

DRAFT REPORT

"COMMUNITY LED TOTAL SANITATION (CLTS) LAST MILE" – WHY SOME HOUSEHOLDS DO NOT HAVE AND USE LATRINES DESPITE CLTS CAMPAIGN AND OPEN DEFACATION FREE DECLARATION FOR THEIR COMMUNITY?

SUBMITTED TO

Water for People Malawi Country Office Blantyre

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BA	Barrier Analysis
CLTS	Community Led Total Sanitation
DCT	District Coordinating Team
HIV	Human Immune Virus
HMIS	Health Management Information System
HSAs	Health Surveillance Assistants
IDIs	In-depth Interviews
FGDs	Focus Group Discussions
KII	Key Informant Interviews
PLWHA	People Living With HIV and AIDS
MDG	Millennium Development Goals
MDHS	Malawi Demographics and Health Survey
NOTF	National ODF Task Force
NGO	Non-Governmental Organisation
OD	Open Defaecation
ODF	Open Defaecation Free
RA	Research Assistant
SMC	School Management Committee
ТА	Traditional Authority
WESNET	Water and Environmental Sanitation Network
WHO	World Health Organisation

1.0 BACKGROUND

In 2015, 39% of the global population (2.9 billion people) used a safely managed sanitation service which was defined as use of a toilet or improved latrine, not shared with other households, with a system in place to ensure that excreta are treated or disposed of safely. The WHO 2017 report indicate that 27% of the global population (1.9 billion people) used private sanitation facilities connected to sewers from which wastewater was treated; 13% of the global population (0.9 billion people) used toilets or latrines where excreta were disposed of in situ; 68% of the world's population (5.0 billion people) used at least a basic sanitation service; 2.3 billion people still do not have basic sanitation facilities such as toilets or latrines. Of these, 892 million still defecate in the open, for example in street gutters, behind bushes or into open bodies of water. According to SDGs, the world hopes to achieve universal clean water and sanitation coverage by 2030. In Malawi, 87% of the households had access to improved drinking water source according to the Malawi Demographics and Health Survey of 2016. Access was higher in urban areas (98.0%) as compared to rural areas of the country (85.2%). Improved sources in Malawi were piped source, public tap or standpipe, tube well or borehole, and protected wells or springs. Access to sanitation was at 51.8% of the household with 44.7% in urban and 53% of the households in rural areas. Open defeacation was at 6.2%. The most common sanitation facility in Malawi is the pit latrine at 78.9% and this is regardless of whether it has a slab or not. The country has a lot of ground to cover in order to reach 100% coverage for access to clean water and sanitation by 2030.

The Government of Malawi with its development partners initiated the 'Open Defecation Free Malawi (ODF) 2015' and the 'National Handwashing Campaign (2012)' Strategies to ensure that it attains its goal of creating a clean, safe and healthy environment which often result in improving people's health and wellbeing. The strategies were developed to ensure complete elimination of Open Defecation (OD) and promote handwashing with soap to reduce the spread of water sanitation and hygiene (WASH) related diseases such as diarrhea and cholera. Diarrheal diseases pose significant health risks for the Malawi population and accounts for 25% of deaths each year in children under the age of 5 (HMIS, 2016). Increasing access to basic sanitation and use of safe hygiene practices are not only vital in prevention of future diarrhea and cholera cases but also in reducing stunting among under five children.

The ODF and handwashing strategies were aimed at aligning, synchronizing and harmonizing sanitation and hygiene initiatives and interventions towards meeting the goals of the Malawi Growth and Development Strategy (MGDS) II. They were also designed to guide the country in achieving the Millennium Development Goal (MDGs) of halving the number of people without access to basic sanitation by 2015. They are currently aimed at realizing the goals and means of Sustainable Development Goals (SDGs) by ensuring access to sustainable sanitation for all by 2030.

The "last mile" or "last kilometer" is a colloquial word meaning the length of the last kilometer or last leg in telecommunications. In sanitation, the last mile is used to mean the number of households remaining to have and use sanitation and hygiene facilitates¹. The last mile definition in this study included ownership and use pit latrines or toilets. In another worldwide online discussion group, there was a debate of whether last mile should only concentrate on achieving

¹ http://www.snv.org/update/universal-access-sanitation-hygiene-services

open defaecation or should also consider achieving a sustainable healthy environment. The latter was perceived to be difficult to be achieved most countries agreed to be very far from achieving it². This is because the word sustainable also looks at the structure and natural resources available for construction of latrines. Those who participated in the last mile discussion agreed that those usually left out in achieving universal access to sanitation and hygiene facilities were the elderly, people with disability, single headed households, people living with HIV/AIDs (PLWHA), ethnic minorities, socially excluded castes and the poorest wealth quintiles². In a meeting in Tanzania, members from the East and Southern African countries were asked the question "who is your last mile in your country?", the answers were "that the last mile included areas with technical challenges such as rocky or sandy soils, or areas with high groundwater, to cultural challenges such as beliefs against latrine use, and social challenges such as marginalised populations and areas with low social cohesion including temporary fishing villages or small-scale miners.³" Some challenges that made communities remain in the last mile discussed included the vulnerability of toilets used to weather shocks. There is need for new sustainable and affordable technologies to assist communities move up the sanitation ladder.

Despite the criteria for declaring communities open defaecation free (ODF) stating that for level one, all households should own and use toilet with no shit visible in the surrounding bushes⁴, it was impossible to achieve 100%. Some few households (less than 6%) still remained without toilets (MDHS 2016). The last mile survey tried to identify the characteristics of these groups so that they can be effectively targeted. The survey determined why these households failed to own and use sanitation facilities especially the pit latrine.

To understand why these households are not owning and using sanitation and hygiene facilities, the survey used a formative research methods. Formative research is used to gain insight into the issue or behavior the project intends to address; it intends to analyze relevant characteristics of primary and secondary audiences; communication access, habits and preferences; and the main drivers of behavior for the target communities⁵. Formative research is the basis for formulation of effective strategies. This survey also incorporated barrier analysis as one of the formative method. Barrier analysis is a rapid assessment tool used in behavior change projects. The purpose of barrier analysis is to identify behavioral determinants, so that more effective behavior change, communication messages, strategies, and supporting activities can be developed. Formative uses both qualitative and quantitative methods though mostly it uses qualitative methods due to its interest in the depth of knowledge.

² http://www.snv.org/update/understanding-last-mile

³ http://www.communityledtotalsanitation.org/blog/learnings-our-east-and-southern-africa-workshop

⁴ Malawi ODF Strategy, 2011 to 2015

⁵ https://www.k4health.org/sites/default/files/how_to_conduct_qualitative_formative_research.pdfs

1.1 Objectives

The main objective of the study is to identify characteristics of a population segment in ODF status TAs that still have not adopted 100% habits of latrine usage and propose practical strategies that will be implemented to allow this segment enable TAs attain 100% ODF coverage. The specific objectives included:

- To determine the demographic characteristic of household not owning latrines
- Identify the people who are not using latrines for defaecation all the times
- To identify reasons for not owning latrines
- To identify the reasons why some members of households do not use pit latrines for defaecation
- To come up with proposed strategies to effectively promote latrine ownership at every household
- To come up with strategies of making every household member to use a latrine for defaecation

The main issues investigated were divided into known and unknown as in Table 1. *Table 1: Summary of known and unknown parameters*

	Questions considered	What is known about owning a toilet?(also indciate what is	What is known about usinglatrinefor for defecation?(also indciate what is
		missing)	missing)
Target Behaviour	Define your target behaviour (what specific action, who will do it, where will they do it, when they will do it).	 What was Known 7% of households do not own a toilet (MMIS, 2017), 5.6% do not have toilet (MDHS 2016) Four districts and several Traditional Authorities declared ODF Not all households have toilets in these ODF areas What was missing/ not known Why others do not have toilets What are the characteristics (age, disability, geographical area, sex, economic status) of the households without toilets 	 What was known Those with toilet as assumed to use it by checking absence of faeces in the surrounding areas What was not known/missing Why household members do not use a toilet

1.2 Stakeholders for the results of the survey

The key stakeholders include grass root members of the targeted areas. Community healthcare workers, District administration, Ministry of Health officials, Ministry of Irrigation and Water Development officials, NOTF members, WESNET officials, gate-keepers in targeted TAs and Districts (Traditional leaders, Religious leaders, political leaders), teachers, community members, SMCs and non-governmental organizations implementing similar and related interventions.

2.0 METHODOLOGY

The study employed formative research design. Formative research helped to understand the factors which influence behaviour and determine the best ways to change them. It looked at behaviours, attitudes and practices of target groups, involving exploring behavioural determinants, and used a mix of methods to collect data.

Summary of the methods



Figure 1: Summary of the methods

2.1 Study participants

The study participants included community members sampled at their household. The households were chosen at village level and these were classified into doers and non-doers.

2.1.1 Doers

These were households that have and are using sanitation facility (latrine). These were provided with information on why others have sanitation and hygiene facilities despite the challenges. They were neighbours to those who do not have the sanitation and hygiene facilities.

2.1.2 Non-Doers

These were the main target group for the study. These were households that do not have a toilet at their household and also those not using a latrine. These households provided insights on why some households fail to construct and use a toilet despite the CLTS campaign and other information through HSAs and other extension workers.

2.2 Study Setting

The study exercise took place in the four selected Traditional Authorities who attained ODF status in Chikwawa District and in other 3 TAs per district for Balaka, Nkhotakota and Rumphi.

2.2.1 Study Population

This study targeted grass root community members including the following:

- Households who own a latrine
- Households without latrine
- Household members not using latrine
- Household members using a latrine

The respondents were head of Households or spouses/older member of the households. To get more comprehensive data, the study also involved District stakeholders, extension workers, traditional and opinion/religious leaders and community members.

2.3 Phase 1: Barrier Analysis

Barrier analysis was the first to be done in Chikwawa and helped in identifying themes for indepth interviews. The results of the first phase assisted in the design of the study during the second phase which involved all the districts. The Last Mile study targeted the two behaviours which were latrine ownership and latrine use. These were agreed upon during the consultative meeting with Water for People. This formative research employed Barrier Analysis (BA) as one of the tools to inform the barriers and motivators to practicing of these behaviours.

2.3.1 Barrier Analysis: Overview

Barrier Analysis (BA) is to tool that is widely used to categorize the factors that are hindering a target group from adopting a preferred behaviour, in addition to identifying the facilitators or motivators to adopting the behaviour. Barrier Analysis is based on the Health Belief Model and the Theory of Reasoned Action, and ideally it explores up to 12 recognized common determinants of behaviour adoption. The survey involving BA is cross-sectional and involves a sample of 45 "Doers" (in this case those who have and use latrines) and 45 "Non-Doers" (those who do not have latrines and do not use latrines). Individuals from a specific survey area are first screened and organized according to whether they are Doers or Non-Doers, and then asked questions according to their classification. Thus, we conducted BA to study the two identified behaviours among target population in Chikwawa, Balaka, Nkhotakota and Rumphi. Each district was treated separately to understand its uniqueness in terms of behaviours. Study participants who were practicing the behaviours in question were interviewed in order to identify which of the determinants of behaviour change are preventing Non-Doers in this population from adopting the behaviour, as well as which determinants are facilitating adoption of behaviours among Doers.

Behaviour	Description and criteria
Household latrine ownership	Targeted households that own latrine and those that do not
	have. Much focus was on those without latrines
Household latrine use	Targeted household members that use and those that do not
	use latrine for defaecation regardless of ownership. Much
	focus was on those who do not use latrines

Table 2: Behaviours Assessed in Barrier Analysis

2.3.2 BA Questionnaire

Two barrier analysis questionnaires, corresponding to the two behaviours, were developed in English following the standard BA questionnaire design guidelines and reviewed by Water for People team. The questionnaires consisted of open-ended and closed questions for each of the two

behaviours. Of interest, specific questions were developed to assess the extent to twelve different social determinants that influence the behaviours. These questionnaires were then translated into Chichewa by a team of enumerators and consultants, and checked by the data collection team during training (who were all tri-lingual, Chichewa, Tumbuka and English-speakers). Table 3 is a summary of the twelve determinants studied.

Social Determinant	Description
Self-perceived efficacy	This determinant refers to an individual's belief that he/she can do a particular behaviour given his/ her current knowledge and skills. Respondents were asked what makes it (or what would make it) easier or more difficult to perform the behaviour in question.
Perceived social norms	This determinant refers to an individual's perception of the approval or disapproval of doing a behaviour by people considered to be important in an individual's life. Respondents were asked who approves or disapproves of them performing the behaviour being studied.
Perceived positive and	This determinant refers to an individual's perception of the good
negative consequences	or bad things that would result from performing a behaviour. Respondents were asked what are (or what would be) the advantages/ disadvantages of performing the behaviour.
Access	This determinant refers to the degree of availability of the needed products or services required for a given behaviour. Respondents were asked how difficult it was/would be to perform the behaviour.
Cues for	This determinant refers to the presence of reminders that help a
action/Reminders	person remember to do a particular behaviour. Respondents were asked how difficult is it (or would it be) to remember to perform the behaviour.
Perceived	This determinant refers to a person's perception of how vulnerable
susceptibility/Risk	or at risk he/ she feels to a certain problem. Respondents were
	asked how likely it is that their child will get diarrhoea in the next 3 months.
Perceived severity	This determinant refers to a person's belief that the problem is serious. Respondents were asked how serious would it be if their child got diarrhoea.
Perceived Action	This determinant refers to the belief that by practicing the
Efficacy	behaviour an individual will avoid a certain problem. Respondents
	were asked how likely is it that their child will get diarrhoea if they
	perform the behaviour.
Perception of Divine	This determinant refers to the belief that God approves of her doing
Will	will if their child got diarrhoea.
Culture	This determinant refers to the set of history, customs, lifestyles,
	values and practices within a self-defined group. Respondents
	were asked if there were any cultural rules or taboos against
	performing the behaviour.

Table 3: Summary of Social Determinants Studied

2.3.3 Sampling and Recruitment

According to BA methodology, purposive sampling was used based on status as a residence of the area, and criteria related to the behaviours of interest. In each of the districts, teams collected data from three Traditional Authorities except for Chikwawa where four Traditional Authorities were visited for each specific behaviour. For each behaviour studied, according to the BA guidelines, 45 Doers and 45 Non-Doers were selected and interviewed. In some cases, the sample was lower than 45 due to data cleaning which removed some incomplete questionnaires. In some cases especially for latrine use, it was difficult to get the required sample. Rumphi had the lowest sample of those not using latrines (15).

2.3.4 Field Data Collection and Coding

Prior to assessments, we sought approvals in all districts through the District Environmental Health Officers and also the team visited the local leaders to seek approval and from community to conduct data collection. During data collection, data collectors approached each potential participant, found a conducive place to conduct the interview, introduced the study and offered informed consent. Those who consented to be part of the study were then screened for eligibility to establish Doer or Non-Doer status, before proceeding with the survey interview. Facilitated by consultants, manual coding, tabulation, and analysis was conducted immediately after data collection to ensure the timely recollection of interviews by the data collectors. Coding occurred through an iterative group process to arrive at a word or phrase that best represented the responses provided.

2.3.5 Data Analysis

Once manual data analysis was completed, results were entered into a Barrier Analysis Tabulation Sheet, a Microsoft Excel table specially created for finding differences between Doers and Non-Doers (Appendix 1). The spreadsheet calculates the percentages of Doers and Non-Doers that gave each response and identifies differences that are statistically significant. Ideally, in Barrier Analysis, significance of the differences is determined by p-value for difference in odds ratio of less than 0.05, or a percentage point difference greater than 15. Further, those determinants, which were significant, and those more frequent from IDIs and FGDs were analysed and Bridges to Activities and recommendations were developed. The characteristics of non-doers were obtained from significant factors (p>0.05) on the demographics and barrier analysis where non-doers were more than doers and from common factors during IDIs, FGDs and KIIs.

2.4 PHASE 2: IDI, FGDS, KII and Social Capital measurement

The second phase involved targeting of different themes dependent on the results of the first phase. This second phase focused on all the four districts of Rumphi, Nkhotakota, Balaka and Chikwawa. Chikwawa was the first district and after preliminary analysis of the data from the district, the results assisted in targeting the other districts. This phase used IDIs, KII and FGD for the measurement of Social Capital. Social capital was measured using Schautte Scale. Unlike Chikwawa the other districts were reached during the second phase with both barrier analysis and qualitative in-depth data collection tools.

2.4.1 Measuring social capital/cohesion

Social capital was measured using the Schutte scale. A C-Index tool was developed with questions including: To what extent do you consider this community to be your home? How close do you feel to friends and households in this community? To what extent can you rely on the community to come to your aid should you have any problems? These were ranked on a scale from 1 to 11 on satisfactory level using the scale in Figure 1 below⁶:





Side facing the interviewer

Side facing the respondent

Figure 2: Schutte Scale

After measuring the social capital, tables were produced which depicted the level of social capital/cohesion. The social capital/cohesion was related to proportion of households without toilets in the village as assessed by the team during the survey.

2.4.2 Methods for measuring support structures

This involved in-depth interviews (IDIs) with community members and other key stakeholders such as natural leaders and local leaders as well as focus group discussions (FGDs) with different groups and gathered information on key themes. FGDs provided opportunity to collect community-level support and practices surrounding sanitation, while IDIs provided in-depth perspectives on household support received.

2.4.3 Methodology for measuring Technical factors

The study targeted households which do not have a latrine, general community, natural leaders and extension workers. The households which do not have latrines were targeted with in-depth interviews (IDIs). At household level, the target was the individual who makes decision regarding choice of residence and latrine ownership. As a way of triangulating the results obtained from IDIs, key informant interviews (KII) were conducted with natural leaders and extension workers. Focus group discussions (FGDs) were also conducted with community members (regardless of whether they have a latrine or not) to get a community perspective on the technical factors that make some community members not to have a latrine.

2.4.4 Methodology for measuring social economic and psychosocial factors for not having latrine

In depth interviews were used to identify non-doers and asked them about their participation in community development activities including CLTS triggering process. For those that do not participate in community activities, further questions were asked to get down to the details for their non - participation.

⁶ Schutte De Wet, *Identifying Community Needs* (Saarbrücken: Scholars' Press, 2015).

RESULTS

3.0 Results for Chikwawa district

3.1 Demographic characteristics: Latrine ownership

Table 4 shows the demographics for those who owned a latrine (doers) and those who did not own a latrine (non-doers). In total there were 120 doers and 120 non-doers in the study.

Demographic factor	Category	Doer	Non-doer	P – value
Condor	Female	78 (65.0%)	74 (61.7%)	0.674
Gender	Male	42 (35.0%)	46 (38.3%)	0.75
	18 -24 years	25 (20.8%)	37 (30.8%)	0.392
	25 -34 years	29 (24.2%)	31 (25.8%)	0.887
	35 - 44 years	25 (20.8%)	22 (18.3%)	0.831
Age	45 - 54 years	19 (15.8%)	9 (7.5%)	0.00659
	55 - 64 years	9 (7.5%)	4 (3.3%)	0.18769
	65 and above	11 (9.2%)	14 (11.7%)	0.003
	Didn't disclose	2 (1.7%)	3 (2.5%)	0.86685
Under-five child	No	51 (42.5%)	43 (35.5%)	0.49198
availability	Yes	69 (57.5%)	77 (64.5%)	0.38925
Availability of	No	113 (94.2%)	116 (96.7%)	0.36522
person living with disability	Yes	7 (5.8%)	4 (3.3%)	0.45533
	Chewa	9 (7.5%)	7 (5.8%)	0.49168
	Lomwe	4 (3.3%)	4 (3.3%)	1.00000
	Mang'anja	61 (50.8%)	60 (50.0%)	0.93017
Ethnicity	Ngoni	3 (2.5%)	2 (1.7%)	0.85158
	Nyungwi	2 (1.7%)	0 (0.0%)	-
	Sena	41 (34.2%)	45 (37.5%)	0.75170
	Yao	0 (0.0%)	2 (1.7%)	-
	Any	0 (0.0%)	1 (0.8%)	-
Religion	ATR (African Tradition Religion)	0 (0.0%)	2 (1.7%)	-
	Christianity	117 (97.5%)	110 (91.7%)	0.05389
	Islam	3 (2.5%)	7 (5.8%)	0.43951
	Divorced	8 (6.7%)	9 (7.5%)	0.72681
Marital status	Married	95 (79.2%)	99 (82.5%)	0.56039
Maritar status	Single/never married	8 (6.7%)	2 (1.7%)	0.24216
	Widowed	9 (7.5%)	10 (8.3%)	0.67920
	Never gone to school	21 (17.5%)	19 (15.8%)	0.88696
Education laval	Primary	86 (71.7%)	85 (70.8%)	0.89686
Education level	Secondary	14 (11.7%)	11 (9.2%)	0.003
	Tertiary	2 (1.7%)	1 (0.8%)	0.86714

Table 4: Demographics for latrine ownership

	Didn't disclose	0 (0.0%)	1 (0.8%)	-
Occupation	Casual labour	17 (14.2%)	18 (15%)	0.94744
	Formal employment	3 (2.5%)	3 (2.5%)	-
	Small scale business	5 (4.2%)	6 (5.0%)	0.80415
	Subsistence farming	92 (87.1%)	84 (70.5%)	0.00806
	Commercial farmer	2 (1.6%)	2 (1.6%)	1.0000
	None	0 (0.0%)	4 (3.3%)	-
	Other	1 (0.8%)	2 (1.7%)	-

3.2 Latrine ownership: Frequencies and barrier analysis

3.2.1 Self-efficacy: easy

Table 5: Self efficacy – what would make it easy to own a latrine: latrine non - owners

Self-efficacy/skills	Non-doer	Percentage
	(Frequencies)	
Convenience (saves time)	1	0.5
Cleanliness of the surrounding	1	0.5
Feaces disgust	1	0.5
Easy access for visitors	2	1.0
Habitual	1	0.5
Agreement as a family	2	1.0
Ability to dig and construct own latrine	52	27.2
Availability of finances	49	25.7
Ability to source construction materials (molding bricks, grass for thatching, plastic, tree logs)	66	34.6
Land/space for construction of latrine	8	4.2
Willingness to construct	6	3.1
Tired of using neighbours' latrine	1	0.5
Availability and commitment of husband	1	0.5

On what would make it easy for a household to have a latrine, the most frequently mentioned issues were ability to dig and construct latrine, availability of finances and ability to source construction materials such as bricks, tree logs and plastic bags (Table 5).

