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UGANDA SANITATION FOR HEALTH ACTIVITY

SUSTAINABILITY STUDY OF SANITATION OUTCOMES IN ODF VILLAGES IN UGANDA

FINAL REPORT

AUGUST 2023

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ACTIVITY INFORMATION

Activity Name:	USAID Uganda Sanitation for Health Activity
Project:	Contemporary and integrated water, sanitation and hygiene (WASH) interventions at community and household levels.
Start Date and End Date:	January 29, 2018–July 28, 2023
Name of Prime Implementing Partner:	Tetra Tech ARD
Contract Number:	72061718C0003
Name of major Subcontractors:	SNV USA Sanitation Solutions Group (SSG) BRAC Uganda FSG
Major Counterpart Organizations:	Ministry of Health, Ministry of Water and Environment, Ministry of Education, Rotary International, Uganda Sanitation Fund, Uganda Water and Sanitation NGO Network, National Sanitation Working Group
Geographic Coverage (districts):	In FY22, active in 20 districts and supports fecal sludge management services in the Municipal Councils of Jinja, Njeru, Masaka, and Gulu **Central East Cluster** 1) Buikwe 2) Kaliro 3) Jinja 4) Buyende 5) Namutumba 6) Kayunga 7) Luuka **Central West Cluster** 1) Mpigi 2) Kyotera 3) Lwengo 4) Bukomansimbi 5) Gomba 6) Ssembabule 7) Masaka (only Output 1) **Northern Cluster** 1) Gulu 2) Agago 3) Kitgum 4) Lamwo 5) Omoro 6) Pader 7) Nwoya
Reporting Period:	October 01, 2021–September 30, 2022

Cover Photo: Using community map during Open Defecation Free (ODF) follow-up in Omiya Anyima Subcountry, Kitgum District.
Credit: RIZK communications.

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Authors: Andy Robinson and Ezron Rwamwanja

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ACRONYMS AND ABBREVIATIONS

CE	Central Eastern Region
CLTS	Community-Led Total Sanitation
CLTS+	Community-Led Total Sanitation with Quality
cm	Centimeters
CW	Central Western Region
DIY	Do-It-Yourself (toilet)
EL	Endline
GPS	Global Positioning System
HWF	Handwashing Facility
IBT	Improved Basic Toilet
JMP	WHO-UNICEF Joint Monitoring Programme for Water Supply and Sanitation
KII	Key Informant Interview
LC1	Local Council One
MBSIA	Market-Based Sanitation Implementation Approach
MoH	Ministry of Health
NC	Northern Cluster Region
OD	Open Defecation
ODF	Open Defecation Free
PAN	Pan African CLTS
Q	Quarter
SATO	"Safe Toilet" Plastic Toilet Pan
SDG	Sustainable Development Goal
SP	Sanitation Promoter
SS	Sustainability Survey
UBOS	Uganda Bureau of Statistics
UNICEF	United Nations Children's Fund
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USHA	Uganda Sanitation for Health Activity
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

EXECUTIVE SUMMARY

Between 2018 and 2023, the USAID Uganda Sanitation for Health Activity (USHA) was implemented in predominately rural locations in 20 districts across Central, Eastern and Northern Uganda. USHA developed market-based sanitation approaches to encourage household investment in basic (and safely managed) sanitation services while also supporting the priorities of the Uganda Ministry of Health to achieve verified Open Defecation Free (ODF) communities and encourage good hand hygiene.

By July 2022, USHA reported that 71,386 households had gained access to improved basic toilets through the Market Based Sanitation Implementation Approach (MBSIA) implemented in the Central Eastern (CE) and Central Western (CW) program regions, with 1,075 verified ODF villages.

A different approach was used in the Northern region due to a much higher rate of open defecation and a significantly lower ability to pay for toilets. A revised Community-Led Total Sanitation (CLTS) with Quality (CLTS+) approach was developed to promote a range of affordable latrine products using a do-it-yourself (DIY) delivery model. By July 2023, 876 ODF villages were verified in the Northern region, including 11,000 new unimproved toilets and 700 new and upgraded improved basic toilets.

Sustainability study: objectives

The aim of the study was to examine the sustainability of sanitation and hygiene outcomes in selected ODF villages at least 12 months after ODF verification, with a particular focus on:

a. Sustained use of improved basic toilets and the sustained practice of hand hygiene in MBSIA ODF villages (CE and CW regions) and
b. Sustained use of all toilet types and the sustained practice of hand hygiene in CLTS+ ODF villages (NC region).

Sustainability study: hypothesis

The study hypothesis was that more durable and better constructed toilets are likely to encourage sustained household use and good sanitation practice. The MBSIA and CLTS+ implementation approaches encouraged the construction and use of durable and hygienic toilets and sought to develop local sanitation services so that households were better able to repair, replace, and improve their toilets. The study compared the sustained sanitation and hygiene outcomes among households using these "higher quality" facilities with those in households using other types of toilets and handwashing facilities.

Sustainability study: methodology

The study used a mixed methods approach with a representative household survey undertaken in each USHA program region (including household interviews, observation of household facilities, and village key informant interviews [KIIs]), followed by qualitative fieldwork to examine the survey findings and identify the main sustainability factors (through KIIs, group discussions and village visits by the consultant team).

Sustainability study: household survey design

Based on the USHA endline survey data, three main sanitation strata were identified for survey and comparison in each region (see **Section 3.2** for more details):

1. Households using new or upgraded toilets with washable floors;
2. Households using existing toilets with washable floors; and
3. Households using existing toilets with non-washable floors.

The first sanitation stratum represents the households who were the main target of the USHA interventions: households who at baseline practiced open defecation or used an unimproved toilet, who built a new toilet, or upgraded an existing unimproved toilet during the USHA intervention period. The other two strata include households who were already using toilets (either with washable or non-washable floors) before the USHA interventions. These households were thought likely to be better-off and more sanitation-aware, as they were willing and able to invest in toilets before those in the first stratum, but they may have used lower quality toilets due to the limited technical guidance previously available.

The selected sanitation strata provide a good summary of overall sanitation status in the three regions: the first stratum in each region, which contains households with new or upgraded toilets with washable floors, is relatively small (7 percent to 18 percent of all households in ODF villages) but is of primary interest to the sustainability study. The second and third strata in each region are much larger (62 percent to 68 percent combined), as these strata include all pre-intervention toilets, plus some upgraded or new non-washable toilets.

The sustainability survey sampled specific households from 95 randomly selected ODF villages in the USHA database, allowing the survey data to be compared with the USHA baseline and endline data for each household. The number of households using toilets with washable floors, which were new or upgraded from baseline, was used as the primary sampling variable, which meant that slightly lower numbers of households with non-washable floor toilets were sampled in the 95 selected villages.

Table A. Survey sample size and equity results in surveyed ODF villages, by program region

Region	ODF villages	Total sample size (households)	Households in bottom two wealth quintiles[1]
Central Eastern	32	932	24%-32%
Central Western	31	889	1%-12%
Northern Cluster	32	738	83%-91%
Totals	**95**	**2,559**	

SUSTAINABILITY SURVEY RESULTS

Almost all of the toilets observed were dry toilets with a simple drophole (i.e., not flush or pour-flush toilets) built directly above a pit. An analysis of the sustained use of improved basic toilets in the three survey strata that included new toilets with washable floors is presented in Table B, columns A, B and C.

Table B. Sustainability survey results in ODF villages, by program region

Region	Sustained household use of washable floor toilets (A)	Washable floor toilets degraded to non-washable (B)	Open defecation rates (C)	Non-washable floor toilets upgraded to washable (D)
Central Eastern	85%	-10%	3%-5%	+42%
Central Western	91%	-7.5%	1.6%-3%	+53%
Northern Cluster	72%	-17%	11%-18%	+17% to +19%

[1] https://www.equitytool.org/uganda

Most new toilets that did not sustain washable floor status had degraded to non-washable floors, largely due to the break-up of thin cement screed floors, although some toilet users in each region had returned to open defecation. However, an analysis of the four survey strata (across the three regions) that comprise toilets with non-washable floors found that significant upgrading (to washable floors) had taken place since the endline survey, particularly in the CE and CW regions (see Table B, column D).

Much lower sanitation outcomes were found in the NC region: lower sustained use of toilets, lower improved basic toilet coverage, higher rates of toilet degradation (to non-washable floors), and higher levels of non-functional and not-in-use toilets.

