate the study design.	<ul style="list-style-type: none"> • 1 = randomized controlled trial • 0.5 = quasi-experimental design • 0 = Natural experiment or pre + post in single group
	Sampling	8. Was sampling representative at the household level (did the survey represent the study population?)	
	Independence of data collection	9. Was data collection conducted by an independent	<ul style="list-style-type: none"> • 0.5 – trained data collector independent of implementer or

		and trained source, with appropriate auditing procedures?	funder (note: data collected by a consultant with noted support of implementer will not be considered “independent” unless justified) • 0.5 - auditing procedures described
	Data relevance	10. Were the indicators measured in the study relevant to the research question, and consistent with prior work and/or thoroughly justified?	• 0.5 - indicators relevant to research question • 0.5 - indicators consistent with prior work and/or thoroughly justified
	Data accuracy	11. Was validity of data collection tools (testing/piloting) reported?	• 0.5 - pre-testing/piloting • 0.5 - data validation
	Analytical rigor	12. Were appropriate analytical methods used?	• For RCTs: reports on probability that effect is due to the program • For non-RCTs: accounts for differences between comparison groups
	External peer-review	13. Is there evidence of the study being subjected to external/independent review prior to publication?	Note: must refer specifically to source external of publishing organization
Appropriateness of conclusions	Interpretation	14. Is there a discussion and interpretation of the main findings?	0.5 if discussion/interpretation is incomplete
	Limitations	15. Were study limitations described?	0.5 if limitations listed are incomplete
	Conclusions	16. Were stated conclusions and implications within the scope of the study design and data collection methods?	0.5 if conclusions partly out of scope

For qualitative studies:

Topic	Criteria	Questions	Notes on scoring
Quality of Reporting	Objectives	1. Were the objectives and purpose of the study described?	
	Context	2. Was sufficient detail provided on the context and setting of the study?	• 0.5 - relevant aspects of the broader context/setting described (e.g. economics, policy, history, culture) • 0.5 - context of the specific program setting described
	Process	3. Was the process of the program or intervention described thoroughly?	• 0.5 if at least two of the points below are included: • overall approach • activities

			<ul style="list-style-type: none"> • dates and duration • implementing organization or actors
	Study design	4. Was adequate information provided on the sampling approach?	<ul style="list-style-type: none"> • 0.5 if partially complete information described: <ul style="list-style-type: none"> • sampling method (e.g. purposive, convenience, snowball) • sample size and descriptors • recruitment process described (e.g. through NGO staff)
	Data collection	5. Was sufficient detail provided on qualitative data collection procedures?	<ul style="list-style-type: none"> • 0.5 - data collection and tools described (in-depth interviews, focus groups, observations) • 0.5 - data collector identified; recording/transcription reported
	Analysis	6. Was sufficient detail provided on analytical methods used in the study?	<ul style="list-style-type: none"> • 0.5 - Analytical approach described (e.g. thematic, content, or discourse analysis; grounded theory; phenomenological approach) • 0.5 - Analytical process described (e.g. reading/coding transcripts, listening to recordings, identifying themes, matrices/networks)
Risk of Bias	Appropriateness of sampling	7. Was sampling appropriate given stated objectives?	<ul style="list-style-type: none"> • 0.5 - appropriate people targeted to answer research question • 0.5 - appropriate method for qualitative research (i.e. not random, or provides thorough justification for random sampling)
	Independence of data collection	8. Was data collection conducted by a trained source independent of the implementer of the program or intervention?	<ul style="list-style-type: none"> • 0.5 - data collector independent of implementer or funder (note: data collected by a consultant with noted support of implementer will not be considered “independent” unless justified) • 0.5 - training of data collectors mentioned
	Rigor in data collection	9. Were there attempts to establish the credibility, neutrality, consistency, and/or transferability of data collection tools?	<ul style="list-style-type: none"> • 1 if at least first 4 points below described; 0.5 if at least 3 described <ul style="list-style-type: none"> • appropriate tools used (e.g. semi-structured interview guides, observation checklists) • data collection tools piloted prior to use • average length of interviews, or time spent in field described • attempts at triangulating data

			(recruiting different types of respondents; including documents and monitoring data)
			<ul style="list-style-type: none"> • data collected in a team
	Rigor in data analysis	10. Were there attempts to establish the credibility, neutrality, consistency, and/or transferability of data analysis methods?	<ul style="list-style-type: none"> • 1 if at least first 4 points below described; 0.5 if at least 2 described • systematic data analysis process (coding, matrices, etc.) • process of reflexivity documented • evidence of member checking and/or external audit? • sufficient detail provided on context to allow reader to determine transferability of results • data analyzed in a team (inter-coder discussions)
	External peer-review	11. Is there evidence of the study being subjected to external/independent review prior to publication?	Note: must refer specifically to source external of publishing organization
Appropriateness of conclusions	Interpretation	12. Is the discussion and interpretation of the main findings appropriate?	0.5 if discussion/interpretation is incomplete
	Limitations	13. Were study limitations described?	0.5 if limitations listed are incomplete
	Conclusions	14. Were stated conclusions and implications within the scope of qualitative study design and well-grounded in the data?	0.5 if conclusions partly out of scope

For case studies and project reports:

Topic	Criteria	Questions	Notes on scoring
Quality of Reporting	Objectives	1. Were the objectives and purpose of the program or intervention described?	
	Context	2. Was sufficient detail provided on the context and setting of the program or intervention?	<ul style="list-style-type: none"> • 0.5 - relevant aspects of the broader context/setting described (e.g. economics, policy, history, culture) • 0.5 - context of the specific program setting described
	Process	3. Was the process of the program or intervention described thoroughly?	<ul style="list-style-type: none"> • 0.5 if at least two of the points below are included: <ul style="list-style-type: none"> • overall approach • activities • dates and duration • implementing organization or actors

	Evidence of study design	4. Is there evidence of a sampling approach?	<ul style="list-style-type: none"> • 0.5 - any source of primary evidence described • 0.5 - sampling method, size and recruitment described (e.g. through NGO staff, key informants, self-recruited)
	Data collection	5. Is there evidence of a systematic data collection process?	<ul style="list-style-type: none"> • 0.5 - type of primary data collected described (surveys, interviews, water samples, observation) • 0.5 - information provided about data collection instruments
	Analysis	6. Is there evidence of data analysis?	<ul style="list-style-type: none"> • 0.5 - data analysis mentioned • 0.5 - analytical approach described
Risk of Bias	Appropriateness of sampling	7. Was sampling appropriate given stated objectives?	<ul style="list-style-type: none"> • 0.5 - appropriate people targeted to answer research question • 0.5 - appropriate method given study design
	Independence of data collection	8. Was data collection conducted by an independent and trained source?	<ul style="list-style-type: none"> • 0.5 - data collector independent of implementer or funder (note: data collected by a consultant with noted support of implementer will not be considered “independent” unless justified) • 0.5 - training of data collectors mentioned
	Rigor in study execution	9. Were appropriate measures taken to provide rigor to the execution of the study?	<ul style="list-style-type: none"> • 0.5 - rigor in data collection (e.g. pre-testing DC tools, training enumerators, auditing) • 0.5 - rigor in data analysis (e.g. appropriate data analysis techniques given study design)
	External peer-review	10. Is there evidence of the document being subjected to external/independent review?	Note: must refer specifically to source external of publishing organization
Appropriateness of conclusions	Interpretation	11. Is there a discussion and interpretation of the main findings?	0.5 if discussion/interpretation is incomplete
	Limitations	12. Were limitations to the information present in the document described?	0.5 if limitations listed are incomplete
	Conclusions	13. Were stated conclusions and implications grounded in evidence/data presented?	0.5 if conclusions partly out of scope

APPENDIX 3: SYSTEMATIC REVIEW - FULL LIST OF INCLUDED LITERATURE

This list is in alphabetical order by study type.

Quantitative evaluations (n=14)

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APPENDIX 4: IN-DEPTH INTERVIEW GUIDES AND CONSENT FORMS

The following three guides were used to conduct interviews. As is typical with qualitative data collection techniques, questions were not necessarily asked in the same order or using the same wording, but the content of the guides was covered in all interviews.

1. Interview Guide for Government Officials and Policymakers

- 1) First, please tell me about yourself. Probes:
 - What is your background/education?
 - What is your role in the government? How long have you worked in this role?
 - Previous experience?
- 2) Please describe to me the current sanitation situation here. Probes:
 - Overall latrine coverage levels? Any disparity across regions?
 - Overall ODF status?
- 3) Who are the major actors (NGOs, government departments) in CLTS here? Probes:
 - What is the government's role?
 - Which government departments are involved in sanitation?
 - What is the role of various NGOs?
 - Where does most funding come from for sanitation in your country?
- 4) In your own words, how would you explain CLTS to someone who has never heard of it?
- 5) According to you, what is the difference between CLTS and other approaches to sanitation?
- 6) When you say "ODF", what do you mean by that? Probes:
 - How do you define ODF?
 - Are any rewards offered to communities or organizations for achieving ODF?
- 7) How would you describe the official sanitation policy of the government? Probes:
 - How does CLTS fit into this policy?
 - Do you have an official CLTS policy/guidelines? How about for training?
- 8) How long has CLTS been used here?
- 9) To your knowledge, which are the organizations that have used the CLTS approach here?
- 10) Can you tell me more about your relationship with Plan International? Probes:
 - How long have these activities been going on?
 - How often do you meet with them?
 - Who funds these activities?

Training

- 11) Does the government provide any training on CLTS? Probes regarding training:
 - When was the most recent training?
 - Who all were trained? (government, natural leaders, other NGOs)
 - How long was the training?
 - How many people were trained?
 - Did you provide any support (fuel, food) for trainees?
 - What did you teach in the training?

12) Have you been trained in CLTS? Can you tell me about this? Probes regarding training:

- When did you receive the training? (More than once?)
- Who trained you?
- How long was the training?
- How many people were trained in that session?
- Who else was trained? (government, natural leaders, other NGOs)
- Did you receive any support (fuel, food) for attending the training?
- What were you taught in the training?

Opinions on CLTS

13) According to you, in what kind of community is it easiest to achieve success in CLTS? Why?

14) Do you think there is any type community where CLTS is not possible? Why?

15) Based on your experience, what is the best time of year to do CLTS?

16) Based on your experience, which step in the triggering process works best? Why?

17) What is your favorite part of CLTS? Why?

18) What is the most difficult part of CLTS according to you? Why? *Probes:*

- What techniques have you used to overcome this challenge?