From barrier analysis, it has been found that latrine owners were 7.5 times likely to say owning a latrine helps one to saves time they could waste if they defecate in the bush (p=0.000). Also doers were 6.8 times likely to state that owning a latrine helps to ensure that the household surrounding is clean (p=0.000). In addition, latrine owners were 5.7 times likely to state that fear of stepping into human feces makes one to own a latrine (p=0.005). The survey also found that owners were 2.4 times likely to state that one may have a latrine if he or she has the ability to dig and construct his/her own a latrine (p=0.013). However, those who did not have a latrine were 2.3 times likely to report that only knowledge on how to dig a latrine made it difficult to own a latrine (p=0.005). This implies that the non – owners may not own a latrine due to lack of skills and knowledge on

how to construct superstructure of the latrine. Furthermore, non – owners were 2.1 times likely to state lack of finances to construct a latrine made it difficult to own a latrine (p=0.003). Related to this point is that latrine non – owners were 1.6 times more likely to report that inability to source latrine construction materials such as bricks, grass for roofing and tree logs made one not to own a latrine (p=0.035).

The latrine owners were 10.6 times more likely to state that one's ability to be ashamed when using the bush for defecation made one to own a latrine (0.007). Also, latrine owners were 10.7 and 10.4 times more likely to report that owning a latrine is part of normal life and also having adequate knowledge on the importance of having a latrine makes one to own a latrine respectively (p=0.002 and p=0.030).

Other factors that came up, though insignificant, that made/would make it easier to practice the behaviour included fear of wild animals in the bush, not happy using a neighbours' latrine and lack of time to construct a latrine.

3.2.2 Self-efficacy/difficulty

Table 6: Self efficacy - what makes it difficult to own a latrine: latrine non - owners

Self-efficacy/difficulty	Non-doer	Percentage
	(Frequencies)	
Fear of keeping it clean all the time	5	3.2
Bad smell from toilet when close	3	1.9
Toilets collapse (e.g. unstable soils, high water table, rainy	22	14.0
season, unreliable building materials)		14.0
Breeding ground for germs/flies/cockroaches	1	0.6
Lack of finances to construct/maintain latrine (e.g. Buy roof	45	28.7
material, digging of new latrine when full)		20.7
None	11	7.0
Unwillingness to share latrine (with passers-by or	3	1.0
neighbours)		1.7
Lack of construction/maintenance materials (bricks, logs,	31	19.7
grass, plastics)		17.7
Unavailability/lack of commitment to construct by husband	6	3.8
Chronic illness (e.g. epilepsy, HIV/AIDS)	20	12.7
Lack of space (e.g. includes rented areas)	3	1.9
Livestock eat grass thatched roof	1	0.6
Lack of suitable soil/place for digging latrine (e.g. hilly	5	2.2
terrain, rocky soils)		3.2
Use of unreliable building materials	1	0.6

On what would make it difficult for a household to have a latrine, the most frequently mentioned issues were lack of finances, lack of construction materials, collapse of toilet especially during rainy season and chronic illnesses (Table 6).

From barrier analysis, it was found that latrine owners were 10.5 times more likely to state that collapse of latrines due to weak or rotten logs makes it very difficult to own a latrine (p=0.015). In addition, latrine owners were 10.6 times more likely to report that more water during the rainy season makes it very difficult to own latrines as they easily collapse (p=0.007). Non latrine owners were 4.1 and 2.6 times more likely to report that lack of finances for latrine construction and lack of construction materials respectively makes it hard for one to own a latrine (p=0.002 and 0.002).

3.2.3 Perceived positive consequences

Perceived positive consequences	Non-doer	Percentage
	(Frequencies)	
Easily accessible/Convenient to have own latrine (e.g. during rainy season, don't use neighbours' latrine)	58	22.6
Clean surroundings (e.g. less smelly surroundings, flies)	55	21.4
Prevent diseases	94	36.6
Safety from wild animals (e.g. snakes)	3	1.2
No shame when visitors come/Dignity	27	10.5
Privacy	15	5.8
Prevent open defaecation	3	1.2
Less discriminated if you have a latrine	1	0.4
Latrine fill up is delayed	1	0.4

Table 7: Perceived positive consequences of having a latrine: Latrine non - owners

From Table 7 above, it has been found that owning a latrine is important because it helps to prevent diseases especially diarrhoea. In addition the targeted households would own a latrine because it's convenient as they would not have problems where to go during rainy season and at night. Also the latrine would offer privacy and respect when they receive visitors (Table 7).

3.2.4 Perceived negative consequences

Table 8: Perceived ne	gative consequences c	of having a latrine	: latrine non	- owners

Perceived negative consequences	Non-doer	Percentage
	(Frequencies)	
None	78	52.0
Falling in the latrine in the event it collapses (e.g. during	5	33
rainy season)		5.5
Others use it (e.g. defecating around drop hole, inconvenient	14	03
when others are in it, brings enmity for those denied)		9.5
Smells when latrine is close	18	12.0
Breeding ground for germs/flies/cockroaches	8	5.3
Risk of animals falling inside toilet	1	0.7
Transmission of diseases when not kept clean	10	6.7
Laborious in taking care of the latrine	7	4.7
Fills up quickly	5	3.3
Toilet collapses	2	1.3

Faecal matter is closer to the house	1	0.7
Costly to maintain	1	0.7

In terms of reasons that may prevent people from having latrine include smell when it is very close to the household, source of disease when not clean especially when there is no one to take care of the latrine. In addition, other community members who use the latrine makes it hard for a latrine to be kept clean all the time (Table 8).

In exploring the barriers and enablers of the behaviour, the survey sought to better understand what perceptions negatively hinder latrine ownership. It was found that those who did not have a latrine were 6.7 times more likely to state that the labour/task required to take care of the latrine is a consequence to own a latrine (p=0.033).

3.2.5 Perceived social norms (approve)

Perceived social norms (approve)	Non-doer	Percentage
	frequencies	
Chiefs/Community Leaders	83	31.3
Friends, neighbours, community members	24	9.1
Village Committees/volunteers/care groups	14	5.3
Family members/relatives	13	4.9
Health/extension workers e.g. HSAs, nurses, clinicians	82	30.9
NGOs and CBOs (e.g. Goal, Care, CADECOM, DAPP,	36	
SHAG, Evangelical, Red Cross, Ubale, Unicef,		13.6
WASHTED/SHARE)		
Religious leaders	5	1.9
Teachers	1	0.4
Councillor	4	1.5
None	3	1.1

Table 9: Perceived social norms (approves) for having a latrine at household

From Table 9 above, health workers, community chiefs and NGOs greatly advocate for households to own latrines.

Latrine owners and non-owners were asked who approves or disapproves of the behaviour, and the non – owners were 2 times more likely than owners to name health/extension workers (e.g. HSAs, nurses and clinicians) as approving the behavior (p=0.008).

3.2.6 Perceived social norms (disapprove)

Table 10: Perceived social norm (disapprove) for having a latrine at household

Perceived social norms (disapprove)	Non-doer	Percentage
	frequencies	
None	116	97.5
Community members (e.g. say will use other people's latrine)	3	2.5

Almost none, except 3 households were found to disapprove owning a latrine in their homes (Table 10). They reported that they would use their neighbours' latrine instead of having their own.

3.2.7 Access

About the self-efficacy determinants, access to bricks was identified as one the significant factors. Latrine owners were 1.7 times more likely to report that "*it is not difficult at all*" to access bricks for latrine construction (p=0.016). However, it was found that latrine non – owners were 3.2 times more likely to state that "*it is very difficult*" to access bricks for latrine construction (p<0.0001).

3.2.8 Cues for Action

Those who did not have a latrine were 5.4 times more likely to state that "*it is very difficult*" to remember the importance of owning a latrine (p=0.002). Related to this, latrine owners were 6.6 times more likely to report that "*it is not difficult at all*" to remember the importance of owning a latrine (p=0.000). This demonstrates the ability to remember the importance of owning a latrine as a motivator of having a latrine among owners, and barrier to the behaviour among latrine non owners.

3.2.9 Susceptibility/Vulnerability and Severity

Non latrine owners were 11.8 times more likely to state that "*it is very likely*" for them to suffer from diarrhea compared to latrine owners (p=0.000). Similarly, latrine owners were 7.9 times more likely to report that "*it is not likely*" for them to suffer from diarrhea (p=0.000). Further, latrine owners were 9.2 times more likely to state that "*it is very likely*" for one to suffer from diarrhea if there is no latrine (p=0.000). Those who did not have a latrine were 20 times more likely to feel that they cannot suffer from diarrhea even if they don't have a latrine (p=0.000). This may mean that latrine owners recognize the benefits of owning a latrine, as they are convinced that owning and using a latrine prevents them from contracting diarrhea which is to the contrary among non-latrine owners.

3.2.10 Perceived Divine Will

Respondents were asked if they think it is God's will if a child gets diarrhea. Latrine owners were 4.3 times more likely to say that it is not God's will if a child gets diarrhea compared to non-doers (p=0.005). This may imply that latrine owners are more knowledgeable about causation of diarrhea disease compared to latrine non – owners. Out of a total of 16 respondents indicated a child getting diarrhoea is God's will, 14 (87.5%) were Christians while 2 (12.5%) were Muslims.

3.3. Demographic characteristics: Latrine use

Table 2 shows the demographics for those who used a latrine (doers) and those who did not use a latrine (non-doers). In total there were 120 doers and 120 non-doers in the study.

Demographic factor	Category	Doer	Non-doer	P – value
Condon	Female	65 (55%)	75 (63%)	0.34023
Gender	Male	54 (45%)	45 (38%)	0.48508
A	18 - 24 years	27 (23%)	38 (32%)	0.66801
Age	25 - 34 years	36 (30%)	25 (21%)	0.43768

Table 11: Demographics for latrine use

	35 - 44 years	23 (19%)	23 (19%)	1.000
	45 - 54 years	14 (12%)	13 (11%)	0.93642
	55 - 64 years	9 (8%)	12 (10%)	0.87886
	65 and above	8 (7%)	7 (6%)	0.93986
	Didn't disclose	2 (2%)	2 (2%)	1.00
Under-five child	No	34 (29%)	43 (36%)	0.52074
availability	Yes	85 (71%)	77 (64%)	0.34420
Availability of person	No	113 (95%)	113 (94%)	1.000
living with disability	Yes	6 (5%)	7 (6%)	0.73244
	Chewa	3 (3%)	1 (1%)	0.72783
	Lomwe	7 (6%)	3 (3%)	0.41792
	Mang'anja	59 (50%)	75 (63%)	0.13643
Ethnicity	Ngoni	1 (1%)	3 (3%)	-
	Nyungwi	1(1%)	2 (2%)	-
	Sena	46 (39%)	35 (29%)	0.35390
	Yao	2 (2%)	1 (1%)	-
	Any	0 (0%)	0 (0%)	0
	ATR (African Tradition	0 (0%)	0(0%)	0
Religion	Religion)			0.40062
	Christianity	114 (96%)	113 (94%)	0.49062
	None	3 (3%)	5 (4%)	0.94827
	Islam	2 (2%)	2 (2%)	1
	Divorced	2 (2%)	8 (7%)	0.83431
	Married	106 (89%)	89 (74%)	0.008
Marital status	Single/never married	4 (3%)	8 (7%)	0.84978
	Widowed	6 (5%)	14 (12%)	0.65127
	Didn't disclose	1 (1%)	1 (1%)	1.000
	Never gone to school	29 (24%)	29 (24%)	1.000
	Primary	71 (60%)	78 (65%)	0.53072
Education level	Secondary	18 (15%)	12 (10%)	0.69491
	Tertiary	0 (0%)	0 (0%)	0
	Didn't disclose	1 (1%)	1 (1%)	1
	Casual labour	21 (18%)	22 (19%)	1
	Formal employment	4 (4%)	3 (3%)	0.95
	Large scale farmer	3(3%)	0 (0%)	-
Occupation	Large scale business	0 (0%)	1 (1%)	-
Occupation	Small scale business	7 (6%)	5 (4%)	0.83
	Subsistence farming	82 (72%)	88 (75%)	0.66
	None	2 (2%)	0 (0%)	-
	Other	0 (0%)	0 (0%)	0

3.4 Latrine use: Frequencies and barrier analysis

3.4.1 Latrine use: Self-efficacy/skills

Self-efficacy/skills	Non-doer	Percentage
	frequencies	
Cleanliness (Latrine is clean, Cleanliness of the surrounding)	54	28.3
Availability of latrine	52	27.2
Presence of HWF/ water for hand washing as opposed to bush	2	1.0
Resources readily available (e.g. building, people to clean, cleaning material, people to dig)	18	9.4
Prevent diseases	7	3.7
Distance from house to latrine (latrine close)	25	13.1
Proper design of latrine (e.g. well-constructed, proper roofing, strong logs, smooth floor)	10	5.2
Pleasant surroundings (non-smelly surroundings, flies)	5	2.6
Privacy	7	3.7
Avoid open defecation	1	0.5
Comfort (Convenience)	3	1.6
Habit	3	1.6
Latrine not full	4	2.1

Table 12: Self efficacy – what would make it easy to use a latrine: latrine non - owners

The fact that latrine makes an environment clean and presence of handwashing facility at the latrine were found to be the major reasons that would make it easy for one to own a latrine (Table 12).

In exploring the barriers and enablers of the behaviour, the survey sought to better understand what skills and perceptions would make it easy or difficult to use latrines for defecation. Non-doers were 1.6 times more likely to report that clean latrines would make it easier for one to use it compared doers (p=0.037). Doers were 5.1 times more likely to report that presence of handwashing facility and water for hand washing would make it easy to use latrine than non-doers (p=0.001). Further, doers were 2.2 times more likely to report that clean surroundings would make it easy to use a latrine than non-doers (p=0.039). Also, doers compared to non-doers were 2.3 times more likely to report that a latrine close to the dwelling house would make it easy to use it. In addition, a properly designed latrine (e.g. well-constructed, proper roofing, strong logs, smooth floor) was 2.4 times more likely to be reported by doers compared to non-doers as another factor which would make it easy to use a latrine (p=0.008). Expectedly, doers were over ten times more likely to say that the fact that using latrines gives dignity or self-respect makes it easy for them to perform this behaviour compared to non-doers (p=0.003). Doers were 5.3 times more likely than non-doers to report that presence of drop hole cover to prevent smell and houseflies makes it easy to use latrine (p=0.009).

Noticeably, non-doers were twice more likely to report that ability to construct own latrines – finances to dig, construct and maintain – would make it easy to use latrines compared to doers (p=0.021). Related to this, non-doers were 3.1 more likely than doers to report that readily

available resources such as human resources, tree logs, roofing materials would make it easy to use latrines (p=0.008). Additionally, non-doers were 6.2 more likely than doers to report that if they had own latrine it would make it easy to use it (p<0.000). On the other hand, knowledge of the link of disease prevention and latrine use was three times more likely to make doers easily use latrines than non-doers (p=0.001).

3.4.2 Self-efficacy/difficulty

Self-efficacy/difficulty Non-doer Percentage frequencies Latrine not clean (difficult to maintain clean latrine, soil for 20 10.6 'kuzila' for floor) Other people defecate outside the drop hole 12 6.3 Latrines fill quickly or latrine full (e.g. other people use it, not 13 6.9 deep enough because of soil problems) Roofs blow off, no roof 7 3.7 Toilets collapse due to rain or moisture 9.5 18 19 Bad smell 10.1 20 Distance from house to latrine 10.6 3.2 Lack of privacy 6 Safety (at night, collapse from weak logs, children afraid of 6 3.2 falling inside) Lack of access when away from home (agricultural fields far 2 1.1 from houses where there are latrines) 22 None 11.6 13 Latrine engaged most of the times (sharing) 6.9 No latrine 27 14.3 Habit not to use latrine 3 1.6 Chronic Illness 1 0.5

Table 13: Self efficacy - what makes it difficult to use a latrine: latrine non - owners

On what would make it difficult for a household to have a latrine, the most frequently mentioned issues were uncleanliness of the latrine, smell from latrine and defecating on the drop hole (Table 13).

On the other hand, non-doers compared to doers were 3.3 times more likely to report that latrines filling quickly or full latrines – due to other people using it or not deep enough due to soil problems – would make it difficult for them to use latrine (p=0.21). Further, non-doers were almost three times more likely to report that bad smell would make it difficult for them to use latrines than doers (p=0.010). Non-doers, also, were 13 times more likely than doers to report that lack of money would make it difficult for them use latrines. This is likely an indirect cause, since lack of money has a direct influence on latrine construction, hence affecting use (p=0.001). Additionally, non-doers were 3.5 times more likely than doers to report that long distance from the house to the latrine would make it difficult for them to use latrines (p=0.003). Related to this, non-doers, also, were 4.4 times more likely to report that unavailability of latrines would make it difficult for them to use latrines (p=0.030). For doers, improper latrine design was 10.4 times

more likely to be reported as a factor that would make using latrines difficult compared to non-doers (p=0.030).

3.4.3 Perceived positive consequences

Perceived positive consequences	Non-doer	Percentage
	frequencies	
Cleanliness (surroundings, less smell, personal hygiene)	51	21.8
Prevent diseases (e. g cholera, diarrhoea)	97	41.5
Privacy	12	5.1
Dignity /Self-respect	24	10.3
Convenient to have own latrine (can use anytime e.g. during	20	85
rainy season), easy to use, don't get soaked		0.5
Distance to toilet is reduced	15	6.4
Prevent flies	6	2.6
Safety (from animals i.e. snakes)	2	0.9
Avoid open defeacation	5	2.1
None	1	0.4
Coming up with life plans in a toilet	1	0.4

Table 14: Perceived positive consequences of using a latrine: Latrine non - owners

From Table 14 above, it has been found that using a latrine is important because it helps to prevent diseases especially diarrhoea. In addition the targeted households members would use a latrine because it's convenient as the latrine makes the household surrounding clean and makes defecation easy during rainy season and at night. Also using the latrine would offer privacy and respect when they receive visitors (Table 14).

This determinant refers to an individual's perception of the good or bad things that would result from performing a behaviour. In order to assess their perception with regard to positive and negative consequences of performing the behaviour, study participants were asked to comment on their perceived positive and negative consequences of using latrines each day. The major positive consequence was disease prevention: doers were 2.4 times more likely to report this consequence than non-doers (p=0.009). Other insignificant positive consequences almost equally reported by both doers and non-doers included: clean surroundings, privacy, convenience and safety from animals such as snakes. Conversely, doers and non-doers invariably reported that there are no negative consequences associated with using latrines. However, doers compared to non-doers were 10.6 times more likely to report that defecation around the drop-hole was the main negative consequence of using latrines (p=0.007). Insignificant negative consequences included: smell arising from latrines, sharing, collapsing of latrines which puts lives at risk and need a lot of time to take care of the latrine.

3.4.4 Perceived negative consequences

Table 15: Perceived negative consequences of using a latrine: Latrine non - owners

Perceived negative consequences	Non-doer	Percentage
	frequencies	

None	88	67.7		
Smell	11	8.5		
Others use it (e.g. shared, too many people ask for latrine	4	2.1		
better not have)		5.1		
Latrine fills quickly e.g. sharing	2	1.5		
Safety (Can collapse and can fall in)	9	6.9		
Uncleanliness (Defecate around drop-hole, attracts flies,	5	2.0		
cockroach)	5.8			
Can transmit diseases	6	4.6		
More investment to care (resources, energy and time)	5	3.8		

In terms of reasons that may prevent people from having latrine include smell when it is very close to the household, source of disease when not clean especially when there is no one to care it. In addition, other community members who use the latrine makes it hard for a latrine to be kept clean all the time (Table 15).

3.4.5 Perceived social norms (approve)

Table 16: Perceived social norms (approves) for using a latrine at household

Perceived social norms (approve)	Non-doer	Percentage
	frequencies	
Chiefs/TA	72	26.6
Family/Relatives	7	2.6
Village Committees and other committees i.e. VDC, bank	27	10.0
nkhonde, drama group, volunteers		10.0
Community members/friends/neighbours/visitors	15	5.5
Extension worker /Health workers (e.g. H.S.A, doctor)	93	34.3
NGOs (e.g. CADECOM, WFP, DAPP, SHAG, Evangelical,	51	
CRS (UBALE), RED CROSS, World vision, Hunger project,		18.8
WANGISA)		
Church	3	1.1
None	3	1.1

From Table 16 above, health workers, community chiefs and NGOs greatly advocate for households to own latrines.

3.4.6 Perceived social norms (disapprove)

Table 17: Perceived social norms (disapprove) for using a latrine at household

Perceived social norms (disapprove)	Non-doer	Percentage
	frequencies	
None	118	97.5
Neighbour	3	2.5

As shown in Table 17, almost all the latrine non – owners reported that there were no one in their villages who disapprove them from not having a latrine. Only two respondents said that their neighbours advise them not to bother constructing a latrine, but rather share theirs.