Shared toilet use

Shared toilet use did not appear to have a major effect on sustainability and did not vary greatly between shared and not-shared toilets. Sustainability losses (i.e., not-functional and not-in use toilets) were low in both the "not-shared" and "owned and shared" categories in the CE and CW regions (2 percent and 1.5 percent respectively) but were marginally higher among households reporting "shared use of another household's toilet". The sustainability losses were generally higher in the NC region, but with little difference across the three shared use categories, which suggests that shared sue is not the main factor influencing sustainability in these NC toilets.

Hand hygiene

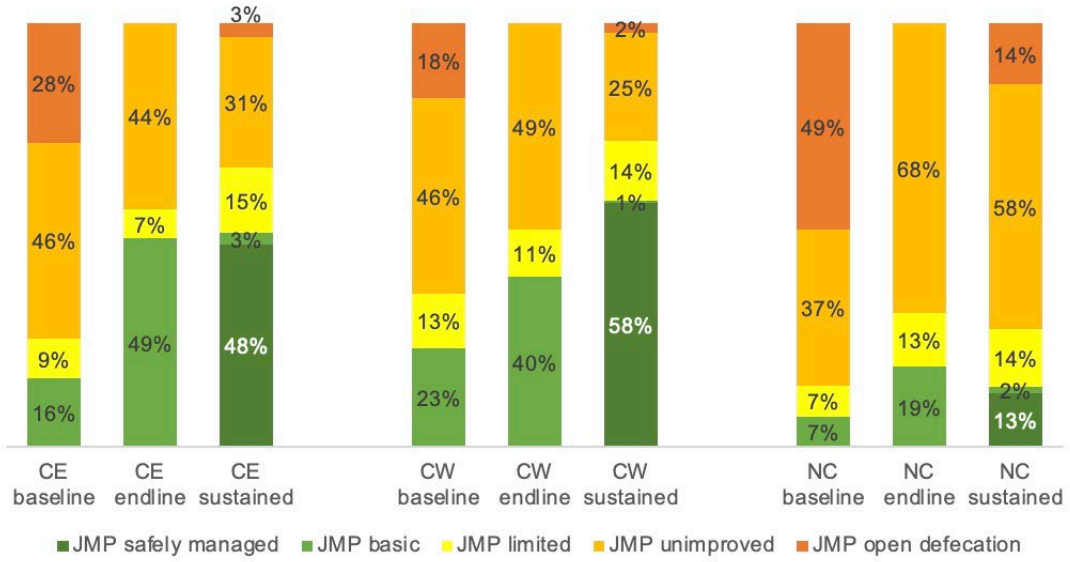
A composite hand hygiene indicator was used to measure the proportion of households who met all four of the handwashing criteria: observed presence of a handwashing facility; evidence of use; availability of soap and water; and at least an "average" demonstration of handwashing by a child from the household. The study found that around 10 percent to 20 percent of CE households have good hand hygiene; around 25 percent to 40 percent of CW households; and only 4 percent to 5 percent of NC households.

KEY FINDINGS

The sustainability study generated detailed information on the sustained use of toilets in the three sanitation strata in each region. The sustained toilet use rates in each stratum were used to estimate the results for the entire ODF population[2] (917 ODF villages) including the JMP sanitation service levels in each USHA program region. The figure below presents the summary of these "sustained" service level estimates alongside those from the USHA baseline and endline surveys.

2 The sustained toilet use rates for each sanitation stratum were applied to the matching ODF population segments and used to construct estimates for the non-sampled populations (15 percent to 30 percent), with sample weighting corrections applied to each segment.

WHO-UNICEF Joint Monitoring Programme (JMP) sanitation service levels in ODF villages, by region



Variations are apparent in the sustained use of toilets across the three USHA program regions. The different economic, social, and historical contexts played a significant role in these results:

- **CW**: best results (sustained use of 59 percent improved basic toilets), with sustained ODF outcomes, low sustainability losses, and a 19 percent increase in the use of improved basic toilets since the endline survey.
- **CE**: moderate results (sustained use of 51 percent improved basic toilets), with sustained ODF outcomes, and a 2 percent increase in the use of improved basic toilets since the endline survey.
- **NC**: the lowest sustained use of improved basic toilets (14 percent), with high sustainability losses (14 percent) and generally lower quality toilets, with a slight decrease (5 percent) in the use of improved basic toilets.

The sustained use of improved basic toilets has increased since endline in the two MBSIA program regions. These gains reflect recent toilet upgrades by households who did not improve their toilets during the USHA program[3], but made toilet improvements over a longer period as their capacity and resources allowed. The toilet upgrades by the large groups of existing toilet owners in each region since the USHA interventions more than offset the minor sustainability losses and service level decreases among the smaller population who built new toilets or upgraded their toilets before ODF verification.

Long-term sustainability

The USHA interventions were generally successful in the promotion of better-quality toilets and in encouraging ODF outcomes. In the CE and CW regions, the MBSIA encouraged significant proportions of households to upgrade and improve their toilets after the program end, perhaps due to shifts in the social norms for sanitation. But it remains unclear whether these short-term results, assessed only 1–2 years after toilet construction and ODF verification, will be maintained over the long-term.

Better quality toilets and strong ODF norms were evident in the CW region, but these positive outcomes likely reflect the higher economic status and generally better pre-intervention housing and

[3] Or were not captured during the rolling endline

sanitation practices in this region. Sustainability losses were also low in the CW region, and the combination of durable toilets and good sanitation behavior change suggests that most toilets are likely to remain in sustained use over the long-term.

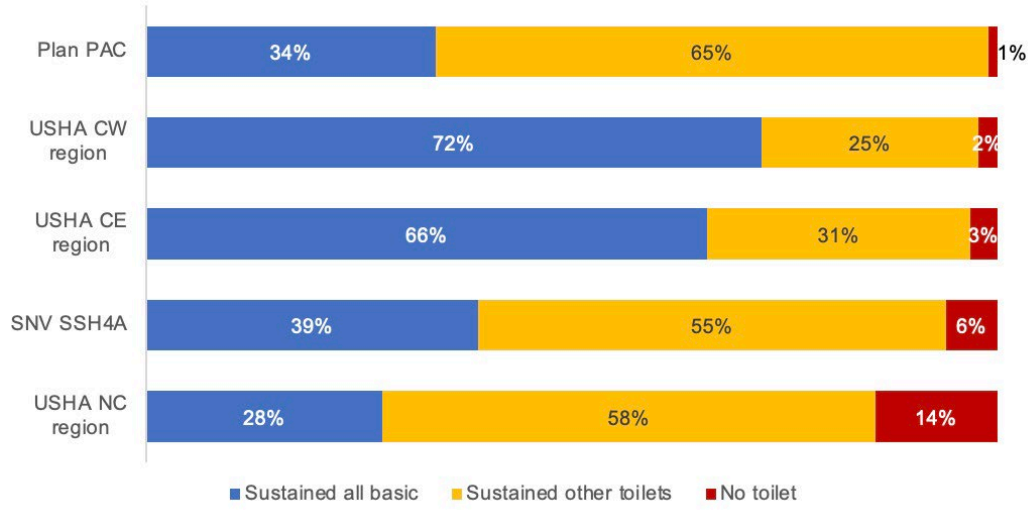
Sustained use of improved basic toilets (and of all toilets) was much better in the CE region than in the NC region. Nevertheless, the long-term sustainability of toilet use and ODF outcomes appeared less likely in the CE region than in the CW region.

In the CE and NC regions, lower economic status and lower housing and sanitation status resulted in lower quality toilets, more shared use of toilets, and less well-maintained ODF outcomes. The qualitative research suggested that the sustainability of some CE and many NC toilets is questionable over the long-term, with limited evidence of follow-up or social support when households in these two regions face sustainability problems.

Comparative analysis

The USHA sustainability results were compared against those from two other rural sanitation and hygiene programs for which evaluation results are available: the 2010–2015 Plan Uganda Pan African CLTS (PAC) program, which was implemented in the Central and Eastern regions; and the 2014–2020 SNV Uganda Sustainable Sanitation and Hygiene for All (SSH4A) program (see figure), which was implemented in the Western and Northern regions.

Sustained use of toilets in three Uganda rural sanitation and hygiene programs



This simple comparison of different target regions and implementation approaches suggests that the USHA CW and CE region results are comparable to the sustained toilet use results from the Plan PAC program; and the worst of the USHA regional results in the NC region is slightly worse than the SNV SSH4A results. The main difference is that the USHA MBSIA interventions (CE and CW regions) achieved higher levels of improved basic sanitation (66 percent to 72 percent, included shared use of improved basic toilets) than the 34 percent to 39 percent coverage reported in the other programs.

