

Research Paper

Lessons learned from the national sanitation campaign in Njombe district, Tanzania

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ABSTRACT

Sanitation remains one of the Sustainable Development Goals, with slow progress. Tanzania has been implementing the National Sanitation Campaign through a Community-Led Total Sanitation (CLTS) approach since 2012. Njombe District Council (DC) has been identified to be among the best performing councils in the implementation of the sanitation campaign. A qualitative study was conducted to document how the CLTS was carried out in Njombe DC, assess progress on CLTS implementation and define the success factors for CLTS implementation. Findings show that CLTS intervention has resulted in increased coverage of improved latrines at a household level from 7.5% before the intervention in 2011 to 99.8% in September 2018. In addition, households with functional hand washing facilities have increased from 5.1% before the intervention to 94% in September 2018. Involvement of political leaders and government officials from the council level to the lowest governmental unit offered important support for CLTS implementation. The best mix of sanitation education, regulation and enforcement was instrumental in raising community awareness, changing collective behavior, making people comply with the village sanitation laws, and the overall success in the sanitation campaign.

Key words | CLTS, rural sanitation, Tanzania

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INTRODUCTION

The United Nations reaffirmed the importance of sanitation by including it in the Sustainable Development Goals (SDGs). Goal 6 of the SDGs aims 'to ensure availability and sustainable management of water and sanitation for all' (UN 2015). Nevertheless, according to

WHO/UNICEF (2017), 2.3 billion people lack basic sanitation services; 600 million people use a limited sanitation service, that is, improved facilities shared with other households; 892 million people worldwide still practice open defecation; and 47% are without hand-washing facilities. In Tanzania, only 10% of rural households use improved, non-shared toilet facilities and 13% of the rural population practice open defecation (URT 2016). There are various negative consequences of poor sanitation and

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hygiene practices. For instance, inadequate hygiene practices and use of unimproved sanitation in the country is among the top five causes of childhood illness among children under five years of age with a prevalence of 12% (TDHS-MIS 2016). Accordingly, the importance of strengthening sanitation service delivery is well recognized due to increasing evidence of the relation between appropriate sanitation and the protection of public health (Mara et al. 2010; Keraita et al. 2013).

Tanzania has been implementing the National Sanitation Campaign (NSC) since 2012 with the aim of increasing the proportion of households and schools with improved sanitation and hygiene conditions. The campaign adopted a combination of approaches that include Community-Led Total Sanitation (CLTS); Social Marketing; Artisan Training; Behavior Change Campaign (BCC), and the rehabilitation or construction of appropriate WASH facilities in schools (SHARE 2017). Njombe District Council has been identified to be among the best performing councils in the implementation of the sanitation campaign in

Tanzania. This study was conducted to document how the sanitation campaign was carried out, assess progress on implementation and define the success factors.

STUDY AREA AND METHODOLOGY

Study area

This study was conducted in Njombe district between November and December, 2018. The district is located between latitude 9°40'0"S–9°0'0"S and longitude 34°50'0"E–35°20'0"E (Figure 1), and lies at 1,900 m above the mean sea level. The area receives rain levels ranging from 1,000 to 1,600 mm per year with temperatures averaging 15 °C. The 2012 population census results estimated the Njombe DC population at 85,747 persons (45,700 females (53.3%) and 40,047 males (46.7%)) (NBS & Njombe DC 2016). The council has a total of 12 wards, 45 villages, 227 sub-villages and 24,211 households.