3.4.7 Perceived Access

Study participants were asked their perceived difficulty to use latrine each day; that is, in terms of having time to use a latrine and distance to get to the latrine. Non-doers were 6.2 times more likely than doers to report that it is "*very difficult*" for them to have time to use a latrine (p<0.0001). Conversely, doers were 2.5 times more likely to report "*not difficult at all*" compared to non-doers (p=0.001). Clearly, this attests to the notion that non-doers hardly use latrine all the time. In terms of how difficult it is to get to the latrine (distance), non-doers were 2.3 times and 3 times more likely than doers to report that it is "*very difficult*" and "*somewhat difficult*", respectively (p=0.023; p=0.001). On the other hand, not surprisingly, doers were 1.5 times more likely to report "*not difficult at all*" compared to non-doers.

3.4.8 Cues for Action/Reminders

This determinant refers to the presence of reminders that help a person remember to do a particular behaviour. Study participants were asked how difficult it is to remember using latrine if one wants to defecate. Non-doers were 7.7 times more likely than doers to report that it is "*very difficult*" to remember (p=0.018) to use a latrine. Furthermore, non-doers are 2.5 times more likely to report that it is "*somewhat difficult*" than doers (p=0.020). Likewise, doers were 3.3 times more likely to report "*not difficult at all*" compared to non-doers (p<0.0001).

3.4.9 Susceptibility/Vulnerability and Severity

This determinant refers to a person's perception of how vulnerable or at risk he/she feels to a certain problem. To assess perceived risk, participants were asked of the likelihood that the child will get diarrhoea in the next three months. Non-doers were over three times as likely compared to doers to report that the risk of diarrhoea is "very likely" (p<0.0001). Respondents not practicing the behaviour perceived the risk of diarrhoea to be high. Conversely, doers compared to non-doers were 5.5 times more likely to report that "not likely at all" (p<0.0001). Doers and non-doers were also asked their belief that the problem is serious; how serious would it be if their child got diarrhoea. Interestingly, though not practicing the behaviour, non-doers were 2.2 times more likely to report diarrhoea to be low or not serious compared to non-doers (p<0.0001). However, doers are practicing the behaviour despite thinking that diarrhoea is not a serious problem. This implies that there are other factors that would motivate one to use a latrine, apart from disease prevention.

3.4.10 Perceived Action Efficacy

This determinant refers to the belief that by practicing the behaviour an individual will avoid a certain problem. Respondents were asked how likely is it that their child will get diarrhoea if they do not use a latrine for defecation. The survey found that non-doers compared to doers were almost twice more likely to report that diarrhoea is *very likely* if they do not use latrine for defecation (p=0.027). Intriguingly, doers were 3.4 times more likely than non-doers to report that diarrhoea is *not likely at all*. Findings here are perplexing in that non-doers have a positive perception of the action efficacy of the behaviour, yet do not practice the behaviour despite the positive perception.

3.4.11 Perceived Divine Will

Respondents were asked if they think it is God's will if a child gets diarrhoea. Doers were almost two (1.9) times more likely to say that it is not God's will if a child gets diarrhoea compared to non-doers (p=0.025).

3.4.12 Culture

This determinant refers to the set of history, customs, lifestyles, values and practices within a selfdefined group. Respondents were asked if there were any cultural rules or taboos against using a latrine. Non-Doers were 3.6 times more likely to state that there are cultural rules and taboos (p=0.025). Whereas, doers were 2.3 times more likely to report that there are no cultural rules or taboos than non-doers (p=0.030).

3.5 Perception of OD as a norm at household level

It has been found that community members have positive attitude towards owning and using a latrine. During IDIs with latrine owners, it was reported that almost every household in the communities do have latrine because they want to prevent diarrhea diseases. However, it was reported that only very few which include the elderly and widows do not have latrines. It was also reported that it is not a common practice for people to defecate in the bush because CLTS programme highlighted to them the consequences of open defecation. Nevertheless, the community members sometimes practice open defecation when they go to the agriculture fields which are located very far from their homes and there are no toilets there. One IDI participant with a latrine from Mcheka 1 village, TA Masache reported that:

...... I don't think there are still people who use the bush to defecate. People only use the bush when they are far away from homes for example in agriculture field...... here it may be only the elderly who don't have latrines.

The findings from IDIs are in line with what has been reported in barrier analysis where almost all stakeholders in the community approve and encourage ownership and use of latrines. It was only the very few (elderly) who had no latrines who reported that they use their neighbour's because they could not afford to dig and construct their own. This implies that even though some elders don't have their own latrine, they still have a positive attitude on latrine use instead of using the bush.

Importantly, it has been found that despite many households own and use latrines to prevent diseases, some community members still believe that one die from cholera due to divine will and not necessary as a result of poor hygiene practices. One IDI participant from Ganizani village, TA Makhwira commented;

...... some of relatives died because of cholera some years back..... However, we survived not necessarily because we follow good hygiene practices but because God had not decided to take us at that time instead he chose our friends and relatives.

3.6 Support from extension workers

It is a fact that support in terms of materials and promotion messages including household follow ups encourage community members to own and use latrines. This study wanted to establish whether there was a significant difference in terms of CLTS support between those with and without latrines. The study found that both participants with and without latrines knew about CLTS programme and triggering sessions that were conducted in their villages. In addition, they both knew the purpose of the CLTS. However, it has been found that most of the participants who had no latrines did not participate in triggering sessions. They reported being away to the market or agriculture field on the day of triggering. Nevertheless, they were told what happened at the triggering session. One IDI participant from TA Masache commented;

CLTS triggering session indeed happened because of high prevalence of diseases due to low latrine coverage.......... I was not around on that day I went to the farm but I was told what happened when I came back.........follow up visits happened almost four times.

During CLTS follow up visits, both latrines owners and non-owners were reached by the extension workers and natural leaders. However, the study has revealed that those with no latrines did not receive any special/additional support. A special plan within CLTS approach was supposed to be created deliberately in order to maximize one to one contact with those households without latrines.

3.7 Technical challenges for having a latrine and using a latrine

With respect to technical challenges, the study wanted to establish technical challenges (such as soil conditions, water table, construction materials e.g. tree logs etc.) in relation to latrine ownership and use. From the IDIs, it has been found from both latrine owners and non-owners that they struggle to source tree logs for covering the latrine hole. This happens due to scarcity of trees as a result of heavy deforestation in the area. If found, then they are sourced at a distance from the villages and sometimes at a high cost. Heavy rain associated with floods was also identified as a contributor for some households not to own a latrine especially to those latrines without roofing. One respondent from Lazaro village, TA Makhwira who had no latrine said that he used to have a latrine. However, the latrine was destroyed by the rains and it has been very difficult for the household to re construct another latrine due to scarcity of construction materials. In addition, her husband said that he had no time to re construct it as he was always busy looking for money. She commented;

We had a toilet before but it fell due to heavy rains. Whenever I tell my husband to construct one he always says he is busy, logs are also scarce.

From barrier analysis, it was noted that latrine non owners found it hard to own a latrine due to lack of finances for latrine construction as most of them were elders or widows who could not construct a latrine on their own. In addition, non-owners failed to have a latrine because some of them had ill health (chronic illness) which prevented them from constructing latrines and had challenges in sourcing construction materials.

3.8 Socio-economic status

Relating to socio-economic status, the study compared occupation status of both latrine owners and non-owners. As shown in Table 11 (demographic tables), there was no significant differences in terms of occupation between latrine owners and users versus latrine non – owners and non – users. Despite such insignificance, results from barrier analysis showed that one's financial status is important to support latrine construction especially among latrine non owners. However, when age of latrine owners was compared with non – owners, it was found that the non-owners were significantly older (p=0.003) than latrine owners Table 11 (demographic tables). Similarly, latrine owners were slightly more education than latrine non – owners. In terms of marital status, there were more latrine non – users who divorced compared to latrine users (p=0.008). This may imply that age, education and marital status plays a significant role on whether one owns or uses a latrine. Therefore, WASH behaviour change promotion strategies for latrine non owners should include the mentioned demographic variables.

3.9 Participation in community development and latrine ownership

It is a well-known fact that latrine non – owners are introverts who mostly do not participate in development activities taking place in their area. In order to understand this fact in the study area, the participants were asked whether latrine owners and non – owners do participate in other development activities not related to WASH. It has been found that there were no major differences between the owners and non – owners on their knowledge and participation in development activities.

3.10 Community social bonding (social capital)

The extent to which bonding occurs in the community has been identified as a major contributor for community development.⁷ This community bonding depends on the extent to which social support is available to those who need it, level of friendship within community members and a sense of belonging to the community. Based on this, the study measured the level of bonding that community members had in the targeted TAs. In order to understand whether social capital issues contribute to latrine ownership and use, two villages from the same TA were compared (i.e. one village performing well on latrine ownership and use compared to another not performing well). From Table 18, it has been learnt that the level of bonding between villages performing well and those not performing well was very high ranging from 7 to 11. One participant from TA Makhwira commented;

"We always encourage those without latrines to construct one so that our village should be clean and free of diseases all the time".

Importantly, it has been found that there was no major difference in terms of bonding between the two groups across all the 4 TAs visited. This may imply that ownership and use of latrines by household members did not depend on their level of bonding.

⁷ Schutte DW, (2015). Identifying community needs: Laying the foundation for success or failure in planning community development projects

Question	TA Mlilima		TA Chapananga		TA Masache		TA Makhwira	
Question	vge A	vge B	vge A	vge B	vge A	vge B	vge A	vge B
To what extent do you consider								
this community to be your								
home?	10	11	10	11	9	10	10	10
How close do you feel to								
friends and households in this								
community?	9	8	10	9	7	10	11	9
To what extent can you rely on								
the community to come to your								
aid should you have any								
problems?	9	8	9	11	4	7	5	5
How likely are you to assist								
someone in this village build a								
latrine if you feel they have								
problems in having one?	10	6	6	11	2	8	10	7
How likely are people in this								
village able to assist you build								
a latrine if they feel you have	10			10	2	2	_	-
problems in having one?	10	4	4	10	3	3	5	5
How safe do you feel walking						_		_
in the streets in the dark?	8	9	9	10	8	5	8	5
How satisfied are you with the	0	0	_		0	_	0	0
leaders in the village?	9	9	7	11	8	7	8	8
In terms of working together,								
how do you compare your								
village with others? How								
satisfied are you with now								
people work as a group as	0	11	7	11	0	7	11	5
How satisfied are you with	0	11	/	11	0	1	11	5
compaign on having every								
household to build and use a								
latrine?	10	11	9	11	9	10	11	6
How satisfied are you with the	10	11	,	11	,	10	11	0
spirit of working together so								
that every household has a								
latrine compared to other								
villages?	8	10	6	18	11	8	11	9
Average score	9	9	8	11	7	7	9	7

Table 18: Measurement of community social bonding

3.11 Conclusion

The study found that demographic factors such as age, education and marital status plays a crucial for one to use and own a latrine. Similarly, Knowledge and skills on how to dig and construct a latrine is important. Lack of finances and inability to source latrine construction materials, including heavy rain also prevent household members in the study area to own latrines. In addition,

cues for action are important if latrine non - owners are to own and use latrines. Importance of owning and using a latrine was not significant since non latrine -owners felt to be more vulnerable to suffer from diarrhoeal related diseases and they strongly believed that diarrhea is a very serious disease. The study has further found out that latrine non – owners do not consider open defecation as a norm at household and community level. Both latrine owners and non – owners were fully supported by the extension workers. However, more effort was required to convince latrine non – owners to construct and use latrines; rather than only depending on normal CLTS process. In terms of social bonding, it has been found that there is high level of bonding among all targeted community members with no major difference between latrine owners and non – owners. This may imply that ownership and use of latrines by household members did not depend on their level of bonding.

3.12 Recommendations

- WASH behaviour change promotion activities for the last latrine milers should be specifically and deliberately designed to address the very old, unmarried women and less educated in the society.
- Special programme should be created to support latrine construction among the vulnerable households. The programme should include construction of durable latrines to withstand harsh weather conditions.
- Cues and environmental prompts should be incorporated in WASH behaviour change programmes to remind household owners to always own and use latrine
- WASH Behaviour change strategy should be the focus towards latrine non owners. There is a need to shift from promotion of WASH hardware to psychosocial factors that affect ownership and use of latrines. Such promotion activities should be more practical and interesting rather than using health education approach.
- There is need to include religious leaders in delivering sanitation projects to reduce some members believing that cholera comes because of the God's Will
- There is need to have other behaviour change approaches be implemented together with CLTS. CLTS alone does not change behaviour and also those who do not care about being shamed are not affected.

3.13 Bridge to action

Behaviour 1: Latrine Ownership						
Determinant	Significant Response/Code	Doers Vs. Non- Doers	Bridge to Activity	Activity		
Self-Efficacy	Feaces disgust (motivator)	Doers are 5.5 times more likely to give this response than Non-doers.	Demonstrate to the community members that feaces bring shame to the household	Awareness on how unclean latrine can promote disease transmission Promote innovations		
	Availability of finances (motivator)	Non-doers are 1.9 more likely to give this response than Doers.	Practical sessions to demonstrate the importance of prioritizing WASH activities at household level	that can survive adverse conditions. Encourage households to move up the sanitation ladder by making investment to build a strong latrine		
	Lack of finances for latrine construction	Non-doers are 3.6 more likely to give this response than Doers.	Practical sessions to demonstrate the importance of prioritizing WASH activities at household level			
	Lack of construction materials (Barrier)	Non-doers are 2.5 more likely to give this response than Doers.	Build interest in the community members to be innovative			
	Chronic illness (barrier)	Non-doers are 20 more likely to give this response than Doers.	Build social capital so that relatives should be able to assist the sick.	Come up activities that are aimed at making the community work together and assist each other		
Perceived Consequences	Laborious in taking care of the latrine	Non-doers are 6.6 more likely to give this	Create shame to those who fail to care of latrines	Hold community wide events to sensitize and raise support for the		
		response than		importance of		
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Behaviour 2: H	lousehold member	s latrine use				
Determinant	Significant Response/Code	Doers Vs. Non- Doers	Bridge to Activity	Activity		
Self-Efficacy	Availability of latrine (Barrier)	Non-doers are 3.3 more likely to give this response than Doers.	Emphasize the shame that is associated with not using latrine and the associated disease transmission risk	Encourage each and every household to have their own latrine		
	Prevent diseases (motivator)	Non-doers are 3 more likely to give this response than Doers.	Increase understanding on disease transmission pathway involving faecal oral route	Demonstrate how use of latrine can reduce one getting the disease versus toilet transmitting disease Use reminders in the community so that the knowledge can be enforced		
	Design of latrine (e.g. well- constructed, proper roofing, strong logs, smooth floor)	Doers are 2.3 times more likely to give this response than Non-doers.	Build interest in the community members to be innovative	Promote innovations that can survive adverse conditions. Encourage households to move up the sanitation ladder by making investment to build a strong latrine		
	Latrine fills up quickly	Non-doers are 3.2 more likely to give this response than Doers.	Increase the individuals to compare risk of not using a latrine and that of constructing a new latrine when old one is full	Awareness on how to dig a latrine that can last for some years and also encouraging every household to have a latrine		

4.0 Results for Rumphi

4.1 Demographics for latrine ownership

The total respondents were 45 people who do not have latrines and these were asked open questions from which themes were derived. These people were selected in the three Traditional Authorities of Mwankhunikila, Mwamlowe and Katumbi which were declared open defaecation free (ODF).

Demographic	Description	Doers (%)	Non doers	p-value
characteristic	-		(%)	-
Sex	Female	27 (61)	36 (88)	0.0065*
	Male	17 (39)	5 (12)	0.0065*
Age	18 - 24 years	7 (16)	13 (33)	0.0730
	25 - 34 years	8 (18)	13 (33)	0.110
	35 - 44 years	10 (23)	5 (13)	0.235
	45 - 54 years	6 (14)	5 (13)	0.892
	55 - 64 years	8 (18)	2 (5)	0.0671
	65 and above	5 (11)	2 (5)	0.092
Availability of under-5	No	16 (36)	12 (29)	0.487
child at household	Yes	28 (64)	29 (71)	0.492
Availability of household	No	40 (91)	40 (98)	0.1647
member with disability	Yes	4 (9)	1 (2)	0.193
Ethnicity	Chewa	0 (0)	0 (0)	NA
	Lomwe	0 (0)	0 (0)	NA
	Sena	1 (2)	0 (0)	0.362
	Tonga	0 (0)	1 (2)	0.3511
	Tumbuka	43 (98)	40 (98)	1.00
	Yawo	0 (0)	0 (0)	0.367
Religion	Christian	41 (98)	40 (100)	0.3620
	African Tradition	1 (2)	0 (0)	0.3620
	Islam	0 (0)	0 (0)	0.326
	None	0 (0)	0 (0)	NA
Marital status	Divorced	1 (2)	6 (15)	0.0349
	Married	38 (86)	29 (71)	0.0968
	Single/never	2 (5)	4 (10)	0.0382*
	married			
	Widowed	3 (7)	2 (5)	0.698
Education	Never gone to	1 (2)	0 (0)	0.3620
	school			
	Primary	27 (61)	25 (63)	0.849
	Secondary	16 (36)	14 (35)	0.923
	Tertiary	0 (0)	1 (2)	0.5096

Table 19: Demographic characteristics of latrine owners and non-owners in Rumphi District

Occupation	Casual labour	5 (12)	5 (14)	0.783
	Formal employment	0 (0)	1 (2)	0.5096
	Large scale business	1 (2)	0 (0)	0.363
	Large scale farmer	1 (2)	0 (0)	0.362
	Small scale business	13 (30)	19 (50)	0.0649
	Small scale farmer	15 (35)	8 (21)	0.156
	Subsistence farming	5 (12)	3 (8)	0.540
	Other	3 (7)	0(0)	0.087

*Significant at 95% level (>0.05)

The demographic factors between latrine owners and non-owners were similar, however it was noted that households without latrines were mainly those female headed households (p>0.05).

4.1 Frequencies and Barrier Analysis on latrine ownership

4.1.1 Self-efficacy/skills

Self-efficacy/skills (What would make it easy for a household to have a latrine?)	Frequency	Percent
Ability to source construction materials (moulding bricks, grass for thatching, plastic, tree logs)	28	33
Availability of land/space for construction of latrine	19	22
Ability to construct own latrine (dig, construct)	15	18
Availability of finances to pay for construction latrine	8	9
Rented place, landlord not interested	7	8
Availability and commitment of husband	5	6
Ease of access (visitors/children/others)	1	1
Willingness to construct /interest	1	1
Availability of well-wishers to assist build latrines	1	1
Total	85	100

Table 20: Self-efficacy or skills for respondents without latrines

On what would make it easy for a household to have a latrine, the most frequently mentioned issues were ability to source construction materials, availability of land and space for construction of latrine and ability to dig and construct the latrine (Table 20). From barrier analysis, it was found that those owning a latrine were 3.1 times more likely to indicate that "ability to dig and construct own latrine" as the reason which made it easy for them to own one as compared to those without a latrine at their household (p=0.005). Those without a latrine at their household were more likely to mention "unavailability and lack of commitment by husband to construct latrine" (p=0.024) and "Residing at a rented place without latrine and lack of interest by landlord to construct latrine" (p=0.005) than those with latrines at their household.

4.1.2 Self-efficacy/difficulty

Self-efficacy / difficult (What would make it difficult to maintain having a latrine at this household?)	Frequency	Percentage
Lack of finances to construct (maintain latrine, buy materials, digging of latrine)	14	20
Lack of space (rented area, personal plot)	10	14
Toilets collapse (rainy season, high water table, unstable soils)	9	13
None	9	13
Unavailability/lack of commitment to construct latrine by husband	9	13
Lack of construction/maintenance materials (bricks, logs, grass, plastics)	7	10
Lack of suitable soil/place for digging latrine (e.g. hilly terrain, rocky soils)	6	8
Fear of keeping it clean all the time	2	3
Latrines fill quickly due to shallow pits	2	3
Bad smell from toilet when close to house	1	1
Unwillingness to share latrine (passers-by, neighbours)	1	1
Need for a modern toilet	1	1
Total	71	100

Table 21: Self-efficacy or what makes it difficult to have latrine

In terms of what would make it difficult for the household to have a latrine, the most common responses included lack of finances to construct latrine $\{20\% (14)\}$, lack of space at personal plot or rented area without enough space to construct a latrine $\{14\% (10)\}$, toilets collapse due to rains, high water table, sandy soils and wetting of unburnt bricks $\{13\% (9)\}$. The other households had no reason (9) (Table 21). From the barrier analysis, it was found that those without latrines were 3.4 times more likely to mention that latrines collapse due to rains and unstable sandy soils than those who had latrines (p=0.049). Interms unavailability and lack of commitment by husband, those without were 10.4 times more likely to mention this as a reason that would make it difficult to have a latrine than those with latrines (p=0.006). The other significant reason given by those without latrines was lack of suitable place for digging latrine due to rocky soils (p=0.011).

4.1.3 Perceived positive consequences

Perceived positive consequences of having a latrine	Frequency	Percentage
Prevent diseases	33	37
Cleanliness (e.g. less smelly surroundings, flies, Easy to care because it's your own)	25	28
Comfort (Easily access during rainy season, don't use neighbour's latrine)	15	17
Dignity/respect (no shame when visitors come)	10	11
Privacy	5	6

Table 22: Perceived positive consequences of having a latrine

Prevent open defaecation	1	1
Others become angry to use their latrine	1	1
Total	90	100

Most common responses in terms of perceived positive consequences of having a latrine for those without latrines were to prevent diseases (33%), promote cleanliness (28%), for comfort and promote dignity and respect (11%) (Table 22). The barrier analysis results found that those with latrines were 2.8times more likely to indicate cleanliness (e.g. less smelly surroundings, flies, Easy to care because it's your own) as the positive consequence than those without latrines (p=0.02).