Market-based sanitation results

The sustainability results confirm that USHA's sanitation demand activation activities and promotion of the construction and use of better-quality toilets through MBSIA were generally successful in improving the uptake and sustained use of improved basic toilets, which contributed to the low sustainability losses reported in the CE and CW regions. However, while significant program efforts were made to

encourage market-based sanitation, more than 90 percent of households in the program area used untrained local masons to build or upgrade their toilets[4] and while many toilets were built or upgraded, the evaluation team saw little evidence that the optimized toilet designs and services promoted by the project were adopted.

The study highlights the challenge of developing market-based sanitation services in low-income rural populations. Where economic status is low, and rural populations are not well connected with markets, market-based sanitation services take time to develop, and often have limited uptake until social norms, sanitation markets or economic conditions change.

Sustained use in different toilet types

The toilet sustainability results in the two MBSIA regions were good (only 2 percent to 3 percent of households were not using toilets) and were found to be similar for households using toilets with washable floors, and for households using toilets with smooth non-washable floors. There was also little difference between the sustained use of not-shared and shared toilets (in the CE and CW regions).

In most cases, the washable toilet floors were cement screed finishes on top of mud-covered durable log platforms, and the smooth non-washable toilet floors were the same construction with a compacted mud finish (instead of the cement screed). As a result, the surface floor finish had little effect on the sustained use of the toilet, with both toilet types reporting low sustainability losses, hygienic outcomes, and an improved basic level of service.

Sustainability losses were far higher in the NC region, with 14 percent of toilets found to be non-functional, not hygienic or not-in-use, and a further 20 percent of households reporting shared use of a toilet owned by another household. Yet structural log floors were also common in toilet construction in the NC region. However, because of the higher poverty and weaker social norms for sanitation in the NC region, these toilets were less well constructed, often used less durable materials and had less protective or private superstructures, which resulted in far lower sustainability.

RECOMMENDATIONS

1. Use integrated and phased area-wide sanitation approaches

Market-based sanitation takes time to develop in lower-income areas like the CE and NC regions and may initially only serve small population segments. Other approaches are needed to reach the rest of the population, including behavior change interventions and area-wide sanitation approaches that change social norms. Phased and integrated approaches allow market-based sanitation services to gradually expand and develop, while continuously encouraging and supporting the transition to higher levels of service.

2. Increase and expand sanitation promotion channels

The USHA program was successful in increasing the use of improved basic toilets in the MBSIA regions, but program impact could be increased by broadening the target audience for the technical tools, information and training, and increasing the number of people involved, until the majority of local leaders, influencers and service providers are aware of the benefits of improved basic toilets and handwashing facilities, and are active in the promotion, provision and support of more durable and hygienic toilets.

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[4] USHA (forthcoming) *Scaling market-based sanitation in rural Uganda – key learnings* Arlington: Uganda Sanitation for Health Activity Learning Brief.

3. Strengthen and disaggregate monitoring

The study highlighted the challenges of collecting reliable information on household-level sanitation and hygiene services. More detailed and more regular monitoring of sanitation and hygiene services is required to generate the information needed for the design, implementation, and long-term support of services. The collection of detailed information on the durability, hygiene and functionality of toilets with different types of structural slab, floor covering, and superstructure requires more investment and capacity for monitoring and evaluation but has the potential to improve sector understanding of sustainability factors, and inform better policy, programming and practice.

4. Develop approaches and capacity for challenging contexts

The study highlighted the difficulty of sustaining the use of improved basic toilets in low-income and scattered populations, such as the NC districts. Where sanitation programs aim to cover entire administrative units, the planning process should aim to identify challenging contexts and low-income populations at the start, and ensure that sufficient time, capacity, and budget are allocated to tailored interventions and longer-term support in these areas. In the NC region, where USHA research identified that an MBS approach was unlikely to work, a longer-term program is required to develop sanitation markets and systems, with some form of toilet subsidy (or other support) likely to be needed to support poor and marginalized households to develop and sustain the use of durable toilets.

5. Independent verification of sanitation results

The sustainability survey revealed over- and mis-reporting problems in the otherwise excellent USHA monitoring system. All large-scale monitoring systems should have systematic and regular checks on monitoring quality and reliability. Wherever possible, these checks should be made by both internal stakeholders (within the program) and external stakeholders (independent of the program), and include both remote data checks (on photographs, classification decisions, Global Positioning System Coordinates (GPS) coordinates, data collection times and durations) and back or spot checks (repeat surveys of randomly selected households to confirm any differences in the data reported).

6. National classification of improved basic toilets

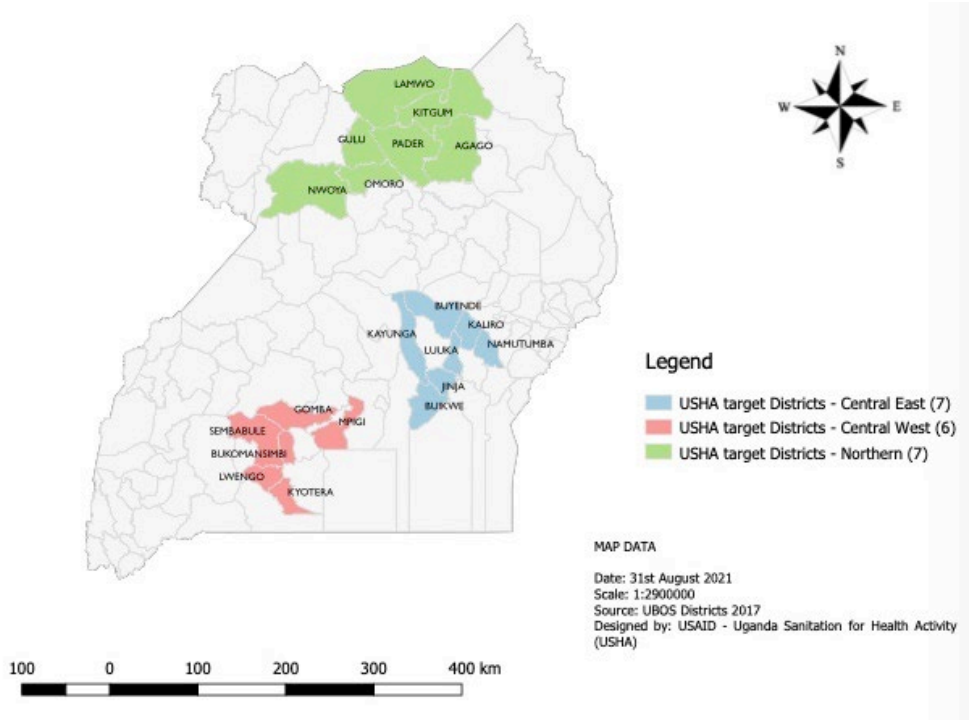
The JMP sanitation monitoring definitions are designed for global and regional reporting on sanitation progress and are constrained by the absence of toilet observation data from the multi-sector household surveys on which the JMP bases its progress estimates. However, national and program monitoring systems do not have the same constraints and are increasingly able to collect reliable observation data on the functionality, hygiene and safe management of sanitation and hygiene services. Where observation data confirm that toilets are: a) functional, hygienic and in-use, b) constructed with durable structural slabs and c) finished with either a durable floor covering, or a smooth non-durable floor covering, these toilets meet the minimum requirements for an improved sanitation facility, whether or not the toilets are shared or not-shared. Therefore, the use of these sanitation facilities should be classed (by national and program monitoring systems) as equivalent to the JMP improved basic sanitation service.
Introduction

1.0 INTRODUCTION

Since early 2018, the USAID Uganda Sanitation for Health Activity (USHA) has been implemented in predominately rural locations in 20 districts across Central, Eastern and Northern Uganda. USHA implemented a series of integrated water, sanitation, and hygiene (WASH) interventions at the community and household levels that were designed to achieve the following three key results:

- Increased household access to sanitation and water services.
- Practice of key hygiene behaviors at homes, schools, and health facilities.
- Strengthened district WASH governance for sustainable services.

Figure 1. Location of USHA Implementation Districts



USHA developed market-based sanitation approaches to encourage household investment in basic (and safely managed) sanitation services, while also supporting the longstanding priority of the Uganda Ministry of Health to eliminate the practice of open defecation, encourage good hand hygiene and achieve verified Open Defecation Free (ODF) communities. The USHA program targeted 750,000 people to gain access to basic sanitation services[5] and 2,500 verified ODF villages.