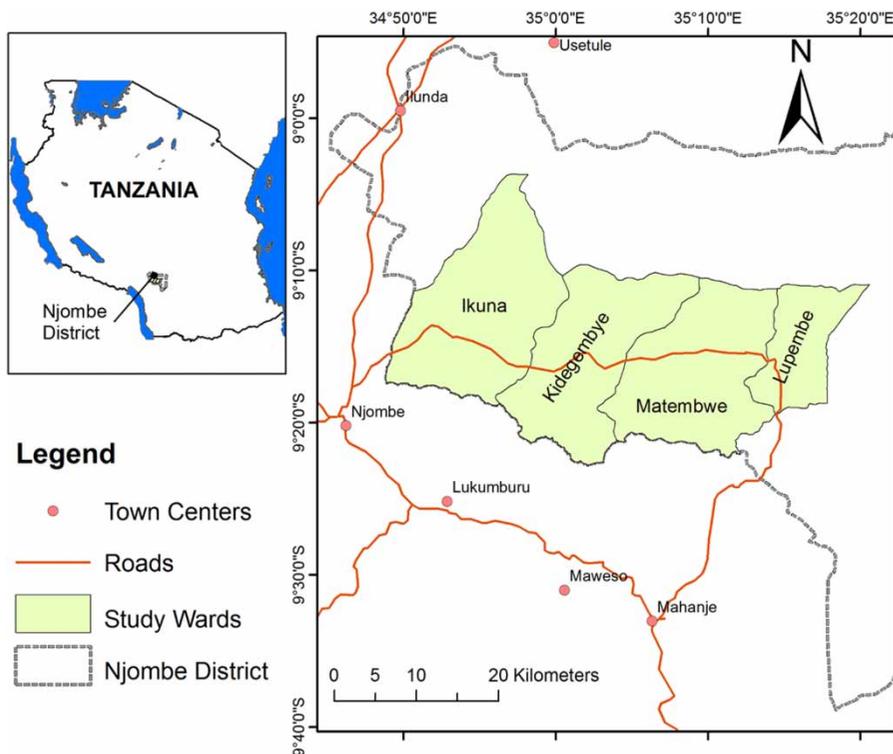


Figure 1 | Location map of the study area.

Data collection and analysis

Data collection involved a review of relevant documents including the Water Sector Development Program (WSDP II); National Sanitation Campaign progress and evaluation reports at national and council levels; baseline and monitoring reports (national and Njombe DC); WASH related by-laws enacted in Njombe DC and peer-reviewed journal articles. Further, field visits were conducted in Lupembe ward (Kanikelele and Lupembe villages), Matembwe ward (Wanginyi village), Kidegembye ward (Image and Kidegembye villages) and Ikuna ward (Ikuna village). A purposive sampling method was employed in selecting villages for the study. Villages triggered at the start of the campaign were enrolled in the study. A basic assumption was that villages with longer experience in implementing CLTS activities would give better insights on the process of sanitation transformation. Overall, the study involved 24 Focus Group Discussions (FGDs) stratified into men, women and schools boys and girls, each composed of 8–12 participants.

The FGDs were conducted in public areas, mainly in the village offices and schools. Both oral and written consent were sought. The discussions focused on sanitation practices, methodology used to communicate sanitation behavior change and local resources, and community capacities in supporting the CLTS initiatives. Other aspects were the achievements of NSC, success factors, implementation challenges and sustainability. In addition, 28 key informants who represented the national, regional, district, ward and village levels were interviewed. Interviews focused on the WASH sector governance; experience on pre-and post-triggering intervention, success factors for the CLTS implementation as well as the challenges and sustainability of the intervention. Data were transcribed and categorized into various themes and sub-themes and analyzed through content analysis techniques.

RESULTS AND DISCUSSIONS

Approach on sanitation campaign

Sanitation in schools

Before the NSC campaign, the sanitation and hygiene situation in primary schools was poor, and improvement of

sanitation and hygiene practices was highly needed. Many of the primary schools did not have improved sanitation facilities. Where available, the facilities could neither meet the national standards of 20 girls and 25 boys per drop hole (URT 2007) nor the national campaign targets of 1:50 for boys and 1:40 for girls (URT 2012). Interventions on improving sanitary conditions in Njombe started with the UNICEF-supported latrine building program for primary schools in 2013. These facilities served as the model latrines to communities. Children became the agents of change having had access to improved latrines and cleaner environment in schools through the establishment and use of School WASH clubs. These clubs took up the task of organizing activities in the community. Schools and communities were also linked through meetings between school administration, school management committees and parents. Engaging communities in this way reached them with the same WASH messages that are taught to their children, making it more likely that improved sanitation and hygiene practices at home are reinforced.

Sanitation campaign at household level

In 2013, sanitation campaigns began with a focus on ending open defecation. The local authority adopted the CLTS approach. The process involved all three steps of the CLTS approach namely pre-triggering, triggering and post triggering. During the pre-triggering stage facilitators familiarized themselves with the village in terms of cultural barriers and enablers of appropriate sanitation and hygiene practices. This was followed by formal communication with the village authority explaining the intention to conduct triggering in the area. Triggering is a step where the community realizes the bad effects of open defecation and decides to stop it through collective analysis of their own sanitation and hygiene profile. This stage is characterized by four pillars: namely shame, disgust, fear and pride. Initially, triggering was received negatively in the communities because of the use of 'shame' words which were thought to be disrespectful. Later, however, communities embraced this approach because of its effectiveness in communicating sanitation messages. Asked what they thought about triggering and whether the language used during triggering should be used in other communities, one of the respondents

remarked ‘... because it is true that without improved latrine people eat feces... [they] should be told the same to be healed; truth heals’. This message is important given that open defecation is responsible for a ‘silent epidemic’ of infectious diseases (Pruss-Ustun et al. 2014). In the study areas, the triggering stage was followed by routine follow-up visits, supervision and monitoring, in order to verify and certify the household sanitation status. The post-triggering stage was conducted through the use of monitoring and evaluation tools.