4.1.4 Perceived negative consequences of having a latrine

Perceived negative consequences of having a latrine	Frequency	Percentage
None	26	53
Breeding ground for germs/flies/cockroaches	9	18
Unintentional sharing (e.g. school children, defecating		
around drop hole, inconvenient when others are in it,	8	
brings enmity for those denied)		16
Transmission of diseases when not kept clean	4	8
Smells when latrine is close/full	2	4
Total	49	100

Table 23: Perceived negative consequences of having a latrine

About more than half of the responses (53%) of the responses on perceived negative consequences of having a latrine were that there are no negative consequences. Some respondents who do not have latrine felt that latrines act as breeding ground for germs, flies, cockroaches and other vectors, they also felt that latrines transmit diseases if not kept clean and that they can produce bad smell if full or close to the house (Table 23). No factor was significance when those with latrines were compared with those without latrines using barrier analysis.

4.1.5 Perceived social norms (approve) for having a latrine at the household

Perceived social norms (approve) for having a latrine at the		
household	Frequency	Percentage
Health/extension workers e.g. HSAs, nurses, clinicians	36	38
Chiefs/Community Leaders	28	30
Village Committees/volunteers/care groups	12	13
NGOs and CBOs (e.g. Goal, Care, CADECOM, DAPP, SHAG, Evangelical, Red Cross, Ubale, Unicef, WASHTED/SHARE)	8	9
Friends, neighbours, community members	4	4
Family members/relatives	4	4
Religious leaders	1	1

Table 24: Perceived social norms (approve) for having a latrine at the household

None	1	1
Total	94	100

On who would approve if the respondent had a latrine in the community, most common responses were that health workers i.e. HSAs, nurses and clinicians would approve {38% (36)}, chiefs and community leaders {30% (28)} while others said village committees. One respondent said no one would approve. In Rumphi, all the respondents (45) indicated that no one would disapprove if they owned a latrine at a household. Similarly as above, there was no significant differences between those having and those without latrines on perceived social norms from barrier analysis.

4.1.6 Perceived access and cues for action

Respondents with and without latrines were asked about how difficult it is to get materials for constructing a latrine and also about how difficult it is to remember to have a latrine at the household. In total 44 people with latrines and 42 without latrines were interviewed using a questionnaire. The responses were very difficult, somewhat difficult and not difficult at all. In terms of ability to source materials for constructing a latrine, responses were similar between those with latrines and those without latrines with more people indicating somewhat difficult and not difficult at all as their responses. However, for ability to get land or suitable soil to dig a latrine, those without a latrine were 4.9 times more likely to mention that it was "very difficult" to find it than those with latrines (p=0.003) and those with latrines were likely to say that "it was not difficult at all" (p=0.009) than those without latrines. In terms of cues for action, all respondents gave similar responses with most of them mentioning that it was not difficult at all to remember to have a latrine at the household (39 doers and 34 non-doers).

4.1.7 Perceived vulnerability of getting a problem i.e. diarrhoea

Both doers and non-doers were asked if there are chances that their child may get diarrhoea in the months to come at their household. The responses were very likely, somewhat likely and not likely at all. The results indicate that those without a latrine at their household 4.4 times more likely to mention that it is very likely that a child might get diarrhoea than those with latrines (p=0.015) while those with latrines were 2.9 times more likely to mention that it was not likely at all that their child could get diarrhoea (p=0.017). The majoring of doers (25) and non-doers (24) mentioned somewhat likely.

4.1.8 Perceived severity

When asked about perceived severity of the diarrhoea if the child gets it, the responses were similar between those with and without latrines. The majority of doers (25) and non-doers (30) mention that it would be very serious while 4 respondents from each group said that it would not be serious at all.

4.1.9 Perceived action efficacy and divine will

Respondents were asked about how likely it is that their child would suffer from diarrhoea if they didn't have a latrine at their household and all responses were not different between latrine owners and those without latrines. Most of them indicated that it was very likely (doers=26, non-doers=19). In terms of whether they think that it's God's will that their child might get diarrhoea, most of them thought that it was not God's will (doers=35, non-doers=32).

4.1.10 Policy and culture determinants of having a latrine

On whether there are policies in the community that make people to have a latrine at their households, the responses were similar from doers and non-doers. Almost all respondents (doers=38, non-doers=41) agreed that there regulations and policies in the villages that encourage households to have latrines. In terms of cultural issues or taboos that discourage households from having a latrine, all respondents agreed that there are none except one latrine owner who said yes there are some.

4.2 Demographics for latrine use

Respondents using latrines and those not using latrines were asked questions despite owning or not owning a latrine. In Rumphi, due to scarcity of those not using latrines, only 15 people not using a latrine were interviewed. For those using latrines, 44 respondents were interviewed.

Demographic	Description	Doers (%)	Non doers	p-value
characteristic			(%)	
Sex	Female	30 (68)	7 (47)	0.1537
	Male	14 (32)	8 (53)	0.1537
Age	18 - 24 years	5 (11)	2 (14)	0.756
	25 - 34 years	12 (27)	4 (28)	0.9404
	35 - 44 years	12 (27)	1 (7)	0.113
	45 - 54 years	4 (9)	2 (14)	0.584
	55 - 64 years	8 (18)	2 (14)	0.723
	65 and above	3 (7)	3 (21)	0.134
Availability of under-5	No	20 (45)	8 (53)	0.598
child at household	Yes	24 (55)	7 (47)	0.598
Availability of household	No	39 (89)	15 (100)	0.568
member with disability	Yes	5 (11)	0 (0)	0.568
Ethnicity	Chewa	0 (0)	0 (0)	NA
	Lomwe	0 (0)	0 (0)	NA
	Sena	2 (5)	0 (0)	0.382
	Tonga	0 (0)	0 (0)	NA
	Tumbuka	41 (93)	15 (100)	0.298
	Other	1 (2)	0 (0)	0.583
Religion	Christian	42 (98)	15 (100)	0.583
	Islam	0 (0)	0 (0)	NA
	None	1 (2)	0 (0)	0.583
Marital status	Divorced	1 (2)	2 (13)	0.092
	Married	37 (86)	7 (47)	0.0038*
	Single/never	1 (2)	4 (27)	0.0042*
	married			
	Widowed	4 (9)	2 (13)	0.005*
Education	Never gone to	2 (5)	1 (7)	0.770
	school			

Table 25: Demographic characteristics for latrine users and non-users for Rumphi District

	Primary	23 (52)	6 (40)	0.426
	Secondary	18 (41)	8 (53)	0.423
	Tertiary	1 (2)	0 (0)	0.583
Occupation	Casual labour	2 (5)	0 (0)	0.382
	Formal employment	3 (7)	0 (0)	0.298
	Large scale business	2 (5)	0 (0)	0.382
	Large scale farmer	2 (5)	0 (0)	0.382
	Small scale business	18 (44)	3 (23)	0.156
	Small scale	13 (32)	10 (77)	0.004*
	farmer/subsistence			
	Other	1 (2)	0 (0)	0.583

*Significant at 95% level (>0.05)

People who do not use latrines at all times were mainly the married ones, single or never married, widowed and those involved in small scale (subsistence) farming (P>0.05).

Below are the frequencies of responses from those not using latrines, barrier analysis results comparing users and non-users, IDIs and FGDs results.

4.3 Frequencies and Barrier Analysis for Latrine Use

4.3.1 Self-efficacy or skills

Table 26: Self-efficacy or skills making it easy to use a latrine for those not using

	Frequenc	Percentag
Self-efficacy/skills (What would make it easy for you to use a latrine?)	У	e
Availability of latrine	15	45
Distance from house to latrine	6	18
Cleanliness (Latrine is clean, well-cared for, smeared well)	6	18
Presence of HWF/ water for hand washing as opposed to bush	2	6
Knowledge for the need to use latrine	1	3
Latrine not full	1	3
Presence of light to use at night	1	3
Properly designed and constructed	1	3
Total	33	100

On what would make it easy to use a latrine, the non-users of latrines indicated that availability of latrine would make it easy $\{45\% (15)\}$ and these were mostly non-users without latrines. Others indicated that distance from latrine to house $\{18\% (6)\}$, cleanliness of latrine $\{18\% (6)\}$ and others (Table 26). From barrier analysis results, those using latrines were 2.9 times more likely to mention cleanliness as something than motivates them to use latrine than those not using latrines but this was not significant at boarderline (p=0.053). Those not using latrines were 40.6 times more likely to mention that availability of latrine would make it easy for them to use it than those using it (p>0.0001).

4.3.2 Self-efficacy or what makes it difficult to use latrine

Table 27: What makes it difficult to use latrine

Self-efficacy/difficulty (What would make it difficult to use a latrine	Frequenc	Percentag
at this household?)	у	е
Latrine engaged most of the times (sharing /refuse to share by owners)	7	22
No latrine	6	19
Latrine not clean (difficult to maintain clean latrine, soil for smearing	5	
(kuzila) the floor)	5	16
Distance from house to latrine	4	13
Lack of access when away from home (Agricultural fields far from		
houses where there are latrines or fetching firewood and at the lake	4	
fishing)		13
Lack of privacy (close to road)	2	6
Flies are problematic	1	3
Roofs blow off, no roof	1	3
Safety (at night it becomes difficult to use the latrine)	1	3
Landlord is not constructing	1	3
Total	32	100

On what makes it difficult to use latrines, those not using latrines indicated that latrine is engaged most of the times (i.e. because they are using a shared latrine and also because owners are uncomfortable to share) {22% (7)}, there is no latrine {19% (6)}, latrine not clean, distance from house to latrine as in Table 27. Barrier analysis results showed that those not using latrines were 4.5 times more likely to mention that they failed to use latrine because it was not clean than those using them (p=0.038). Those not using latrines were more likely to mention lack of access when away from home (Agricultural fields far from houses where there are latrines or fetching firewood and at the lake fishing) than those using latrines (p=0.003. The non-users of latrines were 24.4 times more likely to mention that there was no latrine as the reason for making it difficult to use latrine than those with latrines (p=0.001).

4.3.3 Perceived positive consequences of using a latrine

Parcaivad positiva consequences of using a latring		Percentag
Tercerveu positive consequences of using a fatrine	У	e
Prevent diseases (e. g cholera, diarrhoea)	17	49
Cleanliness	8	23
Make manure after it is full and acts as fertilizer	3	9
Comfort (Convenient to have own latrine, can use anytime e.g. during		
rainy season, easy to use, don't get soaked)	2	6
Prevent flies	2	6
Avoid open defeacation	1	3
Role model to others	1	3

Table 28: Perceived positive consequences of using a latrine

Privacy	1	3
Total	35	100

On perceived positive consequences of using latrines, non-users of latrines mentioned that that the positives included to prevent diseases e.g. cholera and diarrhoea $\{49\% (17)\}$, cleanliness $\{23\% (8)\}$ and others as indicated in Table 28. Barrier analysis results indicated that those who do not use latrines were more likely to say that using latrine provides manure when it is full and the contents are harvested than those using latrines (p=0.014).

4.3.4 Perceived negative consequences of using a latrine

Perceived negative consequences of using a latrine	Frequency	Percentage
None	10	53
Latrine fills quickly e.g. sharing	4	21
Can transmit diseases	3	16
Smell	1	5
Time consuming to clean	1	5
Total	19	100

Table 29: Perceived negative consequences of using a latrine

About half of the responses from those not using latrines $\{53\%, (10)\}$ indicated that there is no negative consequence of using a latrine. Those who have negative consequences indicated that latrine fills quickly, transmit diseases, produces smell and time consuming (Table 29). Latrine users were 4.5 times more likely to mention none as a negative consequence of using latrine than those not using latrines (p=0.038). For latrine fills quickly, those not using latrines were 13.7 times more likely to mention it than those using latrines (p=0.013). Those not using latrines were 9.6 times more likely to indicate that using latrines can transmit disease than those using it (p=047).

4.3.5 Perceived social norms (approve) for using a latrine

Table 30: Perceived social norms (approve) for using a latrine

Perceived social norms (approve) for using a latrine	Frequency	Percentage
Extension worker /Health workers (e.g. H.S.A, doctor)	16	55
Chiefs/TA	5	17
Village Committees and other committees i.e. VDC, bank mkhonde, drama group, volunteers	5	17
NGOs (e.g. CADECOM, WFP, DAPP, SHAG, Evangelical, CRS (UBALE), RED CROSS, World vision, Hunger project, WANGISA)	1	3
Church	1	3
None	1	3
Total	29	100

In terms of who would approve if they used a latrines, the most common response was extension workers i.e. HSAs, health workers and doctors {55% (16)}. Others mentioned Chiefs, village committees and one response was "none" meaning that no one would approve (Table 30). It was found that those using a latrine were 3.4 times more likely to mention that chiefs and Traditional

authorities approve for using latrine (p=0.029) than those not using latrines. All the respondents who do not use latrines said that there is no one who disapproves using a latrine except for one who said her husband.

4.3.6 Perceived access

Respondents were asked about how difficult it is to use a latrine all the times and the responses were very difficult, somewhat difficult and not difficult at all. It was found that those not using latrines were 40.1 times more likely to indicate that it was very difficult than those using latrines all the times (p<0.0001) and were 12 times more likely to say somewhat difficult than those using latrines. As for those using latrines, they were 75.6 times more likely to indicate that it was not difficult at all to use latrines than those not using latrines (p<0001).

4.3.7 Perceived reminders/cues for action

Latrine users and non-users were asked about how difficult it is to remember to use a latrine when one wants to defeacate. Those not using latrines were 15.9 times more likely to mention that it was very difficult to remember to use a latrine than those using it (p>0.0001) while latrine users were 29.6 times more likely to mention that it was not difficult at all to remember to use a latrine than those not using a latrine (p<0.0001).

4.3.8 Perceived vulnerability

Respondents were asked about the likelihood of their child getting diarrhoea the next two to three months. Those not using a latrine were 25.1 times more likely to mention that it was very likely that their child might suffer from diarrhoea than those using latrines (p>0.0001).

4.3.9 Perceived Severity

On perceived severity, doers and non-doers were asked about how severe the diarrhoea would be if their child got it. Those not using latrines were 19.9 times more likely to mention that it would be very serious than those not using latrines (p>0.0001) while those using latrines were 14.2 times more likely to mention that it would not be serious at (p=0.009).

4.3.10 Action efficacy

On how likely their child would be to get diarrhoea if they were not using a latrine, all respondents gave similar responses. These responses were not different between users and non-users of latrines. About 21 doers and 6 non-doers said not likely at all while 16 doers and 6 non-doers said it is very likely for the child to suffer from diarrhoea.

4.3.11 Divine will

On whether it is God's will that their child will suffer from diarrhoea, all the latrine users (44) said it was not God's will while 12 of those not using latrines also said it was not God's will. It was found that latrine users were more likely to mention "no" than non-users (p=0.014). Only 3 of those not using latrines mentioned that diarrhoea can be due to divine will.

4.3.12 Policy

In terms of availability of regulations and policies that encourage people to use latrines, all latrine users (44) indicated that they are available including the 13 of those not using latrines. Only one

respondent and another one of those not using latrines said maybe and no respectively to the availability of regulations and policies on use of latrines in the communities.

4.3.13 Culture

In terms of culture, respondents were asked if there are any cultural rules or taboos that are against latrine use. Most respondents (doers=42, non-doers=13) said there are none. Only one doer indicated that there are taboos and cultural rules against latrine use.

4.4 Results from FGDs and IDIs and KIIs

4.4.1 Reasons for owning a pit latrine

According to the research findings; latrine non-owners (non-doers), latrine non-users (non-doers) and members of the community (focus group discussions) cited some of the reasons for constructing a latrines. These included that the latrines are used to help people relieve themselves (a way of disposing urine, faeces and other toxic substances from human bodies). One respondent, a small scale farmer from GVH Zukumani said: "I built a latrine to promote clean surrounding around my house". Owning a latrine on a household helps one to achieve a clean and hygienic surrounding. Latrines are also used to prevent cholera and other diarrheal diseases especially with the help of handwashing using water and soap after accessing it. The small scale farmer from GVH Zukumani also said: "Currently; a lot of Non-Governmental Organizations and Government stakeholders are encouraging households to adopt this technique of constructing tippy- taps at their latrines in order to promote handwashing". To gain an insight as to why some people despite various information on health from Government and Non-governmental organizations still do not own a latrine; various responses were also gathered. Others claimed that poverty is the underlying factor as they do not have monetary resources to make bricks. Others indicated that polygamous marriages also had a role to play; as most of the second wives were told to be using the toilets for the first wives households as the husbands are too lazy to construct pit latrines for the two assigned households.

Divorce was also found to play a role in community led total sanitation. Malawi as a country has people with different cultural values and beliefs; most cultural tribes when a man proposes marriage he is supposed to pay a bridal price (dowry). When they divorce or separate; the husband gets back the dowry and the wife goes back to her parents' house. As such; she has to find a house to cater for her and the children since they are a different household. Most rural women find it hard to construct latrines as they are used that the husband is the major decision maker and in charge of various constructions.

4.4.2 Technical challenges for having latrine

The most common technical factors included lack of skills to build latrine. Most people were able to dig the latrine but construction needed some expertise. The other factors were related to soils. Along the lake in Rumphi, households had challenges digging latrines because of rocks while other had challenges of latrine easily collapsing especially during rainy season due to sandy soils and high water table. Other challenges included poor workmanship, use of soft logs easily eaten by termites and usage of short logs. Those without skills hire experts to build them a latrine. Key informants argued that the minimum charge for construction of latrines in most areas is MK4, 500 and go above the figure.

The monetary figures are a challenge to poor households, the elderly and child headed families. Transportation of extension workers also can be regarded as a technical challenge. As they cannot visit the households on time to emphasize on latrine ownership or usage. Bicycles are not able to adequately support them in home visits. The government and other stakeholders need to consider providing new bikes. There is also too much work load for HSAs and these can only be achieved if HSAs properly planning their work and actively engage volunteers and regularly refresh them.

4.4.3 Overcoming challenges for latrine ownership and usage

Most non-latrine owners (non-doers) are used to using neighbours toilets and some of them do not see a reason to own latrines. However, that is exception to elderly people as they do not have strength and resources to construct latrines. Some young people are also immersed in excessive drinking as such they do not have time to construct latrines.

Most non-latrine owners (non-doers) and latrine user (non-doer) showed an interest to construct and use latrines in their respective households. According to the research findings; most respondents said that they are making initiatives to build latrines by using cheap locally found resources such as logs, grass, bricks, cheap labour and others. Others are finding ways to find money such as saving so that they build the latrines. Most people in Malawian communities have adopted village savings groups to save and borrow money. Some participants carry various businesses in the community and said they will use the profits to hire someone to build the latrine. Local leaders, natural leaders and HSA's also have a role to play in making sure latrines are constructed by sensitizing the community members. For instance, group village headman Bongololo cited that he has been visiting different households reminding them about the essence of owning and using a latrine. Number of HSA's should also be increased so as to reduce workload as currently it's difficult to conduct frequent household visits. They should also be a refresher for natural leaders as they should be continued follow up.

4.4.4 Knowledge on development activities, CLTS campaign and support from extension workers

During focus group discussions, about 30% women respondents claimed that they did not know anything concerning development projects in the area due to issues of divorce and transfers. On the contrary, 100 % male respondents claimed they knew and understood the developmental projects in the area. They mentioned; afforestation exercises mainly due to food for work programs initiated by various non-governmental organizations to construct woodlots. Another one is the farm input subsidy which is a brain child of the government of Malawi with funding from developmental partners. People are given free seed inputs for maize, soybeans and pigeon peas and a coupon to buy fertilizer at a subsidized price. DANIDA, CADECOM, Feed the children and WFP are also implementing various food for work projects in the district. Other respondent also cited early child hood development and under five outreach clinic as some of the developmental projects.

On Community led total sanitation, all respondents (male and female) affirmed they knew about the concept. CLTS activities were conducted in 2017 and earlier in 2018. 80% of the respondents

said that they participated in triggering and 20% of the respondents failed to participate to participate due to other circumstances that were not stated.

The CLTS were conducted by the HSA's, local leaders (chiefs) and natural leaders (influential people in the area). The reason for conducting the CLTS was to encourage all households to have own latrine and a follow up was done after triggering to ensure that each household has a latrine. In some areas such as Kaseghele a follow up was done in the first month then once after two months. In other areas the respondents said that HSA's conducted follow ups at least twice a month and a natural leader followed up once a month. Some leaders were even involved in latrine construction sponsored by Synod of Livingstonia Development project (SODEV) to assist needy families. They were taught by SOLDEV on how to construct latrines and cast san plats. Currently both natural and local leaders are working with HSAs in advocating for latrine ownership at household level. Non-governmental organizations are also taking lead in CLTS. "WFP during the distribution of relief food put latrine ownership as one of the condition to benefit from the program hence latrine coverage really increased," explained the respondent. One respondent however said that "Local leaders do not take much part in sensitizing the community members on sanitation and hygiene. HSAs more frequently conduct home visits and distribute 1% stock solution in the rainy season."

Some village head also said that enforcement of village bye-laws to punish whoever does not have a latrine should be a priority. Other local and natural leaders also said in affirmation that "HSAs support to the village is not enough. They irregularly visit the village. I should say they do not visit the village". One local leader who is also a retired ambulance driver said that "AEHOs do not supervise the HSAs. They should intensify supervision to these HSAs". He also added that "VHC should work with HSAs and local leaders to intensify the home visits." Other key informants also added that "collaboration between local leaders, VHCs and HSAs can improve the sanitation conditions by 2020'.