By July 2022, the USHA endline household survey reported that 71,386 households had gained access to improved basic toilets through its Market Based Sanitation Implementation Approach (MBSIA) in the CE and Central Western CW regions, with 1,075 ODF villages verified in these two regions.

[5] Basic sanitation service: use of improved sanitation facilities that are not shared with other households (JMP, 2018)

A different approach was used in the Northern region due to a much higher rate of open defecation and a significantly lower ability to pay for toilets[6]. A revised CLTS+ was developed to promote a range of affordable latrine products using a DIY delivery model. In total, 876 ODF villages were verified ODF in the Northern region, including 11,000 new unimproved toilets and another 700 new or upgraded improved basic toilets.

[6] Ministry of Health (2022) *Uganda National Sanitation Market Guidelines for Basic Sanitation* Kampala: The Republic of Uganda, Ministry of Health.

2.0 SANITATION STATUS IN THE ODF STUDY VILLAGES

This study examines the sustainability of the household sanitation and hygiene outcomes achieved by the USHA program. As USHA program implementation continued until early 2023, the study focuses on household sanitation and hygiene outcomes in USHA program villages that were verified ODF before 01 March 2022 (to examine only ODF villages that were verified at least 12 months before the start of the sustainability study in March 2023).

Furthermore, because both the USHA implementation approaches and the monitoring systems were still being developed during Phase I of the USHA program[7], the sustainability study only included Phase II ODF villages that received fully-developed MBSIA or CLTS+ interventions, for which comprehensive baseline and endline survey data were available. As a result, the study excluded 507 Phase I villages (including 208 Phase I ODF villages).

Table 1. USHA household survey data for Phase II villages

Region	No. villages	Baseline household records	Endline household records
Central Eastern	550	97,409	63,906 (66%)
Central Western	513	77,763	23,770 (31%)
Northern Cluster	943	49,120	18,199 (37%)
Totals	2,006	224,292	96,127 (43%)

The USHA household survey data for Phase II villages are summarized in **Table 1**. Baseline data collection for Phase II implementation started in September 2020, with the first Phase II ODF villages verified in April 2021. None of the ODF villages studied were achieved more than 2.5 years ago.

Table 2. USHA household survey data in eligible ODF villages (before 01/03/2022)[8]

Region	ODF villages	Baseline ODF records[9]	Endline ODF records[10]	Average village size (no. households)
Central Eastern	321	49,611	31,207(63%)	155
Central Western	156	18,532	5,069 (27%)	119
Northern Cluster	440	22,210	8,451 (38%)	50
ODF Totals	917	90,353	44,727 (50%)	99

The total of 1,761 ODF villages achieved by the USHA program represent around 71 percent of all intervention villages[11]. However, almost half of these ODF villages were achieved in the last 12 months of the program, with 917 Phase II ODF villages (52 percent) verified before 01 March 2022 and included in this sustainability study.

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7 Phase I of the USHA program was used to develop implementation approaches, build implementation and support capacity, and improve monitoring systems.

8 The March 1st, 2023, cut-off date was selected to ensure that all of the study villages had been verified ODF at least one year ago.

9 Baseline ODF records = total number of baseline survey records in the eligible ODF villages.

10 Endline ODF records = total number of endline survey records in the eligible ODF villages.

11 1,761 verified ODF villages from 2,474 USHA intervention villages in the three regions.

Table 2 reports USHA household survey data from Phase II villages that were verified as ODF before 01 March 2022. USHA endline survey records were only collected if the household reported that it had built a new latrine, or if it had improved or replaced an existing latrine. The USHA baseline survey provided data on households who were already using toilets with washable or non-washable floors before the interventions.

The proportion of endline records in each region provides some indication of the level of sanitation improvement that took place—suggesting that in Phase II ODF villages there was twice as much sanitation change in the CE region as in the other two regions: almost two-thirds of CE households improved their sanitation status; compared to only around one third of households in the other two regions.

Despite the greater sanitation improvement reported in the CE region, the number of verified Phase II ODF villages in the NC region is higher than in the other two regions. This difference reflects both the much smaller villages in the NC region, and the more CLTS-based approach under which many households built unimproved toilets. In the CE and CW regions, the main aim was to convert households to the use of improved basic toilets, thus these MBSIA ODF villages tended to have higher levels of improved basic toilets than the CLTS+ ODF villages in the NC region.

2.1 USHA program: ODF criteria

The Ministry of Health (MoH) ODF Verification Parameters (drawn from the 2019 MoH CLTS Implementation Protocols) include four main ODF criteria:

No exposed human excreta.

1. All households have access to a toilet;
2. All toilets should be flyproof and clean (floor free of feces and urine); and
3. All households have a handwashing facility with soap and water.

In 2021, the USHA program produced Version 3 of its "*ODF Verification, Certification and Re-Verification Process in Targeted Communities under USHA*", which details the USHA approach to ODF verification (consistent with USAID's global ODF monitoring definitions).

The USHA program decided to simplify the ODF verification process and focus more closely on the achievement of 100 percent access to toilets in its target villages. Therefore, the USHA ODF verification process required only three criteria:

No open defecation (i.e., no visible human excreta in household compounds or around the village).

1. 100 percent access to household toilets in the village (including shared access); and
2. 95 percent or greater hygienic use of toilets (i.e., no feces visible on the floor or walls of the toilet).

The USHA document noted that, as ODF achievement is only a step towards 100 percent use of improved basic toilets, USHA interventions would continue to promote and monitor washable toilet floors, handwashing with soap and water, and fly management in dry toilets. But these criteria would not be included in the ODF verification process.

2.2 Sanitation status at USHA endline

The USHA baseline and endline household surveys reported wide variations in sanitation status across the three program regions (see Table 3).

Table 3. USHA sanitation status in study ODF villages (Phase II)

Region	ODF villages	Baseline % toilet use	Baseline % washable floor toilets	Endline % toilet use	Endline % washable floor toilets	Gain in % washable floor toilets
Central Eastern	321	72%	25%	100%	56%	+31%
Central Western	156	82%	36%	100%	51%	+15%
Northern Cluster	440	51%	14%	100%	18%	+4%
Totals	917	69%	25%	100%	46%	+21%

2.2.1 USHA TOILET DEFINITIONS

The USHA program aligned its sanitation monitoring definitions with the USAID definitions, which are based on those used for international progress monitoring by the UNICEF-WHO Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP).

The JMP defines an improved sanitation facility as one that hygienically separates human excreta from human contact and is not shared with other households. The main JMP criteria[12] for classifying a "pit latrine with slab" as an improved sanitation facility are:

- Pit completely covered with a squatting slab or platform with a small drophole;
- Slab or platform are constructed from materials that are durable;
- Slab or platform are constructed from materials that are "easy to clean"; and
- Slabs made of durable materials can be covered with a smooth layer of cement mortar, clay or mud.

USHA interpreted the JMP requirement that improved basic toilets have slabs made from durable materials to mean that the toilet slabs, pans and floors should be finished with washable materials (e.g., concrete, cement screed, durable plastic or ceramic). The USHA criteria for an improved basic toilet are the following:

1. Toilet with a washable floor (i.e., entire toilet floor); and
2. Toilet that is not shared with other households.

Following the lessons learned in Phase I of the USHA program, USHA determined that a durable superstructure was important to both the sustainability of the toilet facility and to improved sanitation behavior by the users. Consequently, USHA demand activation and sanitation promotion messages encouraged these additional toilet features, with the aim of encouraging higher-quality and more durable toilets:

1. Toilet with an improved roof, walls, and door (that provide privacy); and
2. Toilet with a "sturdy" superstructure (all components).

The toilet superstructure components should be made of durable materials, solid, and provide privacy. However, USHA only used the first two criteria (washable floor and not-shared) when assessing and reporting its improved basic toilet results.

[12] UNICEF (2019) *Core questions on water, sanitation and hygiene for household surveys: 2018 update* New York: WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.

2.2.2 NORTHERN CLUSTER REGION: MONITORING DEFINITIONS FOR TOILETS

The toilets constructed in the NC region are of a generally lower service level than in the other two regions. Some households have constructed toilets with either small concrete sanplats provided by previous sanitation support, or with plastic slabs obtained from plastic latrines provided in Internally Displaced People (IDP) camps in the region. In most cases, these smaller slabs do not cover the entire floor of the toilet, and are not structural, but provide a washable area around the toilet drophole.