Throughout the campaign, communities were at the center because changes in social norms and collective behavior were needed. The local government authority initiated collective actions by holding public meetings, discussing sanitation conditions, enacting by-laws and establishing CLTS committees. The main responsibility of the selected CLTS committees was to regularly monitor the progress of the sanitation campaign. Information collected by the CLTS committees was forwarded to the village authority, and thereafter to ward and council levels. The by-laws were enacted by the local government to discipline community members who were not implementing agreed actions. The implementation of the sanitation campaign in Njombe is summarized in Figure 2. Other initiatives during the campaign process involved training local artisans in order to provide technical support for the construction of latrines. Training local actors, including the artisans and opinion leaders, on CLTS intervention fits the diffusion theory whose position is that peer-communication facilitates the adoption of new behavior (Rogers 2003). Local supplies of construction materials were made available by local business people because the demand was already created. In general, this was an all-inclusive campaign. Sanitation became a common agenda across the relevant service sectors (health, water, education and community development).

It is worth noting that community engagement in improving the standards of latrines was gradual. At first, emphasis was placed on ensuring that latrines met the conditions of cleanliness, privacy, convenience and safety. The District Council, in collaboration with the village authority, prepared implementation plans with a set of targets which were to be accomplished within a specified time. At the end of the implementation period, evaluation was

conducted to assess the success and challenges. The implementation plan for the period that followed required approval by community members. Generally, the majority of people moved up the sanitation ladder. Likewise, at the beginning of the campaign, the CLTS team promoted the use of a tippy tap as a hand washing facility. However, as time went by, community awareness of sanitation raised so much that a water bucket fixed with a tap was preferred to a simple tippy tap. Thus, communities no longer use tippy-taps as they are considered not user friendly and less durable. Initially, community members were unwilling to adopt improved latrines because they felt that construction costs were high and unnecessary. Hygiene practices were perceived as being too demanding. A group of men explained how some of the community members reacted to the CLTS committees citing a statement: ‘I hear that they [CLTS committees] want to teach us on how to ease ourselves. Have we started doing it [defecating] today? We have done that for many years, right? Do we need to be taught about it?’

In the face of this resistance, non-compliers were given time to build improved toilets. They received more health education, formal warnings or punitive measures. Such measures included naming, shaming in public meetings, and imposing fines or prosecutions. Fines were largely used to purchase construction materials for the penalized households. During public meetings, names of the household heads who did not have improved sanitation facilities were read aloud. This was regarded as a shame. In the end, non-compliance became more costly than constructing and using improved latrines. However, experience has shown that as far back as 1937: ‘it is far easier to get the population to dig a latrine than to use it’ (Nyasaland Annual Report cited in Austin 1952). In the context of Njombe DC, it was equally difficult to change the habits of people in various aspects including, for example, stopping open defecation or changing the habit of using grass and maize cobs for anal cleansing. In some households, pour flush latrines were built but members of the family kept using the old pit latrine to the extent that the village government had to abolish such latrines forcibly. This experience suggests that the use of pit latrines was habitual so that switching to new types of latrines required extra effort beforehand.