19) What kind of changes would you like to see in the way that CLTS is done?

20) What kind of changes, if any, do you see in your country since CLTS started here? This does not only have to be related to open defecation. *Probes:*

- Why did these changes happen according to you?
- Any changes not related to sanitation?
- Is there anything else you would like to change that has not yet changed?

21) Would you like to tell me anything else about CLTS, about sanitation, or any other topic? Do you have any questions for me?

2. Interview Guide for Plan International staff and field-based implementers

1) First, please tell me about yourself. *Probes:*

- What is your background/education?
- How long have you worked here?
- Have you worked on any water and sanitation projects in the past?

2) What is your specific role in implementing CLTS?

3) Please describe to me the current sanitation situation here.

Probes for Plan CO staff:

- Overall latrine coverage levels?
- Overall ODF status?
- Any disparity across regions?

Probes for field CLTS implementers:

- What is the ODF status?
- What percent of people have toilets? How many dry pit latrines and pour-flush latrines?

4) Who are the major actors (NGOs, government departments) in CLTS here? *Probes:*

- What is the government's role?
- What is the role of various NGOs?

- 5) In your own words, how would you explain CLTS to someone who has never heard of it?
- 6) According to you, what is the difference between CLTS and other approaches to sanitation?
- 7) When you say “ODF” (open-defecation free), what do you mean by that? How do you define ODF?

Overall CLTS Approach

- 8) Please tell me about your organization’s history with CLTS here. Probes:
 - How long have you been doing CLTS here?
 - Do you have other water and sanitation projects here?
 - How many communities have been triggered so far?
- [Q8-Q12 only for Plan CO Staff]
- 9) Can you describe how CLTS activities are structured and organized within Plan? Probes:
 - Role of Program Units?
 - Role of local NGOs?
 - Number of staff
- 10) Who are the CLTS facilitators? (Plan, NGO, local government)? Probes:
 - How are they selected?
 - What kind of training do they receive?
- 11) How do you decide your CLTS approach? Probes:
 - Do you have any guidelines? Have you adapted these guidelines?
 - Do you have any training materials you use?
- 12) Would you mind telling me the funding sources for your CLTS projects?
- 13) Do you work with other organizations on CLTS-related activities here? Please tell me more.

[Q14-Q15 only for field CLTS facilitators]

- 14) Can you tell me about how you do CLTS activities here? How is it organized? Probes:
 - How many people in your organization are involved in CLTS?
 - Who decides on the strategy?
 - Do you have any guidelines?
 - Do you work with other organizations on CLTS-related activities?
- 15) Can you tell me more about your relationship with Plan International? Probes:
 - How long have these activities been going on?
 - How often do you meet with them?
 - Who funds these activities?

Training

- 16) Have you been trained in CLTS? Can you tell me about this? Probes regarding training:
 - When did you receive the training? (More than once?)
 - Who trained you?
 - How long was the training?
 - How many people were trained in that session?

- Who else was trained? (government, natural leaders, other NGOs)
- Did you receive any support (fuel, food) for attending the training?
- What were you taught in the training?

17) Has your organization trained anyone in CLTS? Probes regarding training:

- When was the most recent training?
- Who all were trained? (government, natural leaders, other NGOs)
- How long was the training?
- How many people were trained?
- Did you provide any support (fuel, food) for trainees?
- What did you teach in the training?

Field Implementation of CLTS

I want to understand how CLTS activities are structured in the field. If you don't have much direct experience with triggering activities, please answer the following questions to the best of your understanding.

18) How are communities selected to be part of a CLTS triggering activity? What factors about the community do you think about before you select a community? Probes:

- Do you visit the village before you do the triggering? (pre-triggering)
- Before you do triggering, do you collect data on how many toilets there are in the village? (baseline)

19) According to you, in what kind of community is it easiest to achieve success in CLTS? Why?

20) Do you think there is any type community where CLTS is not possible? Why?

21) Based on your experience, what is the best time of year to do CLTS?

Triggering and Follow-up Process

[Ask only if respondent has first-hand experience with triggering]

22) Can you remember the last time you did a triggering activity in a village? When and where? Please think back to this day for the following questions.

23) When you first reached the village, how did they react to your presence? Probes:

- What did you say to them? How did you start talking about CLTS?
- How did they respond?
- Can you tell me about a specific example where you had a positive reaction?
- Can you tell me about a specific example where you had a negative reaction?

24) Please describe the way you did the triggering activities in this village. Probes:

- How many people went with you?
- Did everybody join you on the walk?
- What did you do if people weren't interested/didn't want you to be there during triggering?
- Did you include women?
- Did you include children? What was the role of children?

25) What happened after you did the triggering? Probes:

- Did anyone make action plans?

- What do you do if people don't do anything with sanitation after you leave?
- 26) Do you go to check if toilets are being built? How many times in 1 month? Probes:
- Where do you get your data on toilets from? Who collects the data on toilets?
 - How many follow-up visits do you usually make to 1 community?
- 27) I would like to know more about how you identify natural leaders. Probes:
- Who are they?
 - How are natural leaders identified?
 - Who assigns their roles?
 - What are their different roles?
 - Do they receive any training? What kind?
- 28) Does Plan work on sanitation with schools and teachers? How about hygiene? Tell me more. Probes:
- Role of teachers?
 - Do you build latrines?
 - Do you build schools?
 - Youth clubs?
- 29) Have you ever done more than 1 triggering event in 1 village? Why?
- 30) Who decides when a village is ODF? How? Probes:
- What is the role of natural leaders?
 - Are incentives/rewards offered for ODF achievement? What form?