Toilets with small washable sanplats or plastic slabs, but with mud covering the remainder of the toilet floor, have the potential to provide a similar level of service to improved basic toilets with fully washable floors. USHA monitored the two areas separately: where the area around the drophole was covered by a sanplat, or plastic slab, or other washable material (e.g., cement screed), the toilet was recorded as having a "washable drophole" area. The type of toilet floor outside the sanplat or plastic slab was recorded separately (as either a washable or non-washable floor).

For the purposes of this study, NC toilets have been reported as having a washable toilet interface if the drophole area was washable. In the Central Eastern (CE) and Central Western (CW) regions, a washable floor was used as the main criterion for an improved basic toilet (as most toilet floors in these regions were either entirely washable or entirely non-washable).

1.2 Issues with USHA's endline data

Preliminary analysis of the results of the sustainability survey conducted for this study found an unexpected large drop in the number of toilets observed to have washable floors, particularly in the CE region. This surprising finding led to more detailed checks on the toilet photographs and GPS coordinates from the three surveys at each household (endline and baseline, and sustainability survey). These checks confirmed that, in some cases, the household toilet photographs in the USHA baseline and sustainability surveys showed the same toilet, whereas the USHA endline toilet photographs showed a completely different toilet.

These discoveries led to a systematic data cleaning process, in which every toilet included in the sustainability survey for which a major change in sanitation status had been reported during the program was checked to confirm whether:

a) The same toilet appeared in all of the available toilet photographs; and
b) The toilet classification was correct (for the endline and sustainability survey).

Where any differences were found, the problem was marked, the toilet photographs were saved, and a decision was taken on whether the toilet floor status reported in either the USHA endline or the sustainability survey needed to be revised.

The data cleaning process confirmed that, in some areas, up to 21 percent of the endline toilets had been mis-reported as toilets with washable floors when they actually appeared to be toilets with non-washable floors. Further reviews of the monitoring process suggested that two issues probably caused these mis-reporting problems: firstly, the USHA grantees reported on their own results, with no independent verification of these results (other than through the ODF verification process, which was not designed to check on the number of USHA improved basic toilets [IBTs]). Secondly, both USHA grantees and sanitation promoters received an incentive payment for every IBT achieved, which may have encouraged over-reporting.

Given the advanced monitoring system developed by USHA, with detailed information available on each household toilet, misreporting was previously considered unlikely. However, the survey checks and cleaning process demonstrated that it is difficult to spot whether data on, and photographs of, new or

upgraded toilets are genuine unless some previous information are available for comparison. It was only when another set of toilet photographs was available from the sustainability survey that it became clear that some misreporting had taken place.

The data review process also revealed that some toilets had been under-reported in the sustainability survey. In some cases, enumerators had recorded a toilet with a non-washable floor, when the toilet photographs showed a toilet with a washable floor. In the 2 percent to 4 percent of households where toilet photographs from the sustainability survey clearly showed a toilet with a washable floor, the toilet floor classifications were revised.

The final revisions to the USHA endline survey data resulted in the following reductions in the estimates of the number of toilets with washable floors:

- CE: 20 percent reduction in the number of toilets with washable floors;
- CW: 2.4 percent reduction in the number of toilets with washable floors; and
- NC: 18 percent reduction in the number of toilets with washable floors.

The USHA baseline and revised endline survey data in the 917 ODF sustainability study villages were used to estimate the proportion of households using toilets in the JMP sanitation service levels: basic[13], limited, unimproved, and open defecation.

Figure 2. JMP sanitation status in study ODF villages: at baseline and endline

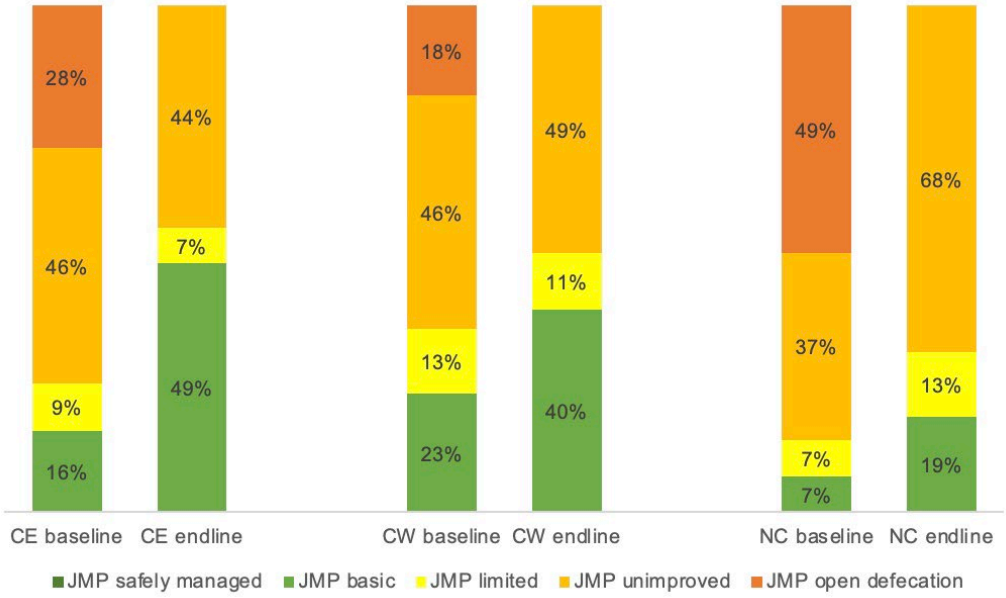


Figure 2 presents the revised endline sanitation status in the three program regions:

- CE: 16 percent baseline to 49 percent endline basic sanitation services (+33 percent);
- CW: 23 percent baseline to 40 percent endline basic sanitation services (+17 percent); and
- NC: 7 percent baseline to 19 percent endline basic sanitation services (+12 percent).

[13] The proportion of JMP improved basic toilets was estimated from the USHA survey data by counting not-shared toilets with washable floors.

3.0 SUSTAINABILITY STUDY: METHODOLOGY

The aim of the study is to examine the sustainability of the sanitation and hygiene outcomes in the selected ODF villages, with a particular focus on:

a. Sustained use of improved basic toilets and the sustained practice of hand hygiene in MBSIA ODF villages (CE and CW regions).
b. Sustained use of all toilet types and the sustained practice of hand hygiene in CLTS+ ODF villages (NC region).

3.1 Mixed methods design

The study used a mixed methods approach:

1. Desk review;
2. Household survey (including household interviews, observation of household facilities, and village KIIs);
3. Interviews, group discussions and village visits by consultant team; and
4. Analysis and synthesis.

Given other work to identify the lessons learned from the MBSIA program, including an examination of how best to expand and sustain market-based sanitation after the USHA program closes[14], the scope of the study has been deliberately limited to focus on the household sanitation and hygiene outcomes, and the factors that influenced these outcomes in groups with different sanitation and hygiene behaviors.

The study hypothesis is that more durable, better designed and better constructed toilets are likely to encourage sustained household use and good sanitation practice. Both the MBSIA and CLTS+ implementation approaches encouraged the construction and use of better quality and more hygienic facilities and sought to develop local sanitation services so that households are better able to repair, replace and improve their toilets. The study compared and contrasted the sustained sanitation (and hygiene) outcomes among households using these "higher quality" facilities with those in households using other types of toilets.

3.2 Household survey

The household survey used a purposive sampling approach to collect data on specific sanitation categories of interest. In each region, the proportion of toilets in the main sanitation categories was assessed, and the different trajectories of the household toilets (from baseline sanitation category to endline sanitation category) were used to identify the main types of households that should be surveyed.

Based on the USHA endline survey data, three main sanitation strata were identified for survey and comparison in each region:

[14] USHA (forthcoming) *Scaling market-based sanitation in rural Uganda – key learnings* Arlington: Uganda Sanitation for Health Activity Learning Brief.