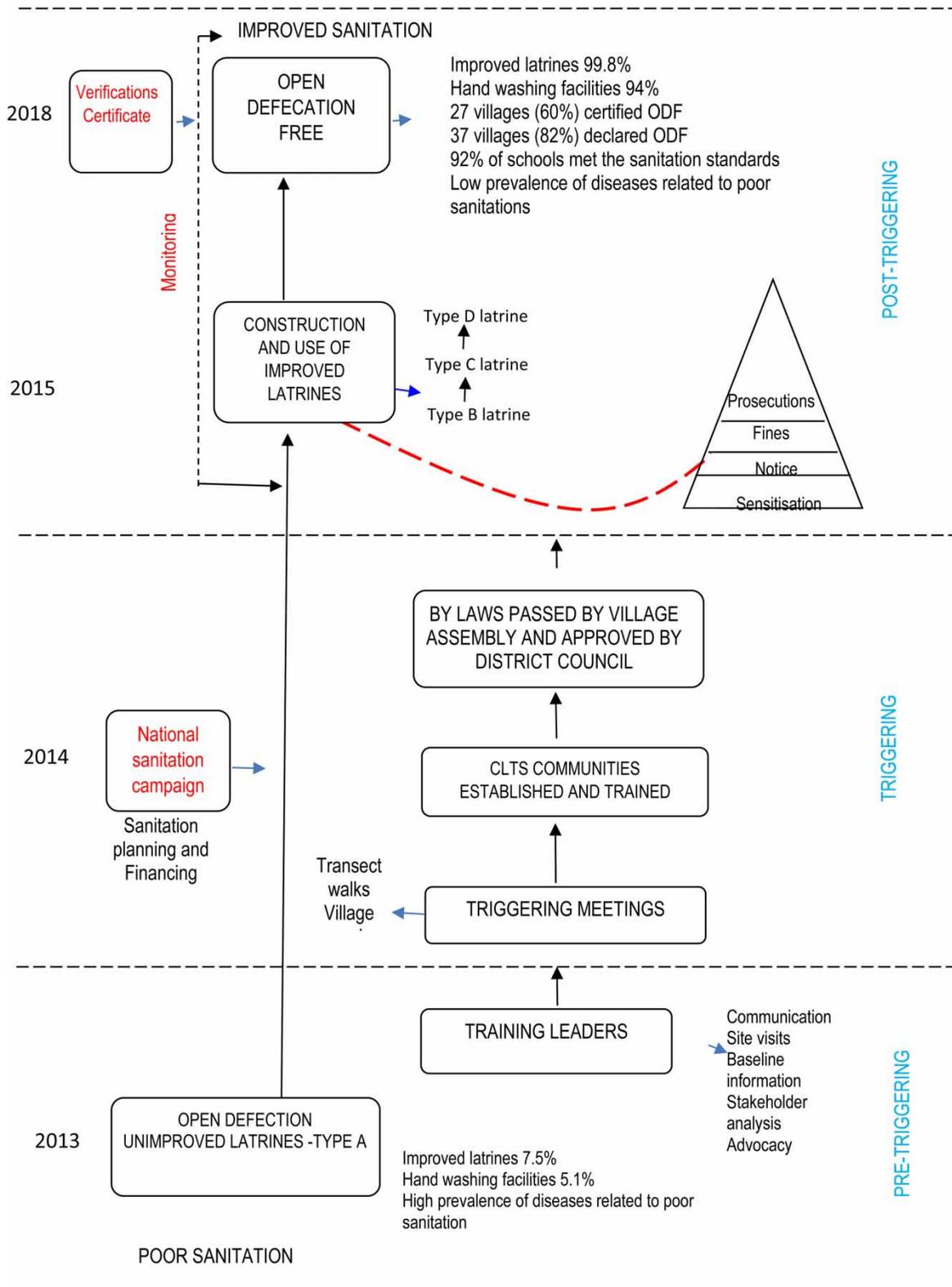


Figure 2 | Implementation of National Sanitation Campaign in Njombe District, Tanzania. Types A, B, C and D latrines are unimproved latrines, improved pit latrines, ventilated improved latrines and pour flush latrines connected to septic tanks, respectively.

Progress on implementation of sanitation campaign

The sanitation campaign in Njombe District was launched in 2013. The first task was to conduct a baseline of the WASH situation before embarking on the actual execution of the campaign. Results of the baseline survey indicated that only 5.1% of the households had improved toilet facilities. As of September 2018, the coverage of improved latrines at the household level was 99.8% up from 7.5% in 2014. Households with functional hand washing facilities had also increased from 5.1% in 2014 to 94% in 2018. Conversely, 37 (82%) of the villages were reported to be Open Defecation Free (ODF). Implementation of the NSC campaign has undoubtedly contributed to a reduced prevalence of diarrheal diseases. For example, reports from a health center in Image village indicated that patients diagnosed with diarrheal diseases had dropped from ten per week to one or none per month as of May 2018. At the time of this study, 92% of schools had attained recommended standards for latrines with handwashing facilities (1:40 for girls and 1:50 for boys), respectively.

Improved latrines now appear to be a 'status symbol' linked with privacy, convenience and dignity. Villagers are deeply concerned about the effect of one household not owning and using improved latrine on the grounds that the health of everybody else in the village would be at risk. If one household does not own an improved toilet facility, neighbors would report the case to the sub-village leadership or village government for action. In one of the FGD meetings, one woman said '*We do not want to be fed feces by our neighbors*'. In this regard, it is clear that these communities no longer accept open defecation. Evidence shows a high uptake level of the sanitation messages. In one of the interviews, it was stated that: '*[...] people in this village are so concerned about the health effects of poor sanitation. We even talk about someone's finger nails if they get too long. We know that is a problem*'. In this perspective, therefore, it is not surprising that Njombe DC became the winner of ODF three times (2015, 2016 and 2018). The Government, through the Ministry of Health, Community Development, Gender, Elderly and Children, awarded prizes to Njombe DC and the villages were declared ODF status. This reward system increases community motivation and brings a strong sense of pride among them.

Success factors

In this section, we adapt a framework developed by Venkataramanan *et al.* (2018) to analyze the factors that facilitated implementation of the sanitation campaign in Njombe DC. This framework provides a comprehensive scope of the enabling factors for the sanitation campaign and is based on analysis of 200 published articles with 64% exclusively focusing on CLTS interventions. The factors we discuss include policy environment, implementation quality, administration context and physical environment. Others are community capacity, community participation and innovation. These factors are described in the following sections.