However some chiefs and other latrine owner's users and latrine user's doers added that Transport for the VHC members is a problem for supervision of latrines. AEHOs do not supervise the HSAs. One respondent added that; 'HSAs visit the villages only when there are clinics.' This shows varying levels of support to communities by extension workers.

4.4.5 Economic status and latrine coverage

Most Malawian households are living below a dollar every day. This does not only affect food consumption but also in sanitation. As already highlighted; people cited poverty as a means of not accessing or using latrines. Most respondents cited that it's very easier to construct latrines by using cheap local resources and everyone can afford despite various economic status. Poverty effects like lack of basics of life including food, soap for washing clothes and bathing makes houses not to prioritize WASH issues. WASH projects should also incorporate issues of economic empowerment.

4.4.6 Perception of OD as a norm at household level

All the respondents showed clearly essence and benefits of using latrines. Community members construct latrines because of various reasons such as to prevent diarrheal disease such as cholera; hygienic purposes and the idea that a latrine brings respect or prestige to the household. A male

respondent with a latrine clearly said that "a person without a household latrine is not respected at all; at the bush a man can meet his mother in-law and is so shameful; also when you receive visitors you become ashamed when you show them the bush to use." A person without a toilet or who doesn't use a toilet is also regarded as filthy, dirty and unhygienic. Their households are not usually visited by visitors because of the said behaviours.

People were also asked to explain the reasons to why some people do not still own the latrines in the district despite various attempts of CLTS. Some household in the district do not have enough land to construct latrines, others it's just merely lack of interest to have latrines and dependence on the toilets of the relatives. But it was clear that everyone whether with latrine or not regard having a latrine as a norm.

4.4.7 Social Capital

In Rumphi, seven people participated in the exercise.

Question	Average Score
To what extent do you consider this community to be your home?	9.57
How close do you feel to friends and households in this community?	9.57
To what extent can you rely on the community to come to your aid should you	
have any problems?	3.14
How likely are you to assist someone in this village build a latrine if you feel	
they have problems in having one?	5.43
How likely are people in this village able to assist you build a latrine if they	
feel you have problems in having one?	2.57
How safe do you feel walking in the streets in the dark?	10.43
How satisfied are you with the leaders in the village?	9.43
In terms of working together, how do you compare your village with others?	
How satisfied are you with how people work as a group as compared to other	
villages?	7.29
How satisfied are you with campaign on having every household to build and	
use a latrine?	5.29
How satisfied are you with the spirit of working together so that every	
household has a latrine compared to other villages?	8.43
Average	7.11

Table 31: Social Capital in T/A Katumbi, STA Zolokere

The social capital in T.A. Katumbi was estimated at 7.11 which is high and this was measured in Sub T.A. Zolokele. In T.A. Katumbi, it was difficult to find households without latrines as compared to Mlowe area. The respondents showed that they rely on each other in terms of sharing latrines as indicated by respondents at a FGD:

"Some households do not have latrines because they are used to sharing the toilet"

In communities, respondents found it difficult to share their latrine with their neighbours. In addition, the HSA also reported that there was a strong relationship between her and the people in the area and indicated that people can easily help her if in problems showing a higher social capital.



Figure 3: Social capital measurement using Schautte Scale in progress in Sub T.A. Zolokele, T.A. Katumbi in Rumphi

4.4.8 Social capital in Mlowe

Question	Average Score
To what extent do you consider this community to be your home?	9.50
How close do you feel to friends and households in this community?	9.75
To what extent can you rely on the community to come to your aid should you	
have any problems?	5.38
How likely are you to assist someone in this village build a latrine if you feel	
they have problems in having one?	5.25
How likely are people in this village able to assist you build a latrine if they	
feel you have problems in having one?	3.88
How safe do you feel walking in the streets in the dark?	4.25
How satisfied are you with the leaders in the village?	7.75
In terms of working together, how do you compare your village with others?	
How satisfied are you with how people work as a group as compared to other	
villages?	4.25
How satisfied are you with campaign on having every household to build and	
use a latrine?	5.63
How satisfied are you with the spirit of working together so that every	
household has a latrine compared to other villages?	9.13
Average	6.48

 Table 32: Social capital scores for Mlowe area, T.A. Mwamlowe

In Mlowe, the social capital was estimated at 6.48 which was low. This was related to a larger proportion of households without latrines estimated by looking at the ease of finding households

without latrines by the research team. Despite most respondents during FGD at Mandunda agreeing on the statement which said:

"We assist each other in digging and lining of stones in the pit provided and if one needs assistance she cooks nsima for those who come to assist"

The statement shows some social cohesion but in real sense it means if one does not cook food, he/she will not be assisted. This confirms the low social capital figures in the area.



Figure 4: Research assistants training participants on how to use Schautte Scale in Mlowe, T.A. Mwamlowe, Rumphi

4.5 Conclusion and Recommendations

Households without latrines were mainly those female headed households, those without suitable land to dig, those who are tired of constructing after the previous one collapsed and those living at a rented place. People who do not use latrines at all times were mainly the married ones, single or never married, widowed, those involved in small scale (subsistence) farming, those involved in fishing at the lake, those whose farms are away from their houses, those with a shared latrine and those whose latrine is not clean most of the times.

The main reasons why some households do not have latrines include not having skills and money to able to dig and construct own latrine, being a female headed household without someone able to dig and construct, husband not willing to dig and construct a latrine, people living at a rented house without latrine and landlord not interested to construct one, toilets collapse and household members no longer interested to construct again and lack of suitable land or soils for digging and constructing a latrine. In terms of why some people do not use latrines, the main reasons included lack of latrine at the household or shared latrine which is mostly engaged, available latrine is not clean and people are afraid of using it and lack of access to latrine when away from the house especially when at the farm and away to catch fish in the lake. The study recommends suggested the following recommendations:

• District Councils and their partners organize training sessions at community level on how to dig and construct latrine using local resources

- Promote behaviour change messages designed to elicit shame for not owning a latrine the health promotion intervention could be embedded in a broader intervention
- Through the District Council, come up with requirements in terms of sanitation for any house or structure that is for rent in rural towns or market centers and promote innovations that can survive adverse conditions.
- Encourage households to move up the sanitation ladder by making investment to build a strong latrine.

On use of latrines, the study had the following recommendations;

- Community leaders in collaboration with extension workers to encourage each and every household to have their own latrine
- Community leaders in collaboration with extension workers to promote community awareness on importance of proper use of latrine and cleaning of latrine on regular basis
- Government and partners in the district should strengthen social capital so that they should be helped by community members. If all fails, these groups should receive toilet subsidies so that they should own one.
- Increase awareness on how unclean latrine can promote disease transmission
- Community leaders in collaboration with extension workers to start debate and planning at village level on how those who move away from their households to farm and catch fish can be accommodated to avoid open defaecation, each community to come up with plans and implement them
- Encourage use of ecological sanitation latrines to households that want to utilize the faeces as manure and also increase awareness on dangers of using untreated faecal matter in the fields.
- There is need to have other behaviour change approaches be implemented together with CLTS. CLTS alone does not change behaviour and also those who do not care about being shamed are not affected.

4.6 Bridges to Action

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Behaviour 1: Latrine Ownership				
Determinant	Significant	Doers Vs. Non-	Bridge to	Activity
	Response/Code	Doers	Activity	
Self-Efficacy	Ability to dig and construct own latrine (Motivator)	Doers were 3.1 more likely to mention ability to dig and construct own latrine as a factor that makes it easy for them to own latrine than non-doers.	Build interest in community members to learn skills to dig and construct their own latrine	Organize training sessions at community level on how to dig and construct latrine using local resources Promotional approach, combined with
	Availability and commitment of husband (Barrier)	Non-doers were 10.6 times more likely to report that availability of husband and his willingness would make it easy to have a latrine than doers	Build social capital so that relatives should be able to assist female headed households. Build interest in men to build latrines. Teach women skills to dig and construct latrines	behaviour change messages designed to elicit shame for not owning a latrine. The health promotion intervention could be embedded in a broader intervention. Come up activities that are aimed at making the community
	Rentedplacewhere landlord isnot interested andrentedplacewithout space forlatrine (Barrier)Toiletscollapse(i.e. during rainyseasondue torains that dissolve	Non-doers were more likely to mention that their landlord was not interested and others said there was no space at the rented house for a latrine than doers Non-doers were 3.4 times more likely to mention that toilets	Advocate for strict regulations in terms of requirements for houses for rent Proper planning for rural growth centers Build interest in the community members to be innovative	work together and assist each other Through the District Council, come up with requirements in terms of sanitation for any house or structure that is for rent in rural towns or market centers

	unburnt bricks, high water table and sandy soils) (Barrier) Lack of suitable soil/place for digging latrine (e.g. hilly terrain, rocky soils) (Barrier)	collapsing makes it difficult for them to have than doers Non-doers were more likely to indicate that lack of suitable land to dig and construct a latrine was a barrier than doers	Build interest in the community members to be innovative	Promote innovations that can survive adverse conditions. Encourage households to move up the sanitation ladder by making investment to build a strong latrine
Perceived Consequences	Cleanliness (e.g. less smelly surroundings, flies, Easy to care because it's your own) (Motivator)	Doers were 2.8 times more likely to indicate that what motivated them to have a latrine was to promote clean environment around their house than non- doers	Increase the perception that not having a latrine promotes open defaecation which leads disease transmission	Hold community wide events to sensitize and raise support for the importance of having a latrine at each and every household
Access	Very difficult (Barrier)	Non-doers were 4.9 times more likely than doers to report that it was very difficult to get a suitable land to dig and build a latrine	As above: Self- Efficacy	As above: Self- Efficacy
	Not difficult at all (Motivator)	Doers were 2.8 times more likely to mention that it was not difficult at all to find suitable land than non-doers	Create interest to learn from others	Promote role models in the community who should be able to explain to other members on how they obtained suitable land where they built their latrine
Susceptibility or Vulnerability	Very likely (Motivator)	Non-doers were 4.4 times more likely than doers to report that their	Increase the perception that under-five children are more likely to	Increase awareness on how diseases are transmitted

	children were	develop diarrhoea	through open
	very likely to	if faeces are not	defaecation in the
	suffer from	properly disposed.	community
	diarrhoea the next		
	three months		
Not likely at all	Doers were 2.9	Increase the	Increase
(Motivator)	times more likely	perception that	awareness on how
	than non-doers to	under-five children	proper disposal of
	report that their	are less likely to	faeces in a latrine
	children were not	develop diarrhoea	can reduce
	likely at all to	if faeces are	diarrhoea diseases
	suffer from	properly disposed	in the children
	diarrhoea the next	in a latrine.	under the age of
	three months		five

Behaviour 2: Household members latrine use

Determinant	Significant Response/Code	Doers Vs. Non- Doers	Bridge to Activity	Activity
Self-Efficacy	Availability of latrine (Barrier)	Non-doers were 40.6 times more likely to mention that unavailability of latrine makes it difficult for them to use a latrine than doers.	Emphasize the shame that is associated with not using latrine and the associated disease transmission risk	Encourage each and every household to have their own latrine
	Latrine not clean (difficult to maintain clean latrine, soil for 'kuzila' for floor) (Barrier)	Non-doers were 4.5 times more likely to report that latrine was not clean as something that made it difficult for them to use latrine than doers	Increase the perceived interest to use clean latrine	Awareness to community on importance of proper use of latrine and cleaning of latrine on regular basis Awareness on how unclean latrine can promote disease transmission
	Lack of access when away from home (Agricultural fields far from houses where	Non-doers were more likely to mention that lack of access when away from house made them not to	Increase understanding on disease transmission pathway involving faecal oral route	Start debate and planning at village level on how those who move away from their households

	there are latrines or fetching firewood and at the lake fishing) (Barrier)	use latrine than doers		to farm and catch fish can be accommodated to avoid open defaecation. Each community to come up with plans and implement them
Perceived Consequences	Make manure after it is full and acts as fertilizer when defeacate directly in the field (motivator)	Non-doers were more likely to indicate that they defeacate in the field because faeces act as manure than doers	Increase the perception that faeces if not treated are not safe and promote transmission of diseases	Encourage use of ecological sanitation latrines to households that want to utilize the faeces as manure. Also increase awareness on dangers of using untreated faecal matter in the fields
	Latrine fills quickly e.g. when sharing	Non-doers were 13.7 times more likely to indicate that the negatives consequences of using latrines were that it fills quickly than doers	Increase the individuals to compare risk of not using a latrine and that of constructing a new latrine when old one is full	Awareness on how to dig a latrine that can last for some years and also encouraging every household to have a latrine
	Can get diseases (Barrier)	Non-doers were 9.6 times more likely to indicate that using a latrine can get diseases than non-doers	Increase understanding on disease transmission pathway involving faecal oral route	Demonstrate how use of latrine can reduce one getting the disease versus toilet transmitting disease
				Use reminders in the community so that the knowledge can be enforced
Social Norms	Chief/Community Leader (Motivator)	Doers were 3.4 times more likely than non-doers to name Chief/Community	Increase the knowledge and perception among Chiefs/Community Leaders of the	Promote latrine use among Chiefs in the area: Hold focus groups with Chiefs to confirm

		Leader as approving of the behaviour.	benefits of using latrines. Reinforce the perception that Chiefs/Community Leaders approve of latrine use	their perspectives and provide knowledge on latrine use. Chief/Community Leaders encouraged to sensitize their communities about was of
				latrine all the times during routine community meetings
Access	Very difficult (Barrier)	Non-doers were 40.1 times more likely to mention that it is very difficult to remember to use a latrine all the times than doers	Develop fear based on the consequences of open defaecation	Develop cues that could remind people about the importance of using a latrine all the times Conduct
	Somewhat difficult (Barrier)	Non-doers were 12 times more likely to mention that it is somewhat difficult to remember to use a latrine all the	Develop fear based on the consequences of open defaecation	awareness campaigns about the importance of using latrines Chiefs to facilitate development of regulations on latering use in their
	Not difficult at all (Motivator)	Doers were 75.6 times more likely to mention that it is not difficult at all to remember to use a latrine all the times than doers	Enforce the behaviour through awareness campaign	Use latrine users as role models. They should declare publicly how they manage to use latrine all the times
Susceptibility or Vulnerability	Very likely (Motivator)	Non-doers were 19.9 times more likely than doers to report that their children were	Increase the perception that under-five children are more likely to develop diarrhoea	Encourage everyone to be using latrines at all times for defaecation

very likely to get a diarrhoea i u	and other diseases if people are not using latrines for defaceation
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5.0 Results for Nkhotakota

5.1 Demographic characteristics: Latrine ownership

Demographic characteristics were collected from 47 respondents who owned a latrine (doers) and 42 respondents who did not own a latrine (non-doers). The respondents came from villages in three Traditional Authorities of Kanyenda, Malengachanzi and Mwadzama. Table 33 presents the demographic characteristics of the respondents.

Demographic	Description	Doers	Non doers	p-value
characteristics	•			•
Sex	Female	33 (70%)	24 (57%)	0.205
	Male	14 (30%)	18 (43%)	0.232
Age	18 - 24 years	10 (21%)	13 (31%)	0.302
	25 - 34 years	18 (38%)	11 (26%)	0.23
	35 - 44 years	7 (15%)	12 (29%)	0.122
	45 - 54 years	7 (15%)	1 (2%)	0.045*
	55 - 64 years	5 (11%)	2 (5%)	0.315
	65 and above	0 (0%)	3 (7%)	0.069
Availability of under-5 child	No	13 (28%)	14 (33%)	0.569
at household	Yes	34 (72%)	28 (67%)	0.569
Availability of household	No	46 (98%)	42 (100%)	0.349
member with disability	Yes	1 (2%)	0 (0%)	0.349
Ethnicity	Chewa	31 (66%)	27 (64%)	0.867
	Lomwe	2 (4%)	2 (5%)	0.91
	Nyenje	0 (0%)	1 (2%)	0.291
	Sena	1 (2%)	0 (0%)	0.35
	Tonga	9 (19%)	11 (26%)	0.427
	Tumbuka	2 (4%)	0 (0%)	0.181
	Yawo	2 (4%)	1 (2%)	0.624
Religion	Christian	34 (72%)	26 (62%)	0.302
	Islam	12 (26%)	13 (31%)	0.567
	None	1 (2%)	3 (7%)	0.26
Marital status	Divorced	5 (11%)	1 (2%)	0.13
	Married	40 (85%)	35 (83%)	0.817
	Single/never married	1 (2%)	5 (12%)	0.072
	Widowed	1 (2%)	1 (2%)	0.924
Education	Never gone to school	4 (9%)	6 (14%)	0.392
	Primary	38 (81%)	28 (67%)	0.133
	Secondary	5 (11%)	8 (19%)	0.268
Occupation	Business	1 (2%)	0 (0%)	0.35
	Casual labour	10 (21%)	14 (33%)	0.209
	Formal employment	0 (0%)	1 (2%)	0.291

Table 33: Latrine ownership demographic characteristics

Large scale business	1 (2%)	0 (0%)	0.35
Large scale farmer	3 (6%)	1 (2%)	0.369
Other	1 (2%)	5 (12%)	0.072
Small scale business	11 (23%)	14 (33%)	0.209
Small scale farmer	11 (23%)	5 (12%)	0.165
Subsistence farming	9 (19%)	2 (5%)	0.047*

*Significant at 95% level (>0.05)

As depicted in the demographic characteristics table (Table 33), it was found that there were few community members in the age category 45-54 years who did not have latrines. In terms of occupation, few community members involved in subsistence farming did not have latrines.

5.2 Latrine ownership frequencies and barrier analysis

A total of 47 respondents who owned a latrine (doers) and 42 respondents who did not own a latrine (non-doers) were asked open questions using the barrier analysis tool. Themes were extracted from the responses given under different sections of the barrier analysis tool. The respondents came from three Traditional Authorities of Kanyenda, Malengachanzi and Mwadzama which had been declared open defaecation free (ODF).

5.2.1 Self-efficacy/skills

Table 34 shows the themes that were reported by those who did not have a latrine (non-doers) when they were asked about what would make it easy for a household to have a latrine.

Self-efficacy/skills (Easy)	Frequency	Percentage
Ability to dig and construct own latrine (dig, construct)	17	41
Ability to source construction materials (moulding bricks, grass for thatching, plastic, tree logs)	14	33
Availability finances to pay for latrine construction	13	31
Availability of suitable site for latrine construction	3	7
Faeces disgust	1	2
Availability of land/space for construction of latrine	1	2
Availability and commitment of husband to construct latrine	1	2

Table 34: Self-efficacy or skills for respondents without latrines in Nkhotakota

The most frequently mentioned enablers were ability to dig and construct own latrine, ability to source construction materials and availability finances to pay for latrine construction (Table 34). From barrier analysis, it was found that those owning a latrine were 3.4 times more likely to indicate that "*ability to dig and construct own latrine*" as the reason which made it easy for them to own one as compared to those without a latrine at their household (p=0.002). In addition, doers were also 4 times more likely to indicate *ability to source construction materials*" (p <0.001) and 6.1 times to report "*availability of land/space for construction of latrine*" (p=0.006) as reasons which made it easy for them to own a latrine as compared to those without a latrine at their household.

Table 35 shows the themes that were reported by those who did not have a latrine (non-doers) when they were asked about what would make it difficult for a household to have a latrine.

Self-efficacy/skills (difficult)	Frequency	Percentage
Lack of finances to construct/maintain latrine (e.g. buy material, digging of new latrine)	8	19
Lack of suitable soil/place/space for digging latrine (e.g. hilly terrain, rocky soils)	6	14
None	4	10
Lack of construction/maintenance materials (bricks, logs, grass, plastics, slab)	4	10
Unavailability and lack of commitment of husband to construct latrine	4	10
Laziness/lack of interest to construct latrine	3	7
Time consuming (e.g. to dig circular pits)/lack of time	3	7
Fear of keeping it clean all the time	2	5
Breeding ground for germs/flies/cockroaches that can cause diseases	2	5
Bad smell from toilet when close house	1	2
Toilets collapse (during rainy season, high water table and unstable soils, unreliable building materials)	1	2
Unwillingness to share (passers-by and neighbours)	1	2
Availability of alternatives to relieve oneself (e.g. lake)	1	2
Tenancy	1	2
Lack of social support form community members	1	2

Table 35: Self-efficacy or what makes it difficult to have latrine

The most frequently mentioned barriers were lack of finances to construct/maintain latrine and lack of suitable soil/place/space for digging latrine (Table 35). Unavailability and lack of commitment of husband to construct latrine also came out as a barrier. From barrier analysis, it was found that those who did not own a latrine were 10.9 times more likely to indicate "*unavailability and lack of commitment of husband to construct latrine*" as what makes it difficult to own a latrine as compared to those who had a latrine at their household (p =0.046). Those owning a latrine were 9.8 times more likely to indicate "*toilets collapse (during rainy season, high water table and unstable soils, unreliable building materials*)" as what makes it difficult to own a latrine than those without a latrine at their household (p < 0.001).

5.2.2 Perceived positive consequences

Table 36 shows the themes that were reported by those who did not have a latrine (non-doers) when they were asked about the positive consequences of owning a latrine at a household.