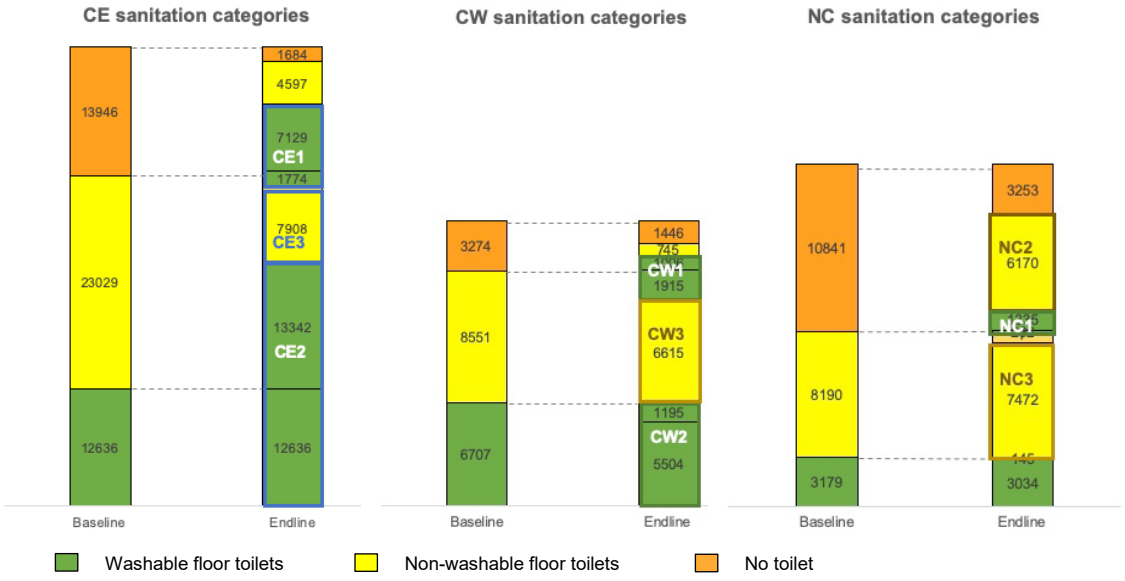
1. Households using new or upgraded toilets with washable floors.
2. Households using existing toilets with washable floors.
3. Households using existing toilets with non-washable floors.

The first sanitation stratum represents the households who were the main target of the USHA interventions and comprise the main USHA results: households who at baseline practiced open defecation or used an unimproved toilet, who built a new toilet, or upgraded an existing unimproved toilet during the main USHA intervention period.

The other two sanitation strata include households who had already invested in toilets (either with washable or non-washable floors) before the USHA interventions. These households were thought likely to be slightly better-off and more sanitation-aware, as they were willing and able to invest in toilets before those in the first stratum but may use lower quality toilets due to the lack of technical guidance available.

The household survey was designed to produce statistically significant data for three sanitation strata in each region. In the end, there were minor variations in the three strata selected in each region, because of the different sanitation situations. On average, around 80 percent of the ODF village population is represented in the nine selected strata (see Figure 3).

Figure 3. Selection of survey sanitation strata[15]



In the CE region, the following three sanitation strata were selected:

- CE1: 17.5 percent households using <u>new</u> toilets with washable floors at endline, who at baseline practiced open defecation (OD) or used non-washable floor toilets;

[15] The Figure 3 sanitation categories were used exclusively to select the survey strata, and do not correspond with the similar JMP sanitation service levels (e.g. the "no toilet" category here includes households in ODF villages who had no toilet but reported shared use of another household toilet, which the JMP classifies as an unimproved or a limited sanitation service).

- CE2: 52 percent households using upgraded toilets with washable floors at endline (upgraded from baseline non-washable) at endline, and households with existing washable floor toilets at baseline (no change at endline);
- CE3: 15.5 percent households using unimproved toilets at endline, who were using the same unimproved toilets at baseline; and
- **Total sample frame = 85 percent of ODF household records.**

In the CW region, the following three sanitation strata were selected:

- CW1: 16 percent households using new and upgraded toilets with washable floors at endline, who at baseline either practiced OD or used non-washable floor toilets;
- CW2: 30 percent households using toilets with washable floors at endline, who were using the same washable floor toilets at baseline;
- CW3: 35 percent households using toilets with non-washable floors at endline, who were using the same non-washable floor toilets at baseline; and
- **Total sample frame = 81 percent of ODF household records.**

In the NC region, the following three sanitation strata were selected:

- NC1: 7.2 percent households using new and upgraded toilets with washable floors at endline, who at baseline practiced OD or used non-washable floor toilets;
- NC2: 28 percent households using new toilets with non-washable floors at endline, who at baseline practiced open defecation;
- NC3: 34 percent households using toilets with non-washable floors at endline, who were using the same non-washable floor toilets at baseline; and
- Total sample frame = 69 percent of ODF household records.

The selected sanitation strata reflect overall sanitation status: the first stratum in each region, containing households with new or upgraded toilets with washable floors, is relatively small (7 percent to 18 percent) but is of primary interest to the sustainability study. The second and third strata in each region are much larger (62 percent to 68 percent combined), as these strata include all existing toilets, plus some upgraded or new non-washable toilets.

Survey sample design

A Uganda Bureau of Statistics (UBOS) consultant calculated that, given the typical strata sizes (see above), a sample of 10 households from 32 villages, for a total sample size of 320 per sanitation strata, should produce statistically significant results (with 95 percent confidence level and a 5 percent margin of error) while also allowing for a 20 percent non-response rate. The survey sample design assumed 960 household survey records in each region, for a total of 3 x 960 = 2,880 households.

The UBOS consultant selected the number of households using toilets with washable floors, which were new or upgraded from baseline, as the primary variable for the random sampling, which meant that slightly lower numbers of households in the non-washable floor toilet strata were found in the 95 selected villages:

- CE: 932 households in 32 villages (319 CE1, 320 CE2, 293 CE3);
- CW: 889 households in 31 villages (307 CW1, 288 CW2, 294 CW3);
- NC: 738 households in 32 villages (225 NC1, 250 NC2, 263 NC3); and
- **Total: 2,559 households in 95 villages.**

The USHA baseline and endline surveys provide longitudinal data on individual (named) households, including the entire populations of the main intervention villages. Therefore, the sustainability survey

sampled specific households from the 95 selected villages in the USHA database, allowing the sustainability survey data to be compared with the USHA baseline and endline data for each of these households.

Household survey process

The household survey process included four main steps:

1. **Village Key Informant Interview**: Collection of information on the number of households in the village, soil type, toilet sustainability problems, ODF verification process, any ongoing open defecation, and details of any households reported to not use toilets;
2. **Transect walk**: Observation of any visible human feces (open defecation) in the village while visiting previous/current sites of open defecation;
3. **Household interview and observation**: Pre-selected households are located and, if they are available and consent to an interview, asked to provide information on the household religion, language, ethnic group, household members, assets (using the Uganda Equity Tool set of questions), sanitation and hand hygiene status and practices, followed by observation of their household sanitation and hygiene facilities. Where no household members were available, consent was sought to observe the household facilities; and
4. **"No latrine" household interview**: where the village key informant(s) reported that some households were not using toilets, the household was visited to assess its current sanitation practices and understand the reasons for not using a toilet (where "no latrine use" status was confirmed).

The household interviews and sanitation and hygiene observation surveys comprise the main components of the survey process. The village KII, transect walk and "no latrine" interviews were designed to provide additional information to explain or support the household interviews and observation findings.

3.3 Qualitative fieldwork

The qualitative fieldwork was conducted by the consultant team, with support from the three USHA regional office teams. The main aims of the qualitative fieldwork were to compare the sample survey findings against what was seen in a small sample of typical villages, examine any discrepancies in the survey findings, and investigate the reasons for the reported sanitation sustainability outcomes.

Given the very different contexts and sanitation statuses of the three program regions, and the different sanitation gains reported for ODF villages in the USHA endline survey, the qualitative fieldwork covered all three regions.

District selection criteria

As each region contains 6–7 program districts, the fieldwork was designed to cover at least two districts in each region, including one of the better performing districts and one of the less well performing districts (to provide some variation in contexts, conditions, and outcomes). A total of six districts were selected for the fieldwork visits, using the following criteria:

- Sanitation baseline status (as this affects social norms for sanitation);
- Sanitation performance (gains in improved basic toilet coverage, OD reduction); and
- Implementation context (remoteness/accessibility of district, soil conditions, socio-cultural factors, other factors that may have affected implementation).

Village selection criteria

Fieldwork was undertaken in four villages in each region (two per district in each of two districts), with the villages selected to provide information on a range of potential sustainability factors. The fieldwork was used to triangulate the findings from the household survey process, with at least one village selected in each region included in the survey sample.

4.0 SUSTAINABILITY STUDY FINDINGS

4.1 Household characteristics

Household sizes in the three regions range from one person to 17 people, with the following regional averages:

- CE: 5.6 people, including on average 1.0 under-five children per household[16];
- CW: 4.3 people, including on average 0.8 under-five children per household[17]; and
- NC: 6.2 people, including on average 0.9 under-five children per household[18].