Policy environment

Improving sanitation and hygiene to prevent infectious diseases is of high priority in Tanzania. In 2011, as part of the Water Sector Development Programme (WSDP), the Government of Tanzania launched the National Sanitation Campaign, aiming to stimulate demand for and improve the supply of sanitation nationally with the overall goal of delivering health and education improvements. Although Tanzania does not have a separate policy for sanitation, the presence of national sanitation guidelines is an enabler of NSC activities as they set targets and standards. This has acted as an incentive for local governments to implement and monitor the NSC activities. These include: The National Sanitation Options and Construction Guidelines of 2012, the National Sanitation Campaign Implementation Guideline of 2014, the National Guidelines for Rural Community Led Total Sanitation of 2016, the National Guideline for Water and Sanitation and Hygiene for Tanzania School of 2016 and the National Guidelines for Water, Sanitation and Hygiene in Health Care Facilities of 2017. There is generally a high political will and support of sanitation activities in the country.

Implementation quality

In this study, we established that there were systematic selections of CLTS committees at the village and sub-village levels. Selection of committed individuals and provision of fair incentives was essential in leveraging sanitation

interventions. Recent experience from Kenya and Zambia has highlighted the need for local governments to organize and provide resources to support CLTS committees in undertaking follow-up, monitoring and reporting as necessary strategies for sustaining CLTS outcomes (Musyoki 2016). Communities witnessed that CLTS committees were the immediate driving force for sanitation transformation in their villages. The process of community self-realization through education campaigns, awareness building and sanitation marketing proved to be quite effective. Emphasis was placed on addressing the multiple fecal–oral transmission routes to achieve the intended health outcomes. The district mobilized the entire community and communicated sanitation messages. During the CLTS triggering event, a range of techniques such as transect walks or open defecation mapping were used to encourage collective action towards an open defecation-free environment. Villages were triggered using bold terminologies in local language to be able to create shame and disgust effectively. The aim was to raise awareness of the collective benefits of stopping open defecation.

In schools, much of the success in sanitation transformation can be attributed to investing in behavioral change through repeated sanitation messages. There are school WASH clubs which have proved to be effective and instrumental in communicating sanitation and hygiene messages and in taking a leading role in sanitation activities within schools and beyond. Any pupil walking out of the latrine who bypasses the hand-washing point located right outside the latrine is shamed and reminded to wash their hands. Every school pupil is a watchdog in preventing poor sanitation and hygiene practices in schools. In each of these schools, there are sanitation messages emphasizing sanitation best practices.

Administration context

A multi-scalar political will in Njombe DC was key in driving the sanitation agenda forward. Participation and unique support of decision makers, including the District Commissioner, Councillors and the District Executive Director, in the implementation of CLTS activities contributed to the high uptake of the NSC package. There is a very clear vertical synergy as well as horizontal cooperation

(e.g. department of health, water, community development and education) within the DC. Thus, ODF is positioned in the context of broader public health and development initiatives in Njombe DC. The direct involvement of political leaders and council officials in the promotion and monitoring of implementation of CLTS activities at the village level gave the community a sense of government commitment for change in sanitation and hygiene practices. It also empowered the village administration and the committees in their day to day operations.

Further analysis shows that there was a clear and verifiable structure of assessing progress for CLTS outcome in the triggered communities. Monitoring, verification and certification were critical elements of the CLTS process and contributed to attaining the ODF status. Monitoring involves both the process and progress of CLTS activities in accordance with the national framework of the Water Sector Development Program. The exercise is carried out at the household level by the CLTS committees. While the village CLTS committees conduct monthly inspection of latrines and sanitary conditions, the committees at the sub-village level does the same on a weekly basis. During inspections, messages of health education are communicated to all family members or latrine users. In the case of any shortcoming, a person in charge of the family signs a form declaring when a specific sanitation-related action will be completed. The CLTS committee then returns to the household to monitor progress, and assess whether the anticipated outcome has been attained as agreed. Data from the sub-village level are submitted to the village office. The village executive officer then aggregates the data and submits it to the Ward Health Officer or Ward Executive Officer for compilation and submission of report to the Council.

As part of data verification and validation, the team from the council level carries out periodic follow-up and supervision to ascertain the reports submitted from lower levels. Overall, implementation of the CLTS activities was characterized by a close follow-up of actors at ward and village levels. There were regular meetings at council level in which the ward and village executive officers reported the implementation progress to the council. *‘These meetings helped to identify the challenges of CLTS implementation and ways to address them’* said one of the ward officers. In

essence, officials at lower local government levels were accountable to the council. A similar experience was reported among village chairpersons and councillors, and there was a sense of competition among these political leaders to achieve higher sanitation status. Each study village had a functional monitoring and reporting system. Indeed, Studies in Kenya (Tiwari 2011), Ethiopia (Anthonj et al. 2018) and India (Ravindra & Mor 2018) all illustrate that an effective monitoring system is an important aspect for the success of CLTS activities. On a separate account, evidence emerged of a high level of community trust to local government both at lower and higher levels. Residents in all villages included in the study pointed to the supportive role of their leaders in development activities. Institutional trust or the confidence that individuals have in an institution's ability to function effectively and deliver on its mandate encourages individuals to accept institutionalized norms that emerge as part of the institutional fabric (Jacobs 2012).