Opinions on CLTS

- 31) Based on your experience, which step in the triggering process works best? Why?
- 32) What is the most difficult part of CLTS according to you? Why? Probes:
- What techniques have you used to overcome this challenge?
- 33) What is your favorite part of CLTS? Why?
- 34) What kind of changes would you like to see in the way that CLTS is done?
- 35) What kind of changes, if any, do you see in the communities since you started CLTS here? This does not only have to be related to open defecation. Probes:
- Why did these changes happen according to you?
 - Any changes not related to sanitation?
 - Is there anything else you would like to change that has not yet changed?
- 36) Would you like to tell me anything else about CLTS, about sanitation, your organization, or any other topic? Do you have any questions for me?

3. Interview Guide for Community Leaders and “Natural Leaders”

- 1) First, please tell me about yourself. Probes:
- Have you lived in this village your whole life? `
 - What is your occupation? How long?
 - Did you attend school? If so, how many years of school did you attend?
- 2) What would you say are the most important problems your community has to deal with?
- 3) In terms of health, what would you say are the top three health concerns of people in your community?

- 4) Can you tell me about the situation of water in your community? Where do most people get water for drinking, for bathing, for cooking, etc.? How clean is the water?
- 5) Before [local CLTS facilitators] came to your community to talk about sanitation, what was the overall sanitation situation like here? Probes:
 - How many families had toilets?
 - Where did people go to defecate?
 - Did schools have toilets?
 - Did people talk about sanitation? Was it a problem?

[Q6 and Q7 only for Natural Leaders]

- 6) When were you selected to be a “natural leader” in your village? Probes:
 - Before or after triggering?
 - Who selected you for this role?
 - Did they say why you were selected?
- 7) What is your role as a “natural leader” for sanitation in your village?

Triggering Process

- 8) Can you remember the first time the [local CLTS facilitators] came to your village to talk about sanitation? Tell me about that experience. Probes:
 - How many people came?
 - What all did they talk about?
 - What activities did they do with the community?
 - How long did they stay?
 - What was their attitude towards your community?
 - How did the community react to their visit?
 - Did they say what they wanted your community to do after they left?
 - Did they involve women and children? How?
 - Did you help them? How?

Opinions on CLTS

- 9) What was your favorite part about the sanitation activities done by the [local CLTS facilitators] (triggering)? Why? Tell me about that.
- 10) Was there anything you did not like about the sanitation activities (triggering)? Why? Tell me more.

Training

- 11) Did you receive any training on sanitation? Please describe this for me. Probes:
 - Who trained you?
 - How long was the training?
 - Did you receive any support (fuel, food) for the training?
 - How many people were trained?
 - What material did they cover in the training?

Follow-up Process

- 12) What happened after the sanitation activities (triggering) were completed? Probes:
- Did people start to build toilets? Can you tell me how this process happened?
 - Any action plans made?
 - Involvement of women and children?
- 13) What was your role in changing the sanitation situation? Probes:
- What were some difficult experiences you faced?
 - What kind of challenges did you have when working with the [local CLTS facilitators]?
- 14) How long after the [local CLTS facilitators]' first visit did they visit for the second time? Probes:
- Was it days, weeks, or months later?
- 15) How many times would you say the [local CLTS facilitators] have visited your village in total?
- 16) Have their visits helped your village improve its sanitation situation? Tell me more about this.

[Q17 only for Natural Leaders]

- 17) Does working on sanitation as a “natural leader” keep you away from other work? Tell me about this.
- 18) Has anyone in your village received any support to to build toilets? What kind of support and from whom?
- 19) What is the sanitation situation like now in your community? Probes:
- How many people have toilets? What types of toilets?
 - Problems with toilets?
- 20) Where do you get this data on toilets? Probes:
- Who collects the data and how often?
 - Does anyone in the community check to see if people are defecating outside? How about from outside the community?
 - Who do you share this information with?
- 21) Are there any people in your community who still defecate outside? Probes:
- Why do you think they do this?
 - What happens to them if people see them?
- 22) Did anybody offer you or your community any rewards to change your sanitation situation?
- 23) What will happen when everybody in your community gets access to toilets? Is there any special event for this? How does this make the community feel?

Overall Philosophy

- 24) According to you, who do you think should pay for improving sanitation in your community?
- 25) Do you feel like your village needed someone from outside to bring this change in sanitation, or do you think the change would have happened eventually anyway? Why do you feel this way?
- 26) Would you like to have people from other communities visit your village now to look at your latrines? Why or why not?

- 27) Would you like to see any changes to the way the [local CLTS facilitators] do their sanitation activities (CLTS)?
- 28) What more changes would you like to see in your community with regard to sanitation?
- 29) Would you like to tell me anything else about your community, about sanitation, or any other topic? Do you have any questions for me?

Thank you for your time.

Verbal Informed Consent Script

Verbal consent was obtained using the following script. An information sheet was also provided to all participants about the project, their participation, and researchers' contact information.