Perceived positive consequences	Frequency	Percentage
Prevent diseases	29	69
Cleanliness (e.g. less smelly surroundings, flies, fear of disgust)	28	67

Table 36: Perceived positive consequences of having a latrine

Comfort (ease access during rainy season, don't use neighbour's	14	33
latrine)		
Dignity/ respect (no shame when visitors come, Less discriminated if	13	31
you have a latrine/social acceptance)		
Privacy	5	12
Readily available manure	3	7
Safety from wild animals (e.g. snakes)	1	2

The most common responses in terms of perceived positive consequences of having a latrine for those without latrines were disease prevention (69%), cleanliness (66.7%), comfort (33%) and dignity/self-respect (31%) as presented in Table 36. From barrier analysis, there were no significant differences between those owned latrines and those who did not own latrines in terms of the perceived positive consequences of owning a latrine.

5.2.3 Perceived negative consequences of having a latrine

Table 37 shows the themes that were reported by those who did not have a latrine (non-doers) when they were asked about the negative consequences of owning a latrine at a household.

Perceived negative consequences	Frequency	Percentage
None	30	71
Smells when latrine is full/close to the toilet	6	14
Breeding ground for germs/flies/cockroaches	5	12
Transmission of diseases when not kept clean	4	10
Falling in the latrine (e.g. when latrine collapses during rainy season, kids falling in)	1	2

Table 37: Perceived negative consequences of having a latrine

The majority of those who did not have latrines indicated that there were no negative consequences in owning a latrine at a household (Table 37). However, about 14% mentioned smells when latrine is full/close to the house as a negative consequence. Some 12% pointed out that latrines act as a breeding ground for germs/flies/cockroaches. From barrier analysis, there were no significant differences between those owned latrines and those who did not own latrines in terms of the perceived positive consequences of owning a latrine.

5.2.4 Perceived social norms

Table 38 shows the responses that were reported by those who did not have a latrine (non-doers) when they were asked about people who approve of a households owning a latrine.

Perceived social norms (approve)FrequencyPercentageHealth/extension workers e.g. HSAs, nurses, clinicians3993Chiefs/Community Leaders2867Village Committees/volunteers/care groups1024

Table 38: Perceived social norms (approve) for having a latrine at the household

NGOs and CBOs (e.g. Goal, Care, CADECOM, DAPP, SHAG, Evangelical, Red Cross, Ubale, Unicef, WASHTED/SHARE)	6	14
Family members/relatives	3	7
None	2	5
Friends, neighbours, community members	1	2
Religious leaders	1	2
Landlord	1	2

The major responses in terms of individuals/people who approve of households owning latrines were health/extension workers (93%), chiefs/community leaders (67%) and village committees/volunteers/care groups (23%). All the doers and non-doers reported that no one disapproves of households owning latrines.

5.2.5 Perceived access

Respondents were asked on access the difficulties they face on the different latrine construction materials. Those who owned latrines were 2.6 times more likely to indicate that access to poles/logs for latrine construction was *not difficult at all* as compared to those who did not own a latrine (p= 0.012). For roofing materials, those who had latrines were 3.9 times more likely to report that it was *not difficult at all* to get roofing materials than those who did not own a latrine (p= 0.001). Those who did not own a latrine were 3.3 times more likely to indicate that getting roofing materials was *very difficult* in comparison to those who owned latrines (p=0.004). For bricks, those who did not own a latrine were 3.9 times more likely to report that getting bricks for latrine construction was *somewhat difficult* in comparison to those who owned latrines (p=0.019).

5.2.6 Cues for action/ Reminders

In terms of cues to action, doers and non-doers were asked how difficult it is to own a latrine at all times. The majority of both doers (91%) and non-doers (79%) indicated it was *not difficult at all* to remember to always own a latrine.

5.2.7 Perceived vulnerability and severity

When respondents were asked on the likelihood of their child/children suffering from diarrhoea within three months, those who owned latrines were 6.9 times more likely to say that it was not likely at all than those who did not have a latrine (p < 0.001). Those who did not own a latrine were 8.3 times more likely to indicate that it was *very likely* that their child/children could suffer from diarrhoea within three months than those who owned latrines. On the perceived severity of diarrhoea, those who owned latrines were 11.3 times more likely to indicate that it was *not serious at all* as compared to those who had not latrines (p=0.008). Those who did not own latrines were 3.1 times more likely to report that diarrhea was *very serious* than those who had latrines (p=0.013).

5.2.8 Gods will

When the respondents were asked if they thought it was God's will that their children get diarrhoea, those who owned a latrine were 11.2 times likely to give "*maybe*" as a response in comparison to those who did not own a latrine (p=0.20). Those who did not own a latrine were 7.1 times more likely to give "*no*" as a response in comparison to those who owed a latrine (p=0.004).

5.2.9 Policy

When the respondents were asked if there were rules/regulation making it more likely for households to own a latrine, those who had a latrine at their households were 8.3 times more likely to report that the rules/regulations existed in comparison to those who did not have a latrine (p=0.020).

5.3 Demographic characteristics: Latrine use

Demographic characteristics were collected from 44 respondents who used a latrine (doers) and 47 respondents who did not use a latrine. The respondents came from villages from three Traditional Authorities of Kanyenda, Malengachanzi and Mwadzama. Table 39 presents the demographic characteristics of the respondents.

Factor	Attribute	Doer	Non-doer	p-value
Sov	Female	33 (75%)	36 (77%)	0.859
Sex	Male	11 (25%)	11 (23%)	0.859
	18 - 24 years	9 (21%)	14 (30%)	0.314
	25 - 34 years	11 (25%)	13 (28%)	0.771
1 32	35 -44 years	9 (21%)	10 (21%)	0.926
Age	45 -54 years	6 (14%)	4 (9%)	0.441
	55 -64 years	4 (9%)	2 (4%)	0.363
	65 and above	5 (11%)	4 (9%)	0.646
Availability of	No	21 (48%)	12 (26%)	0.033*
under-5 child at household	Yes	23 (52%)	35 (75%)	0.033*
Availability of	No	42 (96%)	46 (98%)	0.543
household member living with disability	Yes	2 (5%)	1 (2%)	0.543
Ethnicity	Chewa	31 (71%)	33 (70%)	0.975
	Lomwe	1 (2%)	1 (2%)	0.948
	Tonga	11 (25%)	13 (28%)	0.771
	Tumbuka	1 (2%)	0 (0%)	0.301
	ATR	2 (5%)	1 (2%)	0.522
Deligion	Christian	33 (75%)	30 (64%)	0.254
Kengion	Islam	9 (21%)	13 (28%)	0.427
	None	0 (0%)	3 (6%)	0.095
	Divorced	1 (2%)	6 (13%)	0.068
Marital status	Married	34 (77%)	35 (75%)	0.757
Ivialital status	Single/never married	5 (11%)	2 (4%)	0.212
	Widowed	4 (9%)	4 (9%)	0.92
Education	Never gone to school	2 (5%)	3 (6%)	0.693
	Primary	34 (77%)	39 (83%)	0.499

Table 39: Latrine use demographic characteristics

	Secondary	7 (16%)	5 (11%)	0.459
	Tertiary	1 (2%)	0 (0%)	0.301
Occupation	Casual labour	6 (14%)	6 (13%)	0.911
	Craftwork	0 (0%)	2 (4%)	0.171
	Formal employment	2 (5%)	1 (2%)	0.523
	Helped by relative/family member	5 (11%)	0 (0%)	0.022*
	Large scale business	1 (2%)	0 (0%)	0.301
	Large scale farmer	1 (2%)	0 (0%)	0.301
	Small scale business	9 (21%)	13 (28%)	0.434
	Small scale farmer	19 (43%)	23 (49%)	0.489
	Small scale farmer and skilled work	0 (0%)	1 (2%)	0.339
	Small scale farmer and small scale business	1 (2%)	0 (0%)	0.301
	None	0 (0%)	1 (2%)	0.339

*Significant at 95% level (>0.05)

As presented in the demographic characteristics table (Table 39), it was found that there were few community household where there was an under-5 child and the household did not have a latrine. In terms of occupation, few community members helped by relative/family member did not have latrines.

5.4 Frequency and barrier analysis for latrine use

A total of 44 respondents who were using a latrine (doers) and 47 respondents who did not use a latrine (non-doers) were asked open questions using the barrier analysis tool. Themes were extracted from the responses given under different sections of the barrier analysis tool. The respondents came from three Traditional Authorities of Kanyenda, Malengachanzi and Mwadzama which had been declared open defaecation free (ODF).

5.4.1 Self-efficacy or skills

Table 40 shows the themes that were reported by those who did not use a latrine when they were asked about what would make it easy for a household to use a latrine all the times.

Self-efficacy/skills (Easy)	Frequency	Percentage
Cleanliness (latrine is clean)	25	53
Presence of handwashing facility/ water for hand washing as opposed to bush	18	38
Availability of latrine	17	36
Distance from house to latrine (latrine close)	12	26
Proper design of latrine (e.g. well-constructed, proper roofing, strong logs, smooth floor)	9	19
Pleasant surrounding (non-smelly surroundings, flies)	4	9

Table 40: Self-efficacy or skills making it easy to use a latrine for those not using

Prevent diseases/fear of getting sick	2	4
Privacy	2	4
Comfort (convenience)	1	2

The most frequently mentioned enablers for latrine use were cleanliness (53%), presence of handwashing facility/water for hand washing as opposed to bush (38%), availability of latrine (36%), short distance from house to latrine (26%) and proper design of latrine (e.g. well-constructed, proper roofing, strong logs, smooth floor) (Table 40). From barrier analysis, it was found that those who were not using a latrine were 7.4 times more likely to indicate that "*presence of HWF/water for hand washing as opposed to bush*" would make it easy for them to use a latrine as compared to those who were using a latrine at their household (p <0.001). Those who were using a latrine $^{2.4}$ times more likely to indicate from house to latrine" as the reasons which made it easy for them to use a latrine as compared to those not using a latrine at their household (p = 0.029).

Table 41 shows the themes that were reported by those who were not using a latrine when they were asked about what would make it difficult for a household to use a latrine for defecation all the times.

Self-efficacy (Difficult)	Frequency	Percentage
Toilets collapse due to rain or moisture	22	47
No latrine	10	21
Latrine not clean (difficult to maintain clean latrine)	6	13
Distance from house to latrine	4	9
None	4	9
Bad smell	3	6
Latrine engaged most of the times (due to sharing)	2	4
Chronic illness	2	4
Landlord is not constructing	2	4
Lack of anal cleansing materials	1	2
Latrine is full	1	2
Lack of privacy	1	2
Safety (at night)	1	2

 Table 41: What makes it difficult to use latrine

The most frequently mentioned barriers were latrine collapse due to rain or moisture (47%) and unavailability of latrine (21%) (Table 41). From barrier analysis, it was found that those who did not use a latrine were 7.6 times more likely to indicate that "*toilets collapse due to rain or moisture*" made it difficult to use a latrine as compared to those who used a latrine at their household (p < 0.001). In addition those who were not using a latrine were 12.1 times more likely to report *unavailability of latrine* as what makes it difficult to use a latrine as compared to those using a latrine as compared to those using a latrine at their household (p = 0.001).

5.4.2 Perceived positive consequences of using a latrine

Table 42 shows the themes that were reported by those were not using a latrine for defecation when they were asked about the positive consequences of using a latrine at a household.

Perceived positive consequences	Frequency	Percentage
Prevent diseases (e.g. cholera, diarrhoea)	34	72
Cleanliness (e.g. personal hygiene, surroundings)	23	49
Dignity or self-respect (no shame when visitors come)	11	23
Prevent open defaecation	9	19
Privacy	4	9
Comfort (convenient to have own latrine, can use anytime e.g. during rainy season, easy to use, don't get soaked)	1	2
Safety (e.g. from wild animals)	1	2

Table 42: Perceived positive consequences of using a latrine

The most common responses in terms of perceived positive consequences of using a latrine for those who were not using latrines (non-doers) were disease prevention (72%), cleanliness (49%), comfort (33%) and dignity/self-respect (23%) (Table 42). From barrier analysis, there were no significant differences between those were using latrines and those who were not using latrines in terms of the mentioned positive consequences of using a latrine.

5.4.3 Perceived negative consequences of using a latrine

Table 43 shows the themes that were reported by those who did not use a latrine when they were asked about the negative consequences of using a latrine at a household.

Table 43: Perceived negative consequences of using a latrine

Perceived negative consequences	Frequency	Percentage
None	39	83
Fills up quickly	3	6
Uncleanliness (Defecate around drop hole, attracts flies	2	4
when not clean, cockroach)		
Smell	1	2

The majority (83%) of those who did not use latrines indicated that there were no negative consequences in owning a latrine at a household (Table 43). However, about 6% reported quick latrine filling up as the negative consequence. From barrier analysis, there were no significant differences between those used latrines and those who were not using latrines in terms of the perceived positive consequences of using a latrine.

5.4.4 Perceived social norms (approve) for using a latrine

Table 44 shows the responses that were reported by those who did not use a latrine when they were asked about people who approve of a household using a latrine.

Table 44: Perceived social norms (approve) for using a latrine

Perceived social norms (approve)	Frequency	Percentage
Extension worker /Health workers (e.g. H.S.A, doctor)	39	83
Chiefs/TA	22	49
Village Committees and other committees i.e. VDC, bank mkhonde,	11	23
drama group, volunteers		
Community members/friends/neighbours/visitors	4	9
NGOs (e.g. CADECOM, WFP, DAPP, SHAG, Evangelical, CRS	3	6
(UBALE), RED CROSS, World vision, Hunger project,		
WANGISA)		
Police	1	2

The majority (83%) of the respondents mentioned health/extension workers as those who approve of latrine use. Local leaders such as chiefs were mentioned by 49% of the respondents. All the doers and non-doers reported that no one disapproves of households using latrines.

5.4.5 Access

When the respondents were asked how difficult it was to use a latrine at all times, those who were using a latrine were 28.9 times more likely to report that it was *not difficult at all* as compared to those who did not use a latrine (p < 0.001). Those who were not using a latrine were 10.3 times (p < 0.001) and 13.4 times (p < 0.001) more likely to report that it was *somewhat difficult* or *very difficult* to use a latrine at all times.

5.4.6 Cues for action

In terms of cues to action, doers and non-doers were asked how difficult it is to use a latrine at all times. Those who were using a latrine were 16.1 times more likely to report that it was *not difficult at all* to remember in comparison to those who did not use latrines (p<0.001). Those who did not use latrines were 12.1 times (p=0.002) to indicate that it was *somewhat difficult* and 12.4 times (p=0.001) more likely to indicate that it was *very difficult* than those who were using latrines.

5.4.7 Perceived vulnerability and severity

When respondents were asked on the likelihood of their child/children suffering from diarrhoea within three months, those who used latrines were 3 times more likely to say that it was *not likely at all* than those who did not have a latrine (p = 0.015). The doers were also 3.3 times more likely to say that it was *somewhat likely* than those who did not have a latrine (p = 0.002). Those who did not use a latrine were 13 times more likely to indicate that it was *very likely* that their child/children could suffer from diarrhoea within three months than those who used latrines (p < 0.001). On the perceived severity of diarrhoea, the majority of both those who used latrines (77%) and were not using latrines (79%) indicated that it was *very serious*.

5.4.8 Action efficacy

When the respondents were asked on the likelihood of child getting diarrhea if household always uses latrine, those who used latrines were 2.1 times more likely to report that it was *not likely at all* in comparison to those who were not using a latrine (p=0.049).

5.4.9 Policy

When the respondents were asked if there were rules/regulation making it more likely for households to use a latrine, those who used a latrine at their households were 11.1 times more likely to report that the rules/regulations existed in comparison to those who did not use a latrine (p=0.033). Those who were not using a latrine at their households were 11.1 times more likely to report that the rules/regulations did not exist in comparison to those who used a latrine (p=0.033).

5.5 Perception of OD as a norm at household level

Generally, in all the communities that were visited during the study, open defecation was not considered as a norm. As presented in the barrier analysis (Sections 5.2.4 and 5.4.4) most of the respondents (both those who owned a latrine and those who did not own a latrine) indicated that no one would disapprove of them using a latrine for defecation. This was also supported by findings from IDIs and FGDs.

"If I go to the bush to defecate people use abusive languages at me. So I see it is not good since I am a married man that deserves utmost respect in this village" Latrine non-user, GVH Mwadzama

"It offers privacy. We are free to defecate in the latrine as opposed to bushes" FGD Nkhono village, GVH Kamange

"I use the latrine because I do not want to back to the old time and not using the latrine. That will take away my privacy and I will be prone of suffering from cholera" Latrine user IDI GVH Mwadzama

5.6 Support from extension workers

Generally, in all the communities visited in the study, health extension workers were reported to be highly supportive in encouraging communities to have latrines. This came from both those who owned a latrine and did not own a latrine. From the barrier analysis, extension workers came out on top for both groups as people who would approve of households owning (Section 5.2.4) and using (Section 5.4.4) a latrine. This was also found from IDIs and FGDs within the communities

"Yes they regularly visits us. The HSAs work in collaboration with the VHC and the natural elders. When they go around they spread message for the people to be having clean latrines, A HWF and a trash pit" Latrine owner, GVH Kombo

Apart from the extension workers there were also some support coming from within the community such as local leaders and natural leaders as reported in the barrier analysis (Sections 5.2.4 and 5.4.4). This was also supported with findings from FGDs.

"..apart from the extension workers, we also have natural leaders, VDC that helps us in promoting latrines" FGD participant, GVH Kombo

5.7 Technical challenges for having and using a latrine

The major technological factors that came out as barriers to owning latrines were lack of suitable locations (in terms of space and suitable soils) to construct latrines and lack of permanent technologies. In the communities that were visited during the study, the soils were reported to be mostly sandy soils which easily collapsed during excavation and rainy season. Another major challenge that came out was the high water tables which led to the weakening of the soil and failure to support the latrine structure. Presented below are some quotes that capture these challenges that were raised.

"...we have enough space but other people don't have latrines because of laziness and the logs are scarce and expensive. Also for those not having latrines fail to have one because of sandy soils. People had latrines but because of the unstable sandy soils the latrines collapse. This forces the people to be practicing OD. For sandy soils, people use a nkhokwe which is not reliable" Latrine owner, GVH Kamange

"... Yes there is lack of space. There are a lot of people with a limited space so the people fail to have their own latrines. Instead, they can agree as several households so that they can have a single latrine for them to be sharing. Also for those people that have latrines they face frequent falling in of latrines due to the sandy soils" Latrine owner, GVH Kombo

"...the soils are sandy. This makes the latrines to fill up quickly and the latrines collapse. Furthermore the latrines do not go down deep because the latrines are not dug deep" FGD participant, GVH Kombo

"...according to the soil type and the geographical position, we suffer from high ground water table which becomes worse during rainy season" Mason IDI, GVH Mwadzama

These also came out as frequently mentioned challenges in the barrier analysis when respondents were asked about what makes it difficult for one to have and use a latrine at the household (Sections 5.2.1 and 5.4.2)

5.8 Economic status and latrine coverage

The major economic issue relating to latrine ownership was lack of finances to construct/maintain latrine (e.g. buy material, digging of new latrine) as presented in barrier analysis (Section 5.2.1). This was also found during IDIs and FGDs

"We have enough space but other people don't have latrines because of laziness and the logs are scarce and expensive ..." Latrine owner, GVH Kamange

"Yes people use the nkhokwe as a long term solution but it is expensive in the long run since such latrines are replaced frequently" FGD participant, Nkhono village, GVH Kamange

"People have to buy the nkhokwe and they use the latrines for 1 year and the latrine collapse due to sandy soils. So I am discouraged to have a latrine and spend money each and every da. Those
having strong latrines are lined and constructed of cement which I cannot manage" Latrine ownership non-doer, GVH Kombo

5.9 Social capital

Table 45 shows the scores obtained from community FGDs on social capital in two communities in Nkhotakota district.

	Kamange village TA Malengachanzi		Kombo village TA Malengachanzi	
Question	Respondents	Average score	Respondents	Average score
To what extent do you consider this community to be your home?	8	11.00	8	6.75
How close do you feel to friends and households in this community?	8	9.00	8	7.50
To what extent can you rely on the community to come to your aid should you have any problems?	8	3.38	8	3.75
How likely are you to assist someone in this village build a latrine if you feel they have problems in having one?	8	5.25	8	6.50
How likely are people in this village able to assist you build a latrine if they feel you have problems in having one?	8	4.13	8	5.13
How safe do you feel walking in the streets in the dark?	8	4.38	8	6.25
How satisfied are you with the leaders in the village?	8	7.25	8	7.38
In terms of working together, how do you compare your village with others? How satisfied are you with how people work as a group as compared to other villages?	8	6.63	8	6.88
How satisfied are you with campaign on having every household to build and use a latrine?	8	8.13	8	7.25
How satisfied are you with the spirit of working together so that every household has a latrine compared to other villages?	8	6.50	8	8.00
Average		6.56		6.54

Table 45: Social capital table for Nkhotakota

From the average scores, it was found that social capital in the communities was low as it was below 7. This picture was also reflected in the information gathered from in-depth interviews and focus group discussion. In terms of sharing of latrines, it was established that there was limited

openness to share latrines with those who did not have latrines. The main reasons for not allowing others to share the latrines were quick filling up of latrines and discouraging laziness among those who did not have latrines.

"I only allow sharing with passers. I don't share with those living in the village. Sharing can contribute to high fill up rate. This will bring problems to me since I will not having a latrine. To prevent sharing, I lock the door all the times after using the latrine. Sharing the latrine with others makes them lazy to have own latrines even they can view as if I am hard hearted but this is encouraging others to have latrines" Latrine owner, GVH Kamange

The low social capital was reflected in terms of access to latrine construction materials whereby some section of the community could not easily access the materials within the community.