Physical environment

In the context of this study, the physical environment refers to environmental, geographical and climatic-related factors, such as soil conditions and water availability, which may facilitate or impede CLTS activities. Communities in Njombe are mainly subsistence farmers living in permanent settlements. Hygiene and sanitation transformation under such living arrangements are less challenging than, for example, in nomadic and pastoral communities who are mobile (Cummings et al. 2014; Sara & Graham 2014). Further, Njombe DC is characterized with hilly landscapes. Lack of proper sanitation facilities and open defecation resulted in contamination of water sources which negatively affected human health. During triggering, it was clearly explained how people ended up eating each other's feces through contaminated water sources. Communities became receptive to the CLTS message because the risks of open defecation or using unimproved latrines were immediately visible. One of the FGD participants stated '*... Initially, many of us thought that the [sanitation] campaign was stepping too much on our toes. But it didn't take long before we realized that diarrheal diseases in this village were indeed a result of contaminated drinking water.*'

Community capacity

In this section, we present the factors that influenced implementation of CLTS activities favorably. First, Njombe DC is endowed with forest reserves which makes the availability of poles or timber for construction of latrines rather easy. Second, 75% of households in Njombe live above the poverty line (URT 2016). While sanitation campaigns in rural areas have been implemented parallel with the financing scheme in various countries including Ghana (Keraita et al. 2013) and Cambodia (Bateman & Engel 2018), in Njombe DC the campaign aimed to help people make sanitation transformation through their own actions and efforts. Part of the campaign was to explain to people that unimproved latrines were in the long run more costly than improved ones, both on social well-being and economic grounds. This is important because if constraints are perceived as unchangeable, they result in an end to planning latrine adoption at an early stage of behavior change models (Ajzen 1985). Indeed, a study from India also revealed that the culturally instilled perception of latrines as luxury assets and resistance to use inexpensive latrines had a stronger impact than the lack of material or financial resources (Coffey et al. 2014).

Community participation

The intervention was designed primarily to include everyone in the community. Participatory activities including triggering, village mapping, transect walks, and decision making in the village meetings steered up collective actions. In this community, there is evidence of strong social cohesion with experience of a good level of participation in executing development activities such as constructing road-side open channels and building schools. Throughout the campaign, influential people including religious leaders, traditional leaders, village leaders, and councillors were involved. Further, the council leadership asked village leaders to identify the 'hard to change' people who are known for their resistance in development undertakings. The essence was to educate them at the very early stage and win their support. The CLTS team wanted to overcome any possible obstacle that would delay the uptake of the sanitation campaign.

Sanitation became a common agenda in every formal and informal gathering, including church and in funeral services. Government officials at lower local government, mainly the ward executive officers, village executive officers, clinical officers and school teachers, were instrumental in communicating CLTS messages to communities. In addition, men and women participated actively in various CLTS-related activities among them; making bricks, fetching water and building latrines. Importantly, communities in the study area are known for their hard working spirit with women taking charge in some of the men's traditional roles such as brick making. Globally, however, evidence indicates that while men are often the owners of the sanitation facilities, women are responsible for hygiene maintenance of the facilities (Jenkins & Scott 2007; O'Reilly 2010; Coffey *et al.* 2014).

Innovation

The council leadership managed to integrate CLTS interventions with sanitation marketing activities. It stimulated sanitation demand and provided linkages to suppliers of construction materials. Effective regulation and enforcement helped people to comply with the village sanitation laws using limited available resources. This approach matches with the concept of SMART enforcement advocated for urban sanitation (ISF-UTS & SNV 2017). SMART enforcement considers a range of strategies for effective regulation. It encompasses a mix of enforcement measures and does not apply punitive measures as a first response to non-compliance. Another intriguing aspect of the enforcement is that a significant proportion of money collected as fines from an individual was used to purchase materials for the construction of a latrine for the fined person. Arrangements were made to engage the sons and daughters or close relatives of the elderly, sick or people living with disabilities who were unable to construct improved latrines to help them do so. Individuals who would potentially provide assistance were contacted even if they lived far from the district. In the cases where one had no relatives to assist, the village administration engaged communities to help the less able person. Finally, villagers were encouraged to form groups through which they could share transport costs for materials such as sand and cement. There were

also arrangements with material suppliers to allow for payments in installments.