Script: Hello, my name is [___]. I am a student at the University of North Carolina at Chapel Hill in the USA. I am here working on a research project with Plan International [country]. Thank you for taking the time to talk to me today. I would like to ask your permission to take part in research on sanitation. We are doing this study because we want to know about _____:

[For practitioners/policymakers]: your experience with sanitation and hygiene projects, specifically community-led total sanitation, or CLTS.

[For community leaders]: your community's experience with sanitation and hygiene.

By learning from you, we can try to improve these projects in the future.

[For community leaders]: We want to speak with you because we were told that you are one of the leaders for sanitation in your community. We want to know more about these activities that you do.

Your participation is voluntary, which means that if you do not want to take part in this study, you do not have to. You can also decide later on to say no for any reason, without any penalty. If you don't want to answer specific questions, you can skip those questions. If you agree to take part in this study, I will ask you questions about _____:

[For practitioners/policymakers]: the sanitation situation in this country, about CLTS activities, and about your opinions on CLTS.

[For community leaders]: your experience with sanitation and hygiene activities, such as what activities you took part in and how you felt about them.

The interview should take 30 minutes to 1.5 hours. Your name will be kept secret. We will not mention your name in any report that we write, so I request you to please answer as honestly as possible. No one outside of my research team will be able to link what you said directly to you. With your permission, I would like to record this interview, so that I do not miss anything that you tell me. I will then write down what you said. The recordings will be kept safely and will be erased after the project is finished. Finally, I would like to mention that by taking part in this study, you may help us find ways to improve sanitation projects.

[For practitioners/policymakers]: It is possible that you will also get new information about CLTS from our results that may help you in your job. At the end of this study, we will share with you any reports and findings.

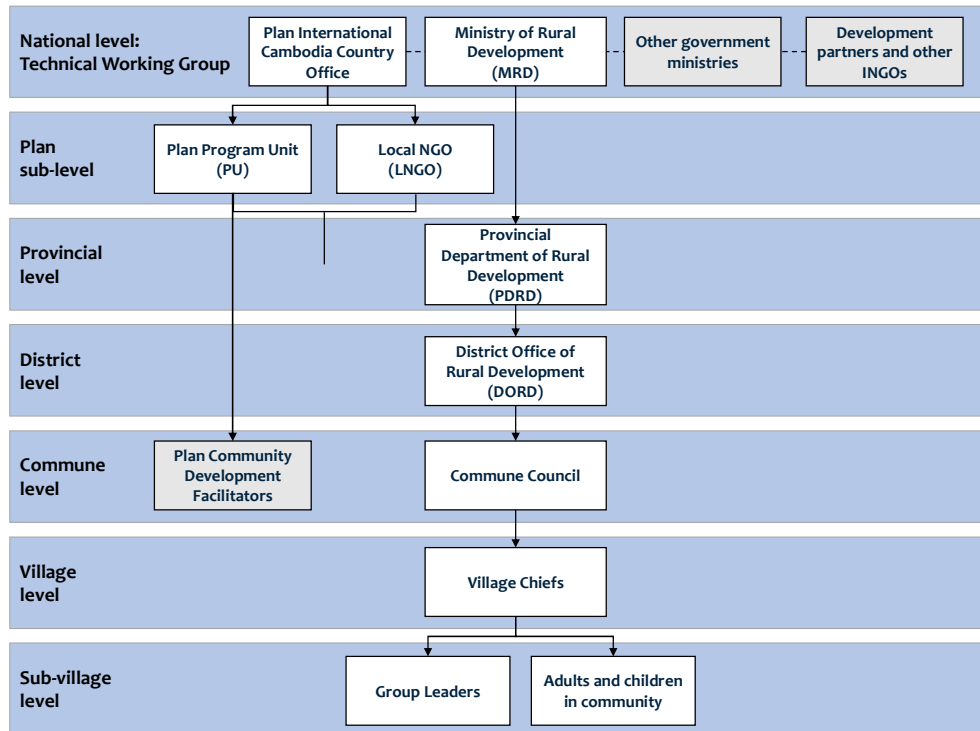
[For community leaders]: You will not receive any direct benefits from this project.

Please keep a copy of the information sheet, which explains the purpose of our research and what we will ask you to do if you agree to take part in the study. Do you have any questions for us?

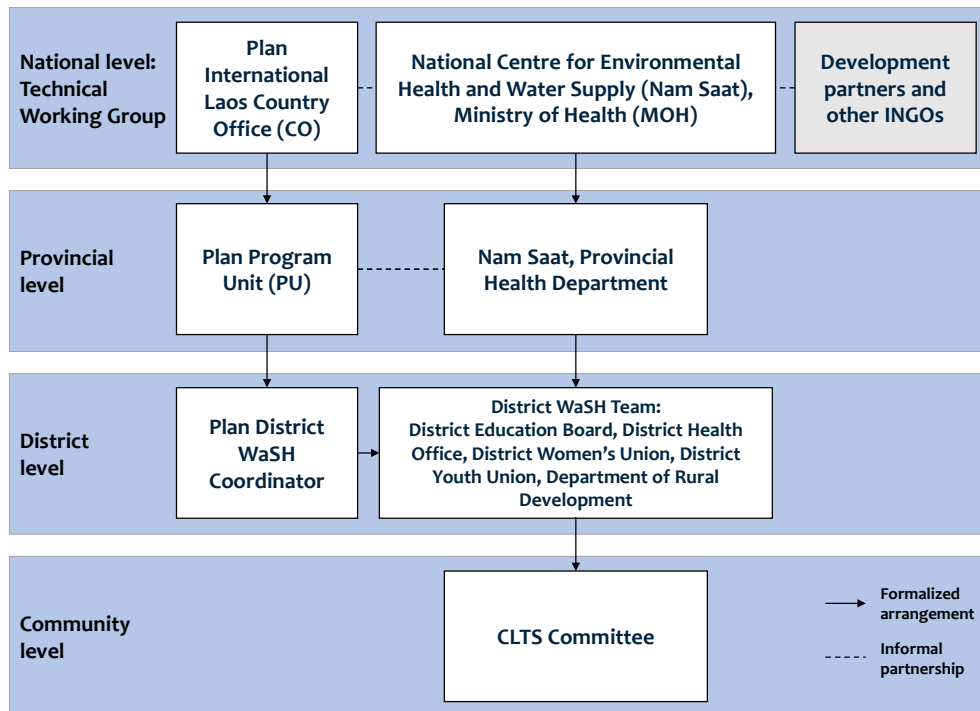
If you agree to take part in this interview, please say into the recorder: “Yes, I agree to take part in this study.”