The sustainability survey also collected data on the proportion of households that contained at least one person with difficulty seeing, walking, or communicating:

- CE: 14 percent households with person with disability (2.6 percent with more than one);
- CW: 10 percent households with person with disability (1.0 percent with more than one); and
- NC: 24 percent households with person with disability (2.9 percent with more than one).

The main household religion reported by the survey households was Roman Catholic in the CW and NC regions, but Anglican (Protestant) in the CE region:

- CE: 35 percent Anglican, 27 percent Roman Catholic, 18 percent Pentecostal, 18 percent Muslim ;
- CW: 63 percent Roman Catholic, 15 percent Anglican, 15 percent Muslim; and
- NC: 65 percent Roman Catholic, 24 percent Anglican, 10 percent Pentecostal.

The main ethnic groups reported in the three regions:

- CE: 71 percent Musoga, 12 percent Muganda;
- CW: 87 percent Muganda, 4 percent Munyankole; and
- NC: 94 percent Acholi, 4 percent Lango.

Main housing characteristics by region:

- CE houses: 38 percent cement floors and 78 percent brick masonry walls;
- CW houses: 68 percent cement floors and 86 percent brick masonry walls; and
- NC houses: 4 percent cement floors and 16 percent brick masonry walls.

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16 58 percent of CE households contained at least one under-five child.

17 49 percent of CW households contained at least one under-five child.

18 58 percent of NC households contained at least one under-five child.

The sustainability survey suggested that between 3 percent and 10 percent of the households in these rural ODF villages are tenants who rent housing from other people (with additional challenges for assuring their access to improved basic toilets):

- CE: 4.2 percent tenants;
- CW: 10.4 percent tenants; and
- NC: 3.4 percent tenants.

Table 4. Household water supply status, by region

Region	Protected WS < 30 mins	Protected WS > 30 mins	WS from suppliers	Unprotected WS
CE	61%	37%	0.8%	1%
CW	50%	20%	2%	28%
NC	53%	33%	1%	13%

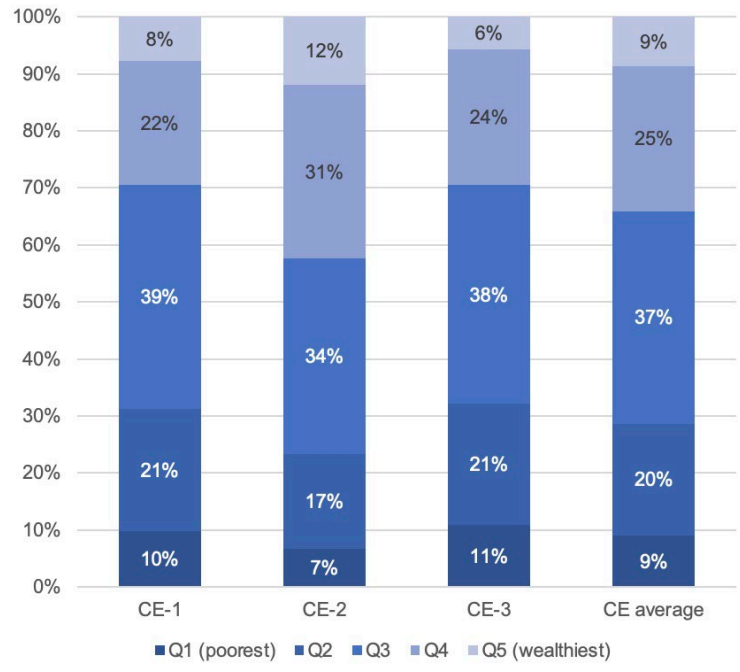
Key: Water supply from suppliers includes: bottled water, water kiosks, water tankers and carts.

The data on household water supply suggests that the CE households have the best water supply (98 percent use protected water sources), but that 37 percent of the CE households take more than 30 minutes to collect water (which is the threshold at which the travel time may influence and reduce water consumption). The survey found that NC households have better water supply services than CW households, perhaps due to the extensive humanitarian interventions in the region over the last 15 years.

4.2 Household wealth status

The sustainability survey included the 13 questions required for an Equity Tool analysis of the wealth quintiles of the surveyed households. Figure 4 presents the wealth quintile data for the Central Eastern survey households, showing the proportion of sanitation strata households in each of the five Uganda wealth quintiles.

Figure 4. Central Eastern (CE): household wealth quintiles, by strata

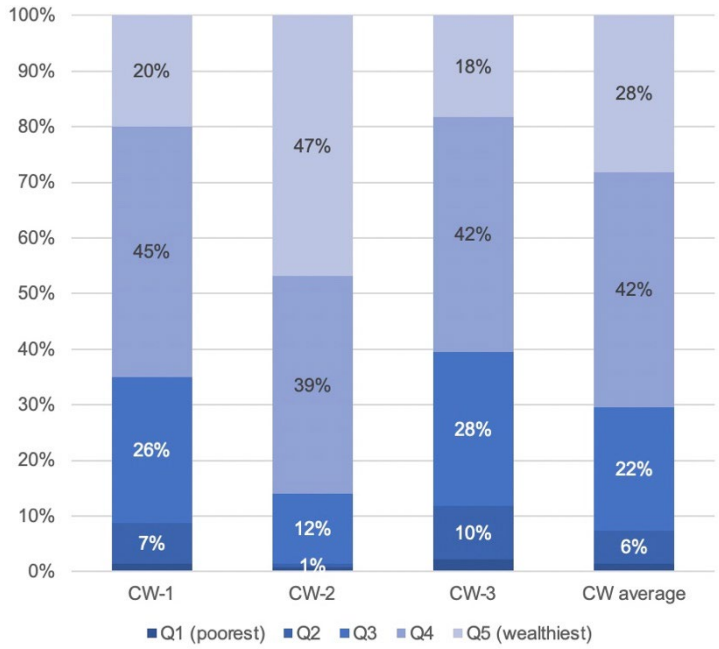


There is relatively little variation across the three CE sanitation strata: the proportion of households in the bottom two wealth quintiles (who might be considered less likely to be able to afford a toilet with a washable floor) is 31 percent in CE-1, 24 percent in CE-2, and 32 percent in CE-3. These data confirm that CE-2 households, who either already had toilets with washable floors at baseline, or upgraded from non-washable floor toilets, are wealthier (43 percent in the top two CE-2 wealth quintiles compared to 30 percent in the other two strata) than the CE-1 households (who built new washable floor toilets by endline) and CE-3 households (who had non-washable floor toilets at baseline, with no improvements reported by endline). But the differences are small, with only minor variations in the middle three wealth quintiles.

The CW wealth quintiles confirm that the Central Western region is substantially wealthier than the other regions. On average, only 7.5 percent of CW households are in the bottom two wealth quintiles, compared to a 29 percent average in CE households; with 70 percent of CW households in the top 2 wealth quintiles in Uganda.

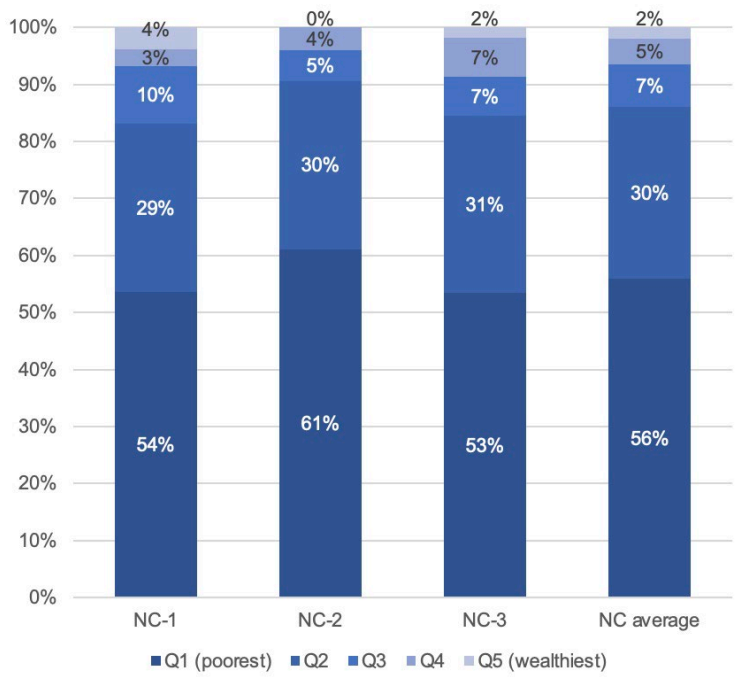
There is a more marked variation across the CW sanitation strata: households in the CW-2 strata (households with existing toilets with washable floors at baseline) are substantially wealthier than those in the other two strata—only 1.6 percent of the CW-2 households were classed in the bottom two wealth quintiles, compared to 8.7 percent in CW-1 households, and 11.8 percent in CW-3 households.