Challenges

Notwithstanding the level of achievements in sanitation and hygiene practices in Njombe DC, several challenges are noted. First, financial resources are inadequate to cover supervision, inspection and law enforcement. Countrywide, low rates of budget execution and unpredictable timing of disbursement have resulted in poor upkeep and reduced access to improved WASH services (UNICEF 2018). With the majority of sanitation costs borne by the households, the poor are disadvantaged. Second, sector professionals are understaffed at all levels of local government authority. For instance, of the 12 wards in the council, only five have Environmental Health Officers (EHOs). Given this challenge, the council had to train other cadres, such as community development officers, on CLTS techniques to assist with the implementation of the campaign. Third, inadequate or unreliable transport to facilitate monitoring of sanitation-related activities remain a challenge. Fourth, limited access to water service in some villages slows progress in sanitation and hygiene practices and fifth, future management of fecal sludge is a concern as most toilet facilities use onsite technology. Disposal of fecal sludge from these facilities will become a serious problem if not considered from the beginning.

Sustainability

In mapping the sanitation sustainability, experience on the ground suggests that the achieved sanitation status will be sustained given that communities are overwhelmingly satisfied with the cleanliness, privacy, convenience and safety the improved latrines provide. In addition, involvement of children and the behavioral transformation instilled in them has become their norm in early life. In this regard, it is more likely that these children will continue with the learned hygiene practices through their adult life. Evidence from literature also shows that CLTS outcomes are more sustainable where there is a supportive enabling environment (e.g. sufficient follow-up visits), where communities have access to latrine products and materials and where

communities are socially cohesive (Crocker et al. 2017). The above descriptions fit the communities and sanitation experience in Njombe DC. Although potential health gains are the primary motivation behind efforts to improve sanitation, non-health benefits have been reported as important attributes for the success of sanitation interventions (e.g. Bartram & Cairncross 2010; Sclar et al. 2017). Further, there is a strong sense of respect, social acceptance and inclusion for households that own and use improved latrines. This observation presents an important psychosocial factor for sustainability of the CLTS activities in Njombe DC. Besides, the long-term economic benefits of the improved latrines which outweigh those of unimproved ones are likely to become the push factor towards the sustainability of improved latrines. However, there are reports from other countries that give an account of community slippage to open defecation (OD) after having attained ODF status (Coffey et al. 2014). With this experience, therefore, it is critical for the local government authority and other stakeholders to continue providing technical support to key actors involved in the sanitation service. Key among these is the need to sustain leadership role in planning, organizing, supervising and monitoring progression. In this perspective, sustainability of improved sanitation will depend on the institutional capacity in terms of its leadership, community participation, and technical support to communities, as the council demonstrated so far.

CONCLUSIONS

Community led total sanitation (CLTS), which is a wide inclusive bottom-up approach, has contributed to the success of the National Sanitation Campaign in Njombe District. A range of social, economic and environmental factors enabled CLTS intervention in the district. The factors were mediated by a well informed and organized local administration. Involvement of political leaders, government officials from the council level to the lowest governmental unit offered the required community support in all stages of the CLTS initiatives. The best mix of sanitation education, regulation and enforcement was instrumental in raising community awareness, changing collective behavior and helping people to comply with WASH

related by-laws. To sustain these achievements there is a need for the local government authority to develop a post-ODF strategy that would help early detection of poorly maintained latrines or reversion to OD. Further, continued government commitment is needed for sustained progression and helping more people move up the sanitation ladder.

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REFERENCES

- Ajzen, I. 1985 From intentions to actions: a theory of planned behavior. In: *Action Control: From Cognition to Behavior* (J. Khul & J. Beckman, eds). Springer-Verlag, New York, NY, USA, pp. 11–39.
- Anthonj, C., Fleming, L., Cronk, R., Godfrey, S., Ambelu, A., Bevan, J. & Bartram, J. 2018 [Improving monitoring and water point functionality in rural Ethiopia](#). *Water* **10** (11), 1591.
- Austin, T. A. 1952 *A Survey of Conditions in the Nyasaland Protectorate*. World Health Organization (WHO) Technical Documentation, Geneva, Switzerland.
- Bartram, J. & Cairncross, S. 2010 [Hygiene, sanitation, and water: forgotten foundations of health](#). *PLoS Med.* **7** (11), e1000367.
- Bateman, M. & Engel, S. 2018 [To shame or not to shame – that is the sanitation question](#). *Dev. Pol. Rev.* **36** (2), 155–175.
- Coffey, D., Gupta, A., Hathi, P., Khurana, N., Spears, D., Srivastav, N. & Vyas, S. 2014 Revealed preference for open defecation. *Econ. Polit. Wkly.* **49** (38), 43.
- Crocker, J., Saywell, D. & Bartram, J. 2017 [Sustainability of community-led total sanitation outcomes: Evidence from Ethiopia and Ghana](#). *Int. J. Hyg. Environ. Health* **220** (3), 551–557.
- Cummings, M. J., Wamala, J. F., Komakech, I., Malimbo, M. & Lukwago, L. 2014 [Emerging and reemerging epidemic-prone diseases among settling nomadic pastoralists in Uganda](#). *Acta Trop.* **137**, 19–24.
- ISF-UTS & SNV 2017 *Learning Paper: Exploring Smart Enforcement Within Urban Sanitation*. Prepared by Institute for Sustainable Futures, University of Technology Sydney for SNV Netherlands Development Organisation. Available from: www.snv.org/explore-more & www.uts.edu.au.
- Jacobs, I. M. 2012 [A community in the Orange: the development of a multi-level water governance framework in the Orange-](#)