APPENDIX 5: INSTITUTIONAL ARRANGEMENT MAPS OF SEVEN CASES

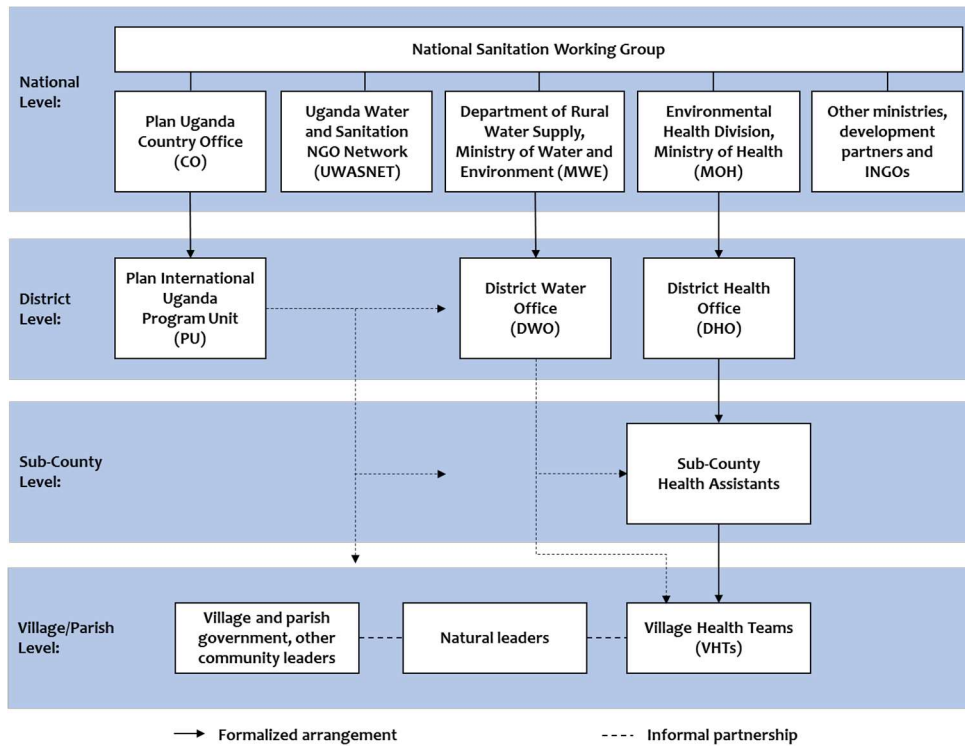
(A) Institutional map of Plan International Cambodia's CLTS approach



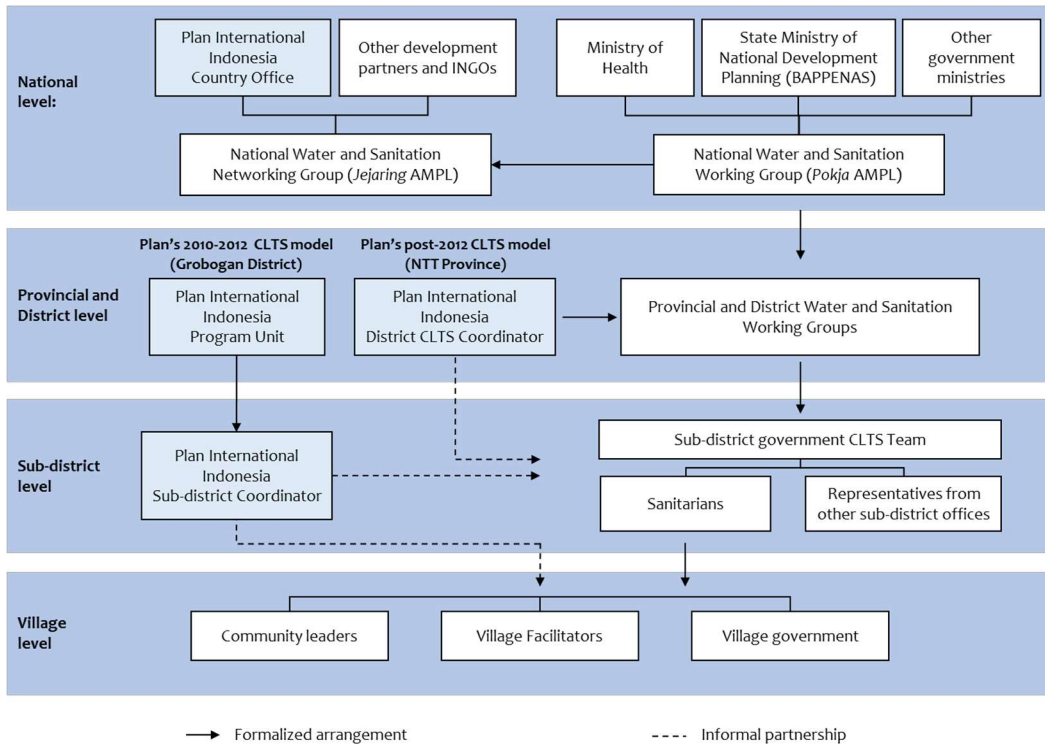
(B) Institutional map of Plan International Laos' CLTS approach