"We face a lot of challenges because people deter us from getting grass from their compound. The people say that we have no access to the thatch since we are from the town" FGD Nkhono village, GVH Kamange

There were also some of the respondents that they felt they were excluded from some development activities within their communities because they were not viewed as part of the community

"...Yes, I know of MASAF. People have been making roads in this village but I did not find chance to participate because the foreman of the tasks chose people that he wanted so he has been leaving me out most of the times. The choice of the people is given by the chief so now and then they involve their relatives to be doing the tasks so they don't consider me since I am not their relative" Latrine ownership non-doer, GVH Kombo

5.10 Conclusion and recommendations

Households without latrines were mainly those where there was no husband or the husband was not committed to construct latrine. The main reasons cited for some households not have latrines included lack of skills and money to construct a latrine, unavailability of husband or lack of commitment of husband to dig and construct a latrine, latrine collapse due to lack of space and unsuitable soils for latrine construction. The main reasons for households not to use latrine included collapse of latrines and lack of latrines. The study recommends that the District Council and partners organize training sessions at community level on how to dig and construct latrine using local resources, promote behaviour change messages designed to elicit shame for not owning a latrine. On the use of latrines, the study recommends encouragement of all households to have their own latrine, promote community awareness on importance of proper use of latrine and cleaning of latrine on regular basis and awareness on how unclean latrine can promote disease transmission. Government and partners in the district should strengthen social capital so that they should be helped by community members. If all fails, these groups should receive toilet subsidies so that they should own one.

5.11 Bridges to action

Behaviour 1: I	Latrine Ownership			
Determinant	Significant Response/Code	Doers Vs. Non- Doers	Bridge to Activity	Activity
Self-Efficacy	Unavailability and lack of commitment of husband to construct latrine (Barrier)	Non-doers were 10.9 times more likely to report unavailability and lack of commitment of husband to construct latrine as what makes it difficult to own a latrine as compared to doers	Build social capital so that relatives should be able to assist female headed households. Build interest in men to build latrines. Teach women skills to dig and construct latrines	Organize training sessions at community level on how to dig and construct latrine using local resources Promotional approach, combined with behaviour change messages designed to elicit shame for not owning a latrine. The health promotion intervention could be embedded in a broader intervention. Come up activities that are aimed at making the community work together and assist each other
Access	Getting roofing materials for latrine construction is very difficult (Barrier)	Non-doers were 3.3 times more likely to indicate that getting roofing materials was very difficult in comparison doers	As above: Self-Efficacy	As above: Self- Efficacy
	Getting bricks for latrine construction was somewhat difficult	Non-doers were 3.9 times more likely to report that getting bricks for latrine construction was		

	(Barrier)	somewhat		
		comparison doers		
Suscentibility	Very likely that	Non-doers were	Increase the	Increase awareness
or	their child(ren)	8.3 times more	perception	on how diseases are
Vulnerability	could suffer	likely to indicate	that under-five	transmitted through
	from diarrhea	that it was very	children are	open defaecation in
	(Motivator)	child(ren) could	develop	the community
		suffer from	diarrhoea if	
		diarrhoea within	faeces are not	
		three months than	properly	
	Diamhan	doers	disposed.	T
	very serious	3 1 times more	perception	on how proper
	very serious	likely to report	that under-five	disposal of faeces in a
	(Motivator)	that diarrhea was	children are	latrine can reduce
		very serious than	less likely to	diarrhoea diseases in
		doers	develop diarrhoea if	the children under the
			faeces are	age of five
			properly	
			disposed in a	
			latrine.	
Behaviour 2: I	Latrine Use			
Self-Efficacy	Presence of	Non-doers were	Emphasize the	Encourage each and
	HWF/ water for	7.4 times more	shame that is	every household to
	hand washing as	likely to indicate	associated	have their own latrine
	opposed to bush	HWF/ water for	latrine and the	
	(Motivator)	hand washing as	associated	
		opposed to bush	disease	
		as the reason	transmission	
		which would	risk	
		them to use a		
		latrine as		
		compared doers		
	Toilets collapse	Non-doers were	Build interest	
	due to rain or	1.6 times more	in the	
	moisture	toilets collapse	members to be	
	(Barrier)	due to rain or	innovative	
		moisture as what		

	Unavailability of latrine makes it difficult to use a latrine (Barrier)	makes it difficult to use a latrine as compared doers Non-doers are 12.1 times more likely to report unavailability of latrine as what makes it difficult to use a latrine as compared to doers	Build social capital so that sharing can be done while encouraging those Build interest in the community members to be innovative	
Access	Somewhat difficult to use a latrine at all times (Barrier) Very difficult to use a latrine at all times (Barrier)	Non-doers were 10.3 times more likely to report that it was somewhat difficult to use a latrine at all times Non-doers were 13.4 times more likely to report that it was very difficult to use a latrine at all times.	Develop fear based on the consequences of open defaecation Develop fear based on the consequences of open defaecation	Develop cues that could remind people about the importance of using a latrine all the times Conduct awareness campaigns about the importance of using latrines Chiefs to facilitate development of regulations on latrine use in their areas
Cues for action	Somewhat difficult to remember to use a latrine always (Barrier) Very difficult to remember to use a latrine always (Barrier)	Non-doers were 12.1 times to indicate that it was somewhat difficult to remember to use a latrine always in comparison to doers vere 12.4 times more likely to indicate that it was very difficult to	Develop fear based on the consequences of open defaecation Develop fear based on the consequences of open defaecation	Develop cues that could remind people about the importance of using a latrine all the times Conduct awareness campaigns about the importance of using latrines Chiefs to facilitate development of

		latrine always in		regulations on latrine
		comparison to		use in their areas
		doers		
Susceptibility	Very likely that	Non-doers were	Increase the	Encourage everyone
or	their child(ren)	13 times more	perception	to be using latrines at
Vulnerability	will suffer from	likely to indicate	that under-five	all times for
	diarrhoea within	that it was very	children are	defaecation
	three months	likely that their	more likely to	
		child(ren) could	develop	
	(Barrier)	suffer from	diarrhoea and	
		diarrhoea within	other diseases	
		three months than	if people are	
		doers	not using	
			latrines for	
			defaecation	

6.0 Results for Balaka District

6.1 Demographic Characteristics: Latrine Ownership

Demographic characteristics were collected from 45 respondents who owned a latrine (doers) and 45 respondents who did not own a latrine (non-doers). The respondents came from villages from three Traditional Authorities: Phalula, Kalembo and Nsamala.

Factor	Attribute	Doers	Non-doers	p-value
Sex	Female	82%	76%	0.445
	Male	18%	24%	0.445
Age	18 - 24 years	33%	18%	0.097
	25 - 34 years	36%	27%	0.364
	35 - 44 years	16%	11%	0.531
	45 - 54 years	7%	16%	0.187
	55 - 64 years	2%	9%	0.172
	65 and above	6%	20%	0.070
Availability of under-5	No	58%	47%	0.302
child at household	Yes	42%	53%	0.302
Availability of household	No	93%	100%	0.078
member with disability	Yes	7%	0%	0.078
Ethnicity	Chewa	9%	2%	0.152
	Lomwe	9%	29%	0.019
	Mang'anja	7%	0%	0.078
	Ngoni	42%	36%	0.563
	Sena	4%	0%	0.182
	Tumbuka	29%	33%	0.684
	Yao	9%	2%	0.152
Religion	Christian	67%	69%	0.840
	Islam	33%	31%	0.840
	None	0%	0%	-
Marital status	Divorced	22%	13%	0.267
	Married	51%	64%	0.219
	Single/never married	9%	4%	0.341
	Widowed	18%	18%	1.000
Education	Never gone to school	9%	16%	0.321
	Primary	69%	71%	0.837
	Secondary	22%	13%	0.267
Occupation	Casual labour	51%	24%	0.011
	Formal employment	11%	0%	0.027
	Skilled work	2%	4%	0.581
	Small scale business	20%	9%	0.146
	Small scale farmer	2%	15%	0.032

Table 46: Demographics for Latrine Ownership

Subsistence farming	2%	40%	0.000
Subsistence farming Large scale	0%	2%	0.346
farmer			
Other	11%	4%	0.214

6.2 Latrine Ownership Frequencies and Barrier Analysis

The total respondents of non-doers – people who do not have latrines – were 45 and these were asked open questions from which themes were derived. These people were selected in the three Traditional Authorities of Kalembo, Nsamala and Phalula, which were declared open defaecation free (ODF). Some respondents produced more than one statement on each theme and all these were counted and tabulated below:

6.2.1 Self-efficacy/skills

Self-efficacy/skills (What would make it easy for a household to have a latrine?)	Frequency	Percent
Agreement as a family	1	1.6
Ability to construct latrine (dig, construct)	13	20.6
Availability of finances for constructing latrine	16	25.4
Ability to source construction materials (moulding bricks, grass for that abing plastic trace logo)	18	28 6
Knowledge about importance of owning latrine	1	1.6
Land/space for construction of latrine	5	7.9
Willingness to construct/interest	2	3.2
External support (Chiefs, NGOs)	5	7.9
Unhygienic practice to share a latrine	1	1.6
Length of stay in the area	1	1.6
Total	63	100

Table 47: Self-efficacy or skills for respondents without latrines

When asked what would make it easy for a household to have a latrine, the most frequently mentioned issues were ability to source construction materials, availability of finances for construction of latrine and ability to dig and construct the latrine (Table 47). From barrier analysis, it was found that those owning a latrine (doers) were 10.3 and 5.5 times more likely to indicate that "ability to dig and construct own latrine" (p<0.0001) and "land/space for construction of latrine" (p<0.0001), respectively, as the reasons which made it easy for them to own one as compared to those without a latrine at their household. Likewise, non-doers (those without a latrine at their household) were more 4.0 times likely to mention "availability of finances for constructing latrine" (p=0.006) than those with latrines at their household.

6.2.2 Self-efficacy/difficulty

Self-efficacy / difficult (What would make it difficult to	Frequency	Percentage
maintain having a latrine at this household?)	requency	Tercentage
Fear of keeping it clean all the time	3	5.9
Toilets collapse (during rainy season)	4	7.8
Lack of finances to construct (maintain latrine, buy materials, disging of latrine)	14	27.5
None	6	11.8
Lack of construction/maintenance materials (bricks, logs, grass, plastics)	3	5.9
Unavailability/lack of commitment to construct latrine by husband	6	11.8
Chronic illness (e.g. epilepsy, HIV)	2	3.9
Lack of space (rented area, personal plot)	6	11.8
Lack of external support (slabs)	5	9.8
Lack of support from children	1	2.0
Relocation to new place	1	2.0
Fear of keeping it clean all the time	3	5.9
Total	51	100

Table 48: Self-efficacy or what makes it difficult to have latrine

Doers and non-doers were asked what would make it difficult for the household to have a latrine, the most common responses included lack of finances to construct latrine $\{27.5\% (14)\}$, lack of space at a personal plot or rented area to construct a latrine $\{11.8\% (6)\}$, and unavailability/lack of commitment to construct latrine by husband $\{11.8\% (6)\}$. From the barrier analysis, latrine owners were found to be 2.8 and 3.2 times more likely to mention that latrines collapse due to rains (p=0.044) and lack of construction/maintenance materials (bricks, logs, grass, plastics) (p=0.034), respectively, as reasons which would make it difficult. Those without latrines were significantly likely to mention lack of space as a reason that would make it difficult (p=0.013).

6.2.3 Perceived positive consequences

Perceived positive consequences of having a latrine	Frequency	Percentage
Comfort (easy access during rainy season, don't use neighbours'	0	
latrine)	9	9.1
Cleanliness (e.g. less smelly surroundings, flies)	28	28.3
Prevent diseases	38	38.4
Dignity/Respect (No shame when visitors come)	15	15.2
Privacy	6	6.1
Prevent open defaecation	2	2.0
Inculcate good latrine use behaviour in children	1	1.0

Table 49: Perceived positive consequences of having a latrine

	Total	99	100
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Among those without latrines, the most common responses in terms of perceived positive consequences of having a latrine included: prevention of diseases (38.4%), promote cleanliness (28.3%), and promote dignity and respect (15.3%) (Table 49). The barrier analysis results, encouragingly, found that those without latrines were 2.4 times more likely to indicate cleanliness (e.g. less smelly surroundings, flies) as the positive consequence than those with latrines (p=0.017).

6.2.4 Perceived negative consequences of having a latrine

Perceived negative consequences of having a latrine	Frequency	Percentage
None	24	52.2
Falling in the latrine (e.g when latrine collapse during rainy season, child falling in latrine)	1	2.2
Smells when latrine is close/full	8	17.4
Breeding ground for germs/flies/cockroaches	4	8.7
Transmission of diseases when not kept clean	9	19.6
Total	46	100

Table 50: Perceived negative consequences of having a latrine

Majority (52.2%) perceived that there are no negative consequences of having a latrine. Nevertheless, some respondents who do not have latrine felt that latrines transmit diseases if not kept clean (19.6%), they also felt that latrines act as breeding ground for germs, flies, cockroaches and other vectors and that they can produce bad smell if full or close to the house (Table 50). No factor was significance when those with latrines were compared with those without latrines using barrier analysis.

6.2.5 Perceived social norms (approve) for having a latrine at the household

Perceived social norms (approve) for having a latrine at the		
household	Frequency	Percentage
Chiefs/Community Leaders	25	26.6
Friends, neighbours, community members	2	2.1
Village Committees/volunteers/care groups	6	6.4
Family members/relatives	4	4.3
Health/extension workers e.g. HSAs, nurses, clinicians,		
agriculture workers	57	39.4
NGOs and CBOs (e.g. PCI)	11	11.7
Teachers	1	1.1
Councillor	1	1.1
None	7	7.4
Total	94	100

Table 51: Perceived social norms (approve) for having a latrine at the household

Study participants were asked who would approve if they had a latrine in the community, most common responses included: health workers i.e. HSAs $\{39.4\%, (37)\}$, chiefs and community leaders $\{26.6\%, (25)\}$ while others said village committees. Strikingly, 7 (7.4%) respondents said no one would approve. From barrier analysis, non-latrine owners were 4.9 times more likely compared to owners to mention health care workers (p<0.0001). On the other hand, all but one respondent (44) indicated that no one would disapprove if they owned a latrine at a household. One participant (non-doer) felt that community members would disapprove. There were no significant differences between those having and those without latrines on perceived social norms from barrier analysis.

6.2.6 Perceived Access

In terms of perceived access, doers and non-doers were asked how difficult it is to get the following: poles and logs, roofing materials such as grass, bricks, and suitable land for construction. The expected answers on each of these were very difficult, somewhat difficult and not difficult at all. There were no significant differences between doers and non-doers in terms of access to poles and logs and roofing materials. There were, however, significant differences between doers and non-doers with regard to access to bricks: non-doers were 4.1 times likely to mention that 'it is somewhat difficult' compared to doers (p=0.019). Likewise, doers were 3 times more likely to report 'not difficult at all' compared to non-doers (p=0.022). On the other hand, non-doers were 7.3 times more likely to report 'somewhat difficult' in terms of access to suitable land for latrine construction compared to doers. Nonetheless, doers were 12.6 times more likely to report 'not difficult at all' compared to non-doers (p=0.002).

6.2.7 Perceived Vulnerability

On being asked what is the likelihood that your child will get diarrhea in the next three months, non-doers were 15.6 times more likely to report that their child is 'very likely' to get diarrhea compared to doers (p<0.0001). On the other hand, doers compared to non-doers were 4.5 and 2.7 times more likely to report 'somewhat likely' (p=0.003) and 'not likely at all' (p=0.010), respectively.

6.2.8 Perceived Severity

In terms of perceived severity, interestingly, non-doers were 15.5 times more likely to report that diarrhea is 'very serious' compared to doers (p<0.0001). Similarly, doers compared to non-doers were 12.3 and 11.9 times more likely to report that diarrhea is 'somewhat serious' (p=0.001) and 'not serious at all' (p=0.003), respectively.

6.2.9 Divine Will

On being asked if they think that it is God's will that children get diarrhea, non-doers were 6 times more likely to report 'no' compared to doers (p=0.008). On the other hand, doers were 11.1 times more likely to report 'may be' compared to non-doers (p=0.028).

6.3 Demographics Characteristics: Latrine Use

Demographic characteristics were collected from 45 respondents who used a latrine (doers) and 45 respondents who did not use a latrine (non-doers). The respondents came from villages from three Traditional Authorities of Phalula, Kalembo and Nsamala.

				p-value
Factor	Attribute	Doers	Non-doers	
Sex	Female	78%	78%	1.000
	Male	22%	22%	1.000
Age	18 - 24 years	38%	11%	0.005
	25 - 34 years	33%	33%	1.000
	35 - 44 years	9%	15%	0.386
	45 - 54 years	16%	4%	0.064
	55 - 64 years	0%	24%	0.001
	65 and above	4%	13%	0.133
Availability of under-5 child	No	33%	41%	0.436
at household	Yes	67%	59%	0.436
Availability of household	No	98%	98%	1.000
member with disability	Yes	2%	2%	1.000
Ethnicity	Chewa	13%	9%	0.547
	Lomwe	29%	11%	0.038
	Mang'anja	0%	2%	0.346
	Ngoni	16%	41%	0.012
	Sena	7%	4%	0.536
	Yao	36%	30%	0.548
Religion	Christian	64%	67%	0.766
	Islam	36%	30%	0.548
	None	0%	2%	0.346
Marital status	Divorced	20%	13%	0.376
	Married	64%	57%	0.501
	Single/never	13%	9%	0.547
	married			
	Widowed	2%	20%	0.009
Education	Never gone to	7%	22%	0.049
	school			
	Primary	71%	72%	0.917
	Secondary	22%	7%	0.049
Occupation	Casual labour	27%	28%	0.916
	Formal	4%	4%	1.000
	employment			
	Other	7%	7%	1.000
	Skill work	2%	4%	0.581

Table 52: Demographics for Latrine Use

Small scale	27%	35%	0.416
business			
Small scale farmer	31%	22%	0.339

6.4 Latrine Use Frequencies and Barrier Analysis

Respondents using latrines and those not using latrines were asked questions despite owning or not owning a latrine. In Balaka, 45 people not using a latrine were interviewed. For those using latrines, 46 respondents were interviewed. Below are the frequencies of responses from those not using latrines, barrier analysis results comparing users and non-users, IDIs and FGDs results.

6.4.1 Self-efficacy or skills

Self-efficacy/skills (What would make it easy for you to use a		
Latrine?)	Frequency	Percentage
Cleanliness (Latrine is clean)	27	27.6
Availability of latrine	5	5.1
Presence of HWF/ water for hand washing as opposed to bush	13	13.3
Availability of anal cleansing materials	3	3.1
Cleanliness of the surrounding/general hygiene	2	2.0
Ability to construct own latrine (e.g. Dig and construct and maintain, money)	8	8.2
Resources readily available (e.g. thatch, logs, bricks etc)	8	8.2
Prevent diseases (fear of getting sick)	1	1.0
Distance from house to latrine (latrine close)	3	3.1
Proper design of latrine (e.g. well-constructed, proper roofing, strong logs, smooth floor)	5	5.1
Space for latrine available	1	1.0
Pleasant surrounding (non - smelly surrounding, flies)	7	7.1
Own latrine/Personal latrine/ latrine belongs to relative	4	4.1
Avoid open defecation	1	1.0
Avoid going to thick bush	1	1.0
Presence of drop hole cover to prevent smell and houseflies	4	4.1
None	1	1.0
Finances	4	4.1
Total	98	100

Table 53: Self-efficacy or skills making it easy to use a latrine for those not using

Doers (latrine users) and non-doers (latrine non-users) were asked what would make it easy to use a latrine, the non-users of latrines indicated that cleanliness of latrine would make it easy {27.6% (27)}. Others indicated that presence of the handwashing facility {13.3% (13)} (Table 53). From barrier analysis, those using not latrines were 4.2 and 8.5 times more likely to mention "ability to

construct own latrine (e.g. dig, construct and maintain)" (p=0.045) and "resources readily available" (p=0.015) as factors that would motivate them to use latrine. Those using latrines were 3.5 times more likely to mention that distance from house to latrine (latrine close) makes it easy for them to use it than those not using it (p=0.019).

6.4.2 Self-efficacy or what makes it difficult to use latrine

Table 54:	What	makes	it d	lifficult	to	use	latrine
				33			

Self-efficacy/difficulty (What would make it difficult to use a latring at this household?)	Fraguanay	Dorcontago
	Frequency	reicemage
None (no reason at all)	5	8.3
Latrine not clean (difficult to maintain clean latrine)	4	6.7
Other people defecate outside the drop hole	1	1.7
Latrines fill quickly or latrine full (e.g. other people use it, not deep enough because of soil problems)	1	1.7
Latrine is full	4	6.7
Disgusting to see other people's feces inside latrine hole	1	1.7
Toilets collapse (e.g. due to rain or moisture, roof blow off)	17	28.3
Bad smell	5	8.3
Lack of resources (e.g proper roofing material, soil for 'kuzila' for	4	<i></i>
floor)		6.7
Lack money	3	5.0
Latrine lacks privacy	1	1.7
Sharing makes latrine engaged most of the times	1	1.7
No latrine	7	11.7
Lack of interest to build by husband	1	1.7
Lack of cleansing materials (e.g. water for anal cleansing)	1	1.7
Don't know	3	5.0
Inability to construct latrine	1	1.7
Total	60	100

Study participants were asked what makes it difficult to use latrines, non-doers indicated that toilets collapse (e.g. due to rain or moisture or roof blow off) {28.3% (17)}, there is no latrine {11.7% (7)}, bad smell, none (no reason at all) (Table 54). Barrier analysis results showed that those not using latrines were 11.3 times more likely to mention toilets collapse than those using latrines (p<0.0001). The users of latrines were 6.3 times more likely to mention that nothing makes it difficult to use latrine than those with not using latrines (p<0.0001).