- Senqu River basin in Southern Africa. *Int. Environ. Agreements Polit. Law Econ.* **12** (2), 187–210.
- Jenkins, M. W. & Scott, B. 2007 Behavioral indicators of household decision-making and demand for sanitation and potential gains from social marketing in Ghana. *Soc. Sci. Med.* **64** (12), 2427–2442.
- Keraita, B., Jensen, P. K. M., Konradsen, F., Akple, M. & Rheinländer, T. 2013 Accelerating uptake of household latrines in rural communities in the Volta region of Ghana. *J. Water Sanit. Hyg. Dev.* **3** (1), 26–34.
- Mara, D., Lane, J., Scott, B. & Trouba, D. 2010 Sanitation and health. *PLoS Med.* **7** (11). Available from: <http://dx.doi.org/10.1371/journal.pmed.1000363>.
- Musyoki, S. M. 2016 Roles and responsibilities for post-ODF engagement: building and enabling institutional for CLTS sustainability. In: *Sustainable Sanitation for All: Experiences, Challenges, and Innovations* (P. Bongartz, N. Vernon & J. Fox, eds). Practical Action Publishing, Rugby, UK, pp. 167–180.
- O'Reilly, K. 2010 Combining sanitation and women's participation in water supply: an example from Rajasthan. *Dev. Pract.* **20** (1), 45–56.
- Prüss-Ustün, A., Bartram, J., Clasen, T., Colford Jr, J. M., Cumming, O., Curtis, V. & Freeman, M. C. 2014 Burden of disease from inadequate water, sanitation and hygiene in low-and middle-income settings: a retrospective analysis of data from 145 countries. *Trop. Med. Int. Health* **19** (8), 894–905.
- Ravindra, K. & Mor, S. 2018 Rapid monitoring and evaluation of a community-led total sanitation program using smartphones. *Environ. Sci. Pollut. Res.* **25** (32), 31929–31934.
- Rogers, E. M. 2003 *Diffusion of Innovations*, 5th edn. Free Press, New York.
- Sara, S. & Graham, J. 2014 Ending open defecation in rural Tanzania: which factors facilitate latrine adoption? *Int. J. Environ. Res. Public Health* **11** (9), 9854–9870.
- Sclar, G. D., Garn, J. V., Penakalapati, G., Alexander, K., Krauss, J., Freeman, M. C., Boisson, S., Medlicott, K. O. & Clasen, T. 2017 Effects of sanitation on cognitive development and school absence: a systematic review. *Int. J. Hyg. Environ. Health* **220**, 917–927.
- SHARE 2017 *Process Evaluation of Tanzania's National Sanitation Campaign*. Policy Brief. Institute of Development Studies, University of Sussex, UK.
- TDHS-MIS 2016 *Tanzania Demographic Health Survey and Malaria Indicator Survey, 2015–16 Key Findings*. Ministry of Health, Community Development, Gender, Elderly and Children (Tanzania Mainland), Ministry of Health (Zanzibar), National Bureau of Statistics, Office of the Chief Government Statistician and ICF. Rockville, Maryland, USA.
- Tiwari, C. 2011 *Role of District Level Reflection and Government Leadership in Scaling Up CLTS: Lessons on Process Monitoring in Kenya*. SNV, The Netherlands.
- UN General Assembly 2015 *Draft Outcome Document of the United Nations Summit for the Adoption of the Post-2015 Development Agenda*. UN General Assembly, New York, NY, USA.
- UNICEF 2018 *Tanzania WASH Budget Brief*. UNICEF, Dar es Salaam, Tanzania.
- URT 2007 *Water Sector Development Programme 2007–2025*. Dar es Salaam, Tanzania.
- URT 2012 *National Strategic Plan for School Water, Sanitation and Hygiene (SWASH) 2012–2017*. Dar es Salaam, Tanzania.
- URT 2016 *Njombe District Council Socio-Economic Profile*. NBS and Njombe DC, Dar es Salaam, Tanzania.
- Venkataramanan, V., Crocker, J., Karon, A. & Bartram, J. 2018 Community-led total sanitation: a mixed-methods systematic review of evidence and its quality. *Environ. Health Perspect.* **126** (2), 026001.
- WHO/UNICEF 2017 *Progress on Drinking Water, Sanitation and Hygiene. Update and SDG Baseline*. United Nations Children Fund, World Health Organization, Geneva, Switzerland.

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