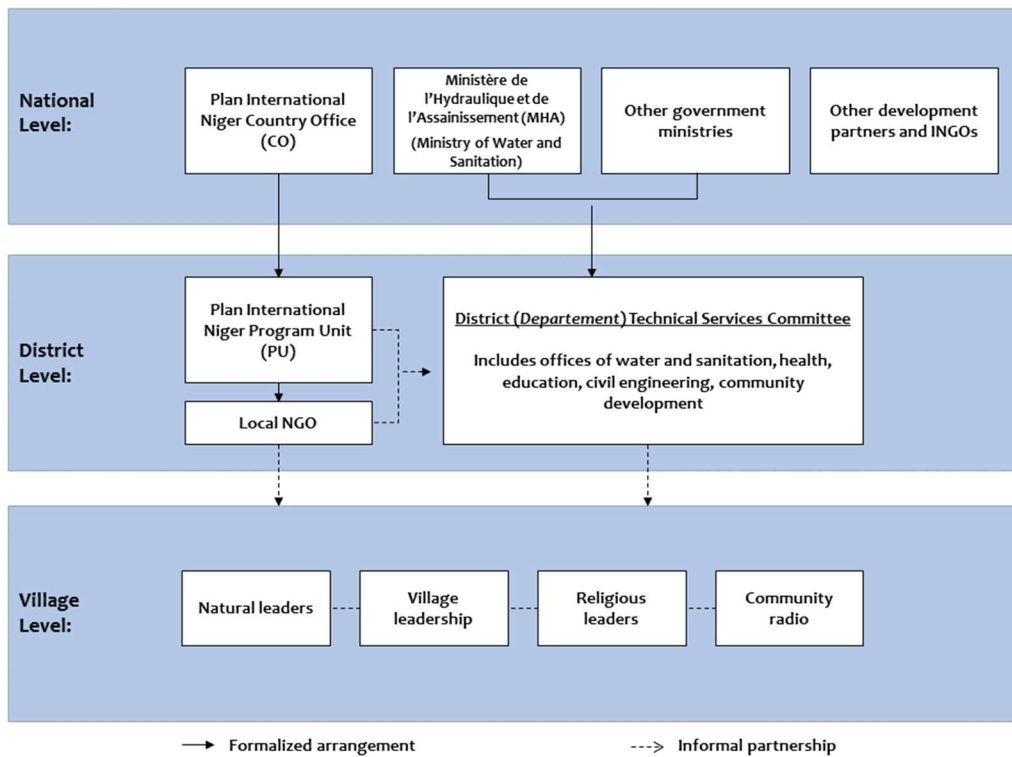
(C) Institutional map of Plan International Uganda’s CLTS approach



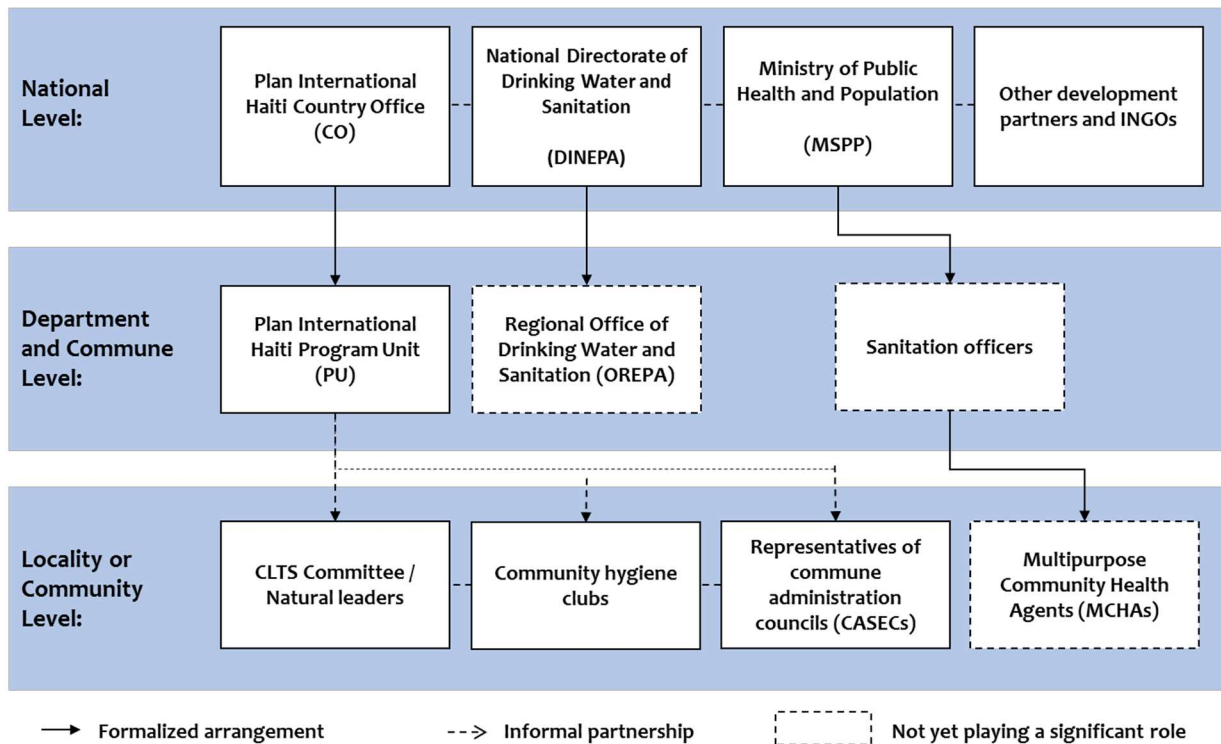
(D) Institutional map of Plan International Indonesia’s CLTS approach