6.4.3 Perceived positive consequences of using a latrine

Perceived positive consequences of using a latrine	Frequency	Percentage
Clean surrounding (smelly surroundings, prevent flies, cockroaches)	19	27.1
Prevent diseases (e.g cholera, diarrhoea)	35	50.0
Privacy	1	1.4
Dignity or self-respect	4	5.7
No shame when visitors come	1	1.4
Avoid open defeacation	9	12.9
Personal hygiene (e.g. opportunity to wash hands	1	1.4
Total	70	100

Table 55: Perceived positive consequences of using a latrine

On perceived positive consequences of using latrines, non-users of latrines mentioned that that the positives included: prevention of diseases e.g. cholera and diarrhoea $\{50\%, (35)\}$, clean surrounding (less smelly surroundings, prevent flies, cockroaches) $\{27.1\%, (19)\}$ and others, as indicated in Table 55. From barrier analysis, doers were 3.3 and 5.5 times more likely to say that using latrine results in "clean surroundings" (p=0.003) and "prevents diseases" (p=0.013), respectively. Interestingly, non-doers compared to doers were 4.9 times more likely to report that the positive consequence of using latrine is avoidance of open defaecation (p=0.025).

6.4.4 Perceived negative consequences of using a latrine

Table 56: Perceived negative consequences of using a latrine

Perceived negative consequences of using a latrine	Frequency	Percentage
None	28	51.9
Bad Smell	4	7.4
Others use it (e.g. shared, too many people ask for latrine better not	2	
have)	2	3.7
Defecate around drop hole	2	3.7
Latrine fills quickly e.g. sharing	1	1.9
Not clean i.e. attracts flies when not clean, cockroach	2	3.7
Time consuming to clean	2	3.7
Can get/cause diseases	10	18.5
Need a lot of care i.e. resources and energy	2	3.7
When we use, toilet will be dirty	1	1.9
Total	54	100

In terms of negative consequences of using a latrine, slightly above half of the responses from those not using latrines $\{51.7\% (28)\}$ indicated that there is no negative consequence of using a latrine. Those who perceived negative consequences indicated that latrines transmit diseases and produces smell (Table 56). There were, however, no significant differences between users and non-users.

6.4.5 Perceived social norms (approve) for using a latrine

Perceived social norms (approve) for using a latrine	Frequency	Percentage
Chiefs/TA	21	26.6
Family/Relatives	2	2.5
Village Committees and other committees i.e. VDC, bank mkhonde, drama group, volunteers	2	2.5
Community members/friends/neighbours/visitors	1	1.3
Extension worker /Health workers (e.g. H.S.A, doctor)	31	39.2
NGOs (e.g. CADECOM, WFP, DAPP, SHAG, Evangelical, CRS (UBALE), RED CROSS, World Vision, Hunger Project, WANCISA)	11	12.0
WANGISA)	2	13.9
None	7	2.3 8.9
Don't know	2	2.5
Total	79	100

Table 57: Perceived social norms (approve) for using a latrine

In terms of who would approve if they used latrines, the most common response was extension workers i.e. HSAs, health workers and clinicians $\{39.2\%, (31)\}$. Others mentioned Chiefs, village committees and one response was "none" meaning that no one would approve (Table 57). From barrier analysis, it was found that those using a latrine were 3.1 and 5.9 times more likely to mention that Chiefs and Traditional Authorities (p=0.005) and Village Committees (0.001) approve for using latrine than those not using latrines. All the respondents who do not use latrines said that there is no one who disapproves using a latrine except for one who said her husband.

6.4.6 Perceived Access

Doers and non-doers were asked how difficult is it to use a latrine at all times, non-doers compared to doers were 8.5 and 15.9 times more likely to report that 'very difficult' (p=0.015) and 'somewhat difficult' (p<0.0001), respectively. Conversely, doers were 16 times more likely to report 'not difficult at all' compared to non-doers (p<0.0001).

6.4.7 Cues for action/ Reminders

In terms of cues to action, doers and non-doers were asked how difficult it is to always to use a latrine at all times. Non-doers compared to doers, significantly reported that it is 'very difficult' (p=0.013). Further, non-doers were 22.9 times more likely to report 'somewhat difficult' in comparison to doers. On the other hand, doers were 20.2 times more likely to report 'not difficult at all' compared to non-doers (p<0.0001).

6.4.8 Perceived vulnerability and severity

On being asked if their child is likely to suffer from diarrhea the next three months, non-doers were 2.5 times more likely to report 'not likely at all' compared to doers (p=0.015). In terms of

perception of severity of diarrhoea, doers were 6.1 time more likely to report that diarrhea is 'very serious' compared to non-doers (p<0.0001). Non-doers were 9.4 times more likely to report that it is 'somewhat serious' compared to doers (p<0.0001).

6.5 Perception of OD as a norm at household level

The majority of the study population had latrines and reported defecating in them. Increased use of latrines, as reported by both IDI and FGD participants, inevitably, coincided with high latrine ownership due to various initiatives in the sampled communities. There were a number of reasons that encouraged people to own latrines, these included: fear of diseases, dignity and respect, and presence of village-based rules and regulations

"Those who construct latrines fear diseases and they just want dignity and respect in this village." Community FGD 2

"There is high latrine coverage because there are strong rules. Those disobeying (not having a latrine) pay a fine of chicken. If they do not pay the chicken they are forced out of the village." IDI 1, Village Chief

Further, scarcity of bushes nearby their houses has forced communities to own and use latrines. During FGD, one of the participants said,

"... if the bush was closer we could have been defecating in the bush, but as of now we are forced to construct and use the latrines since there is no bush here. We have latrines partially because we were told to do so. But the latrines take a lot of time to take care. Therefore, if the bush was around we could be going to the bush" Community FGD 1

Sentiments like above clearly demonstrate that although behaviour change in terms of ownership and use has increased, it may not necessarily mean that attitudes to open defecation have changed. Indeed, there were isolated instances where people stated that they defecate outside periphery of their compounds or villages, thus, in the open fields or bushy areas. Below are some excerpts related to open defaecation,

"... some of us still don't have latrines. As for my household, we use the nearby bush as you can see there are only two houses here and we both don't have latrines." IDI 3, Non-doer

"Almost everyone constructed a latrine. But now you cannot see 100% of the latrines since other toilets collapsed. So, because of the collapsing of the latrines some of the villagers also use the bush for defecation" Community FGD 1

"I do not see the need of defecating only in the latrine. Sometimes I defecate in the field when I am in the fields" Community FGD 2

"Ignorance and just being lazy to construct own latrine. Other people are just used to use bush or other people's latrines." IDI 3, Doer

Similarly, disposal of child faeces followed a similar practice. Despite most participants narrating that they use hoes or pieces of metal to remove childhood faeces, disposal was usually done in the nearby fields – mostly, fields surrounding the households. One participant said,

"... we collect it (faeces) using a hole and dispose it at the bush." IDI 1, Non-doer

Noticeably, majority of the people who did not use latrines, also, did not own a latrine. There were multiple reasons for non-ownership of latrines, these included among others, the following: lack of finances to dig and construct latrines; husband not willing to dig and construct; scarcity of construction materials, specifically, tree logs due to deforestation and competition with firewood; laziness; and non-conformity or arrogance. Below are some of the excerpts on why some people do not own latrines,

"Because they don't have the latrine. Some women in the village don't have husbands to dig them latrines. And also, the supporting pillars are scarce because people cut down most trees, these also contribute to not having a latrine." IDI 2, Non-doer

"Some husbands, like my husband, are not willing to construct latrines. Like mine doesn't even know the need of having a latrine, I have tried asking him to dig and construct one here but to no avail. Others don't have husbands to construct for them, some don't have money and some are sick they can't dig and construct a latrine for their households." IDI 3, Non-doer

6.6 Support from Extension workers

There was heterogeneity with regard to support they receive from extension. The support they received was software in nature ranging from health talks, visits to encourage latrine construction and use, encouraging use of handwashing facilities and other things. In terms of quality of visits or support, there were variations with some feeling that the support and visits are adequate, whereas others felt that it was inadequate and reactionary sometimes.

"The HSA do not visit regularly, they remind us on the need to have latrines. They visit maybe once every 2 months. Usually they come here whenever they have heard that cholera has struck other areas." IDI 3, Doer

The messages from extension workers included: having modern latrines, latrines with roofs, have handwashing facility (HWF), dish rack and having a rubbish pit. There were, however, conflicts between messages relayed by extension workers and their religious beliefs. An appreciable majority of the study participants were predominantly Muslim, and messages like possessing a HWF outside their latrine was deemed as being 'incompatible' with their faith, which encourages anal cleansing. They felt that handwashing is done alongside anal cleansing, thus, another handwashing facility may not be necessary. One of the IDI participants said,

"More than three-quarters are Muslims and that's why you don't see HWFs. We do the washing while we are inside the latrine. We cannot listen to their HWF messages since CLTS has just come now, but we listen to our religion that says that handwashing should be done inside the latrine not outside. Moreover, the HWF only takes little water maybe 5 litres at a time." IDI 3, Doer

Other participants felt that there was lack of reciprocal support from the community to the extension workers. Participants felt that some community members are arrogant towards extension workers during the visits.

"Those without latrines just not need to stay a health life. They are the ones who are arrogant to Extension workers during the visits." Community FGD 2

6.7 Technical challenges for having a latrine

The major technical challenges to having a latrine that were reported by participants included: rocky soils surfaces, scarcity of tree logs for support, grass and plastics for roofing. Rocky soil surfaces, according to respondents, results in pit latrines that are shallow as it is difficult to dig, and hence they fill up quickly. Scarcity of tree logs owing to deforestation as well as competition with firewood was reported as a huge challenge, and consequently, they are travelling longer distances to find these materials. This, according to respondents, is exacerbated by lack of money to finance the construction process, in terms of labour and purchase of materials.

"The soils are rocky and we do not dig deep. There is also little sand underneath." Community FGD 2

"There are problems like when there is only a woman, it's hard to dig a pit and it's hard to find money to find someone to dig and construct, but to those who are married it's hard if the husband is sick or is busy." IDI 2, Non-doer

"We are facing problems mostly in finding the construction materials especially trees because we use trees for firewood." IDI 1, Non-doer

6.8 Economic status and latrine coverage

From demographics, in terms of latrine use, occupation showed significant differences between doers (those who own latrine) and non-doers (those without latrines). Under the category of casual labour, doers (51%) were significantly high compared to non-doers (24%). Similarly, within the category of formal employment, doers (11%) were significantly high in comparison to non-doers (0%). On the hand, non-doers (15%) were significantly high compared to doers (2%) in the category of small-scale farmers. Similarly, under the category of subsistence farmers, non-doers (40%) were significantly high compared to doers (2%).

6.9 Participation in community development and latrine ownership

Most participants took part in developmental activities taking place in their communities. However, most of the participants did not consider CLTS to be a developmental activity. There were variations in the implementation of CLTS, some participants reported not attending CLTS triggering sessions instead the community leaders – usually the Village Headman – attended and in return relayed the message about CLTS. Some participants, nevertheless, reported taking part in triggering sessions and demonstrated it by explaining the process. Below are some excerpts about CLTS.

"PCI and other NGOs did the triggering but I only remember PCI since it was the one that was actively involved and it continued follow up visits. They regularly visited us." Community FGD 2

"Yes, it happened. It was in 2012. During the triggering, we interacted with PCI, Concern Universal and the health officials. Triggering was called 'kushosha mudzi'. Firstly, they explained the advantages and disadvantages of having/not having a latrine at a household. They advocated that every household should have a latrine. This was done to avoid sharing of latrines because sharing of latrines makes the latrines to fill up quicker. So, they just said that flies would be transmitting diseases if the people still practice OD. Also after triggering they told us that we should select natural leaders and VHC members. The villagers selected both the natural leader and the VHC members. For example, in this Michesi village there are 3 people who were selected to be natural leaders." Community FGD 1

Invariably, across all the sampled villages, participants for both FGDs and IDIs reported high latrine coverage. So, speculatively, CLTS implementation influenced ownership of latrines. Some participants said,

"The latrine coverage has increased because like three-quarters of the villagers knew the need to have latrines and they constructed the latrines. People construct the latrines out of shame." FGD Community FGD 2

6.10 Social Capital

Question	Average Score (Michesi)	Average Score (Kalembo)
To what extent do you consider this community to be your home?	8.13	8.63
How close do you feel to friends and households in this community?	7.38	6.00
To what extent can you rely on the community to come to your aid should you have any problems?	8.38	7.88
How likely are you to assist someone in this village build a latrine if you feel they have problems in having one?	7.38	7.25
How likely are people in this village able to assist you build a latrine if they feel you have problems in having one?	7.50	9.00
How safe do you feel walking in the streets in the dark?	10.75	9.63
How satisfied are you with the leaders in the village?	7.63	9.00
In terms of working together, how do you compare your village with others? How satisfied are you with how people work as a group as compared to other villages?	7.38	8.88
How satisfied are you with campaign on having every household to build and use a latrine?	7.50	10.63
How satisfied are you with the spirit of working together so that every household has a latrine compared to other villages?	7.63	7.25
Average	7.96	8.41

Table 58: Social Capital for Balaka

Two communities – Michesi and Kalembo – were assessed in terms of their social capital using Schutte scale. The lower score (0 to 7) indicates low of social capital and scores greater than 7 imply good social capital. The results show that both communities had a better social capital. These results, speculatively, imply that social capital may not be important factor for latrine ownership and use.

6.11 Conclusion

Demographic factors such as ethnicity, education and occupation were important factors for latrine ownership. Similarly, demographic factors such as age, ethnicity, marital status and education were found to be crucial for one to use a latrine. Likewise, knowledge and skills on how to dig and construct a latrine, lack of finances and scarcity of construction material were found to be important factors. Furthermore, cues for action are important if one is to use latrine. Diarrhoea risk perception among non-doers in terms of latrine ownership was high, and similar perceptions were mirrored for severity. In terms of latrine use, despite being users, doers felt to be vulnerable to suffer from diarrhoeal related diseases and they strongly believed that diarrhoea is a very serious disease. The study has further found that participants felt latrine ownership and use was high, nevertheless, there were pockets of attitudes who felt open defecation is normal. There were physical, technical and environmental challenges that influence latrine ownership and use. Respondents reported variations in terms of support they received from extension workers. However, more effort is required to convince latrine non-owners to construct and use latrines; rather than only depending on normal CLTS process.

6.12 Recommendations

- WASH behaviour change promotion activities to address the last latrine milers should target the elderly, unmarried women, small scale famers, subsistence and less educated in the society.
- Special programme should be created to support latrine construction among the vulnerable households. The programme should include construction of durable latrines to withstand harsh weather conditions.
- Cues and environmental prompts should be incorporated in WASH behaviour change programmes to remind household owners to always own and use latrine
- WASH Behaviour change strategy should be the focus towards latrine non-owners. There is a need to shift from promotion of WASH hardware to psychosocial factors that affect ownership and use of latrines. Such promotion activities should be more practical and interesting rather than using traditional health education approach.

6.13 Bridges to action for Balaka

Behaviour 1: Latrine Ownership					
Determinant	Significant Response/Code	Doers Vs. Non- Doers	Bridge to Activity	Activity	
Self-Efficacy	Availability of finances for constructing	Non-doers were more 4.0 times likely to mention availability of finances for constructing latrine	Conduct demonstrations to households should orienting them on the importance of prioritising WASH through practical sessions	Organize training sessions at community level on how to dig and construct latrine using local resources, and how to budget and finance construction Promotional approach, combined with behaviour change messages	
	Lack of suitable soil/place for digging latrine (e.g. hilly terrain, rocky soils) (Barrier)	Non-doers were more likely to indicate that lack of suitable land to dig and construct a latrine was a barrier than doers	Build interest in the community members to be innovative	designed to elicit shame for not owning a latrine. The health promotion intervention could be embedded in a broader intervention.	
Perceived Consequences	Cleanliness (e.g. less smelly surroundings, flies, Easy to care because it's your own) (Motivator)	Doers were 2.4 times more likely to indicate that what motivated them to have a latrine was to promote clean environment around their house than non- doers	Increase the perception that not having a latrine promotes open defaecation which leads disease transmission	Hold community wide events to sensitize and raise support for the importance of having a latrine at each and every household	
Perceived Access	Somewhat difficult (Barrier)	Non-doers were 4.1 times more likely than doers to report that it was very difficult to get a	As above: Self- Efficacy	As above: Self- Efficacy	

		suitable land to dig and build a latrine		
	Somewhat difficult (Barrier)	Doers were 7.3 times more likely to mention that it was somewhat difficult to find suitable land	Promote latrine technologies which are resilient to	Practical activities to increase awareness on different latrine technologies that are available.
<u> </u>	X7 1'1 1	than non-doers	T (1	T
Susceptibility	Very likely (Motivator)	Non-doers were	Increase the perception that	Increase awareness
or Vulnerability	(Motivator)	15.6 times more likely than doers to report that their children were very likely to suffer from diarrhoea the next three months	perception that under-five children are more likely to develop diarrhoea if faeces are not properly disposed.	on how diseases are transmitted through open defaecation in the community
Perceived Severity	Very serious (Motivator)	Non-doers were 15.6 times more	Increase the perception that	Community sensitization
		likely to report that their child is 'very likely' to get diarrhoea compared to doers	diarrhoea in under-five children is very serious.	meetings which increase awareness seriousness of diarrhoea among under-five.

Behaviour 2: Household members latrine use

Determinant	Significant	Doers Vs. Non-	Bridge to	Activity
	Response/Code	Doers	Activity	
Self-Efficacy	Availability of	Non-doers were	Emphasize the	Encourage each and
	latrine (Barrier)	40.6 times more	shame that is	every household to
		likely to	associated with	have their own latrine
		mention that	not using	
		unavailability of	latrine and the	
		latrine makes it	associated	
		difficult for	disease	
		them to use a	transmission	
		latrine than	risk	
		doers.		

Perceived	Avoidance of	Non-doers were	Increase the	Demonstrate how use			
Consequences	open defecation	more likely to	perception that	of latrine can prevent			
-	(motivator)	indicate that	latrine use	open defecation.			
		they defecate in	prevents open				
		the field because	defecation				
		faeces act as					
		manure than					
		doers					
Access	Very difficult	Non-doers were	Develop fear	Conduct awareness			
	(Barrier)	8.5 times more	based on the	campaigns about the			
		likely to	consequences	importance of using			
		mention that it is	of open	latrines			
		very difficult to	defaecation	~			
		remember to use		Chiefs to facilitate			
		a latrine all the		development of			
	a 1	times than doers		regulations on latrine			
	Somewhat	Non-doers were	Develop fear	use in their areas			
	difficult	15.9 times more	based on the	I Tan latuina waana aa			
	(Barrier)	likely to	consequences	Use latrine users as			
		mention that it is	of open	should dealers			
		difficult to	defaecation	should declare			
		remember to use		managa to usa latring			
		a latring all the		all the times			
		times than doers		an the times			
Cues to action	Very difficult	Non-doers	Develop cues	Demonstrate cues			
Cues to action	(Barrier)	compared to	that could	which can make			
	(Barrier)	doers	remind people	people remember			
		significantly	about the	about using a latrine			
		reported that it is	importance of	all the times			
		'verv difficult'	using a latrine				
			all the times				
	Somewhat	Non-doers were	Develop cues				
	difficult	22.9 times more	that could				
	(Barrier)	likely to report	remind people				
		'somewhat	about the				
		difficult' in	importance of				
		comparison to	using a latrine				
		doers	all the times				
Perceived	Somewhat	Non-doers were	Increase the	Community			
severity	serious	9.4 times more	perception that	sensitization			
	(Motivator)	likely than doers	diarrhoea in	meetings which			
		to report that	under-five	increase awareness			
		their children	children is very	seriousness of			
		were very likely	serious.	diarrhoea among			
		to get diarrhoea		under-five.			

Barrier Analysis Tabulation Sheet (05/02/2016)														
[Complete behavior description here]														
Total Doers	44	- Bo curo												
Total Non-doers	15	< De Sule	to comple	Cells										
Estimated Prevalence of Behavior	10%	(If unknown	, leave as 1											
Determinants	Doers Giving	Non-Doers Giving	Doers NOT	Non-Doers NOT	Doers %	Non-Doers %	Diff.	Odds Ratio	Confide	ence Interval	Estim. Relative	p-value	Doers	Non-doers
									Lower Limit	Upper Limit				
1.1: Self-Efficacy: What makes it EASIER?								-						
Cleanliness (Latrine is clean, well-cared for, smeared well)	30	6	14	9	68%	40%	28%	3.21	0.96	10.80	2.86	0.053		
Availability of latrine	10	15	34	0	23%	100%	-77%	0.00			0.02	0.000		Non-doers are 40.6 more likely to give this response than Doers.
Presence of HWF/ water for hand washing as opposed to bush	15	2	29	13	34%	13%	21%	3.36	0.67	16.89	2.84	0.112		
Distance from house to latrine	20	6	24	9	45%	40%	5%	1.25	0.38	4.11	1.22	0.476		
Knowledge for the need to use latrine	C	1	44	14	0%	7%	-7%	0.00			0.00	0.254		
Latrine not full	C	1	44	14	0%	7%	-7%	0.00			0.00	0.254		
Presence of light to use at night	2	1	42	14	5%	7%	-2%	0.67	0.06	7.93	0.69	0.593		
Properly designed and constructed	C	1	44	14	0%	7%	-7%	0.00			0.00	0.254		
			44	15	0%	0%	0%					1.000		
			44	15	0%	0%	0%					1.000		

Appendix 1: Example of Barrier Analysis Tabulation Sheet