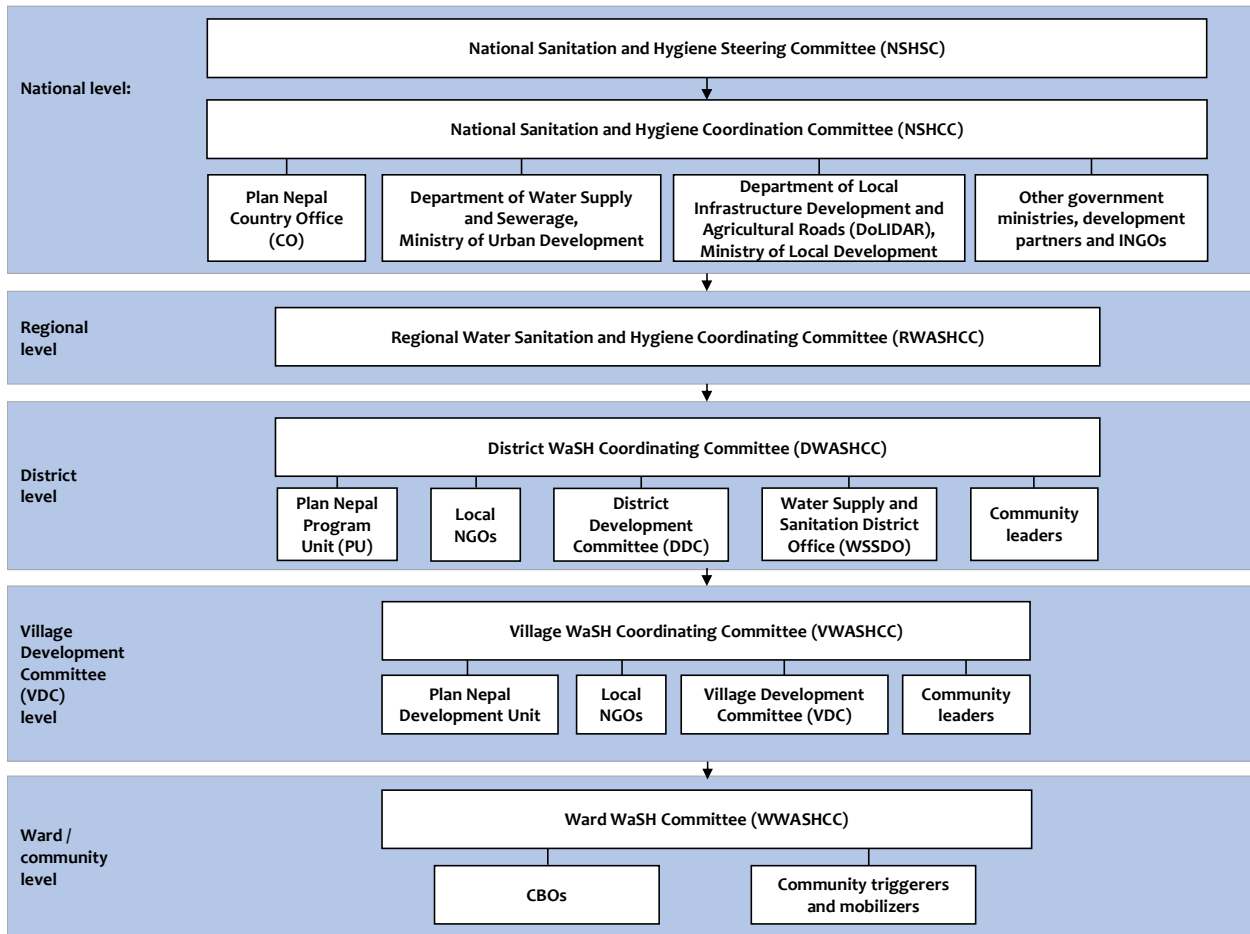
(E) Institutional map of Plan International Niger’s CLTS approach



(F) Institutional map of Plan International Haiti’s CLTS approach



(G) Institutional map of Plan International Nepal's CLTS approach



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