Figure 5. Central Western (CW): household wealth quintiles, by strata



The Northern Cluster households (see Figure 6) are the least wealthy: there is little variation across the strata, with 86 percent of the NC households in the bottom two wealth quintiles (compared to only 7.5 percent in the CW region). While these dramatic variations in household wealth are not immediately apparent in the sustainability survey results presented in this report, it should be remembered that the sanitation strata surveyed do not represent equal proportions of the ODF population.

Figure 6. Northern Cluster (NC): household wealth quintiles, by strata



The wealth distribution data support the USHA decision to implement a different CLTS+ approach in the NC region, as the program had to reach different population segments in each region: largely middle-income households in the CE region; higher income households in the CW region; and low-income households in the NC region.

4.3 Sanitation outcomes

The revisions made to the USHA endline survey data were completed after the sustainability study sanitation strata had been selected. As a result, some of the toilets in the sanitation strata containing washable floor toilets had to be re-classified.

The charts presented below summarize the extent of the revisions that were made following the data cleaning process. The main revisions were in four sanitation strata:

- CE-1: 19 percent USHA endline toilets reported with washable floors were found to have non-washable floors, and were reclassified;
- CE-2: 21 percent USHA endline toilets reported with washable floors were found to have non-washable floors, and were reclassified;
- CW-1: 7 percent USHA endline toilets reported with washable floors were found to have non-washable floors, and were reclassified; and
- NC-1: 18 percent USHA endline toilets reported with washable floors were found to have non-washable floors, and were reclassified.

Similarly, some of the toilets selected in the NC-2 and NC-3 strata had washable drophole areas with non-washable floor areas (outside the sanplat or small slab), thus were a slightly higher service level than anticipated. The figures below present the data on the USHA endline sanitation status, confirming that 5 percent of the NC-2 toilets and 25 percent of the NC-3 toilets had washable drophole areas.

Figure 7. Central Eastern (CE): USHA endline toilet status

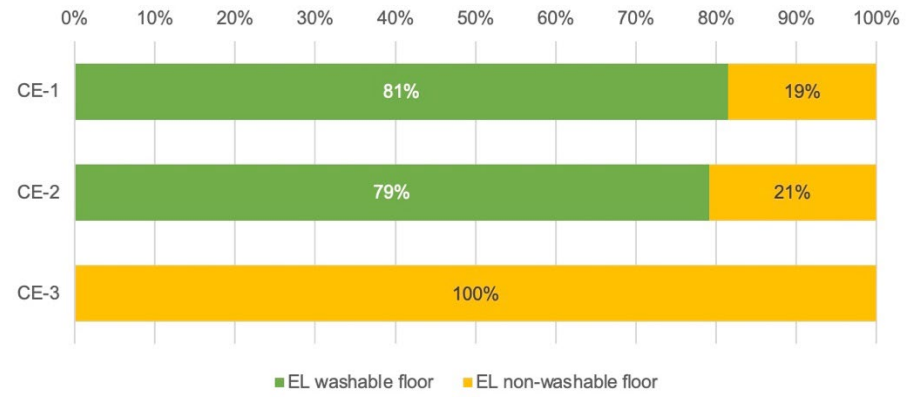


Figure 8. Central Western (CW): USHA endline toilet status

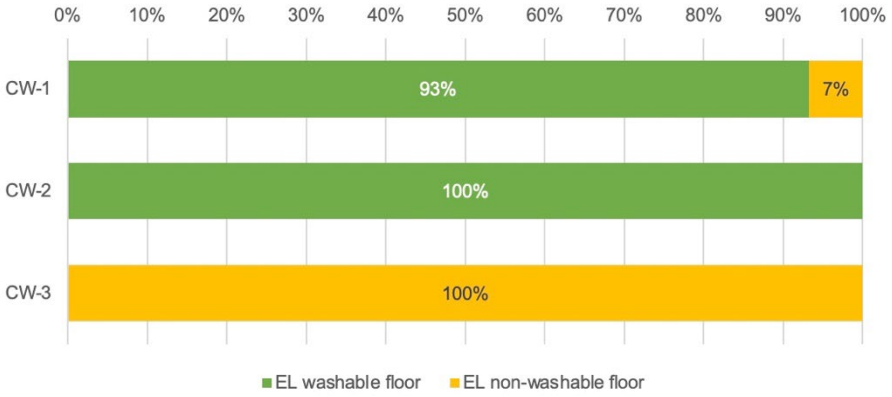
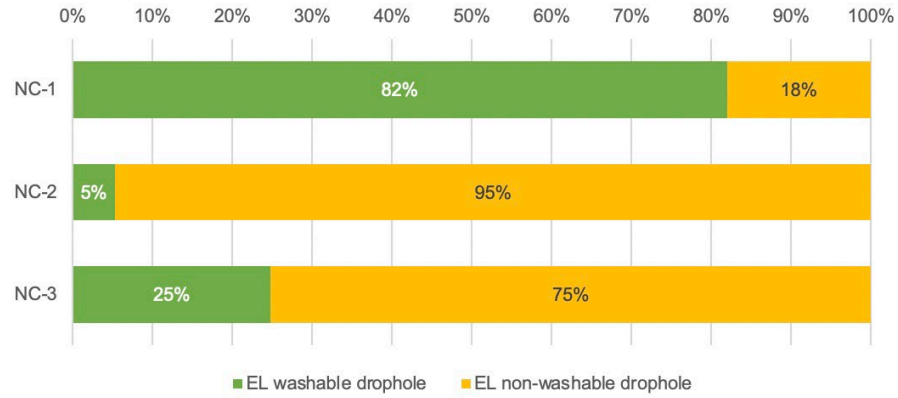


Figure 9. Northern Cluster (NC): USHA endline toilet status



4.3.1 SUSTAINED USE OF TOILETS

The sustainability survey collected a variety of data on sustained toilet use and functionality through both interview questions to household respondents, and from observation of the toilet by the survey enumerators.

Figure 10. Toilet use, functionality, and excreta containment by region

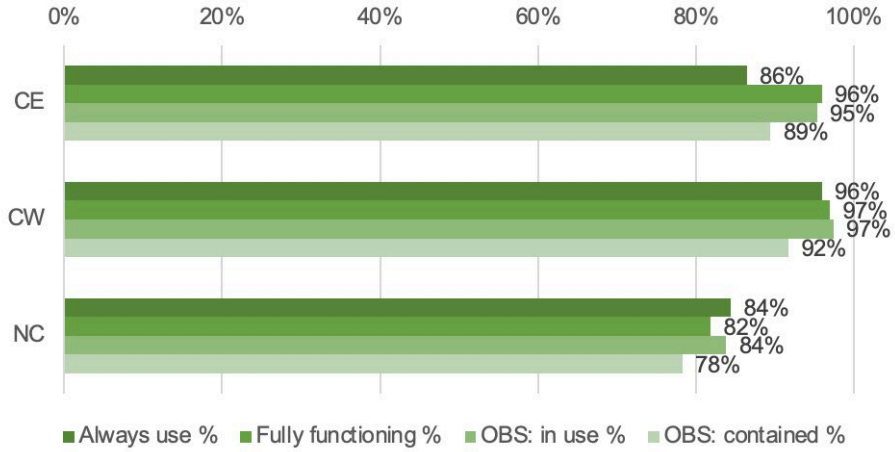


Figure 10 compares four similar indicators on toilet use and functionality:

- Interview: self-reported toilet use (Yes, always use);
- Interview: self-reported toilet functionality (Yes, fully functional);
- Observation: evidence of regular toilet use[19]; and
- Observation: presence of an adequate toilet floor (excreta containment)[20].

The toilet use and functionality data were reasonably consistent in each region, with similar findings from the interview data and observation "evidence of use" data.

Occasional toilet use

A review of the survey findings for the 156 households who reported occasional toilet use ("sometimes use") found that most of these toilets remain functional, except in the NC region where 40 percent of these "occasional use" toilets were reported to be either non-functional (collapsed, full or no latrine) or only partly functional. The main factors that affected occasional toilet use were:

1. Toilets not clean (44 percent);
2. Latrines more than three years old (51 percent to 56 percent);
3. Toilets shared with others (35 percent to 77 percent);
4. No roof or inadequate privacy (32 percent to 36 percent); and
5. Pressure to build a toilet (30 percent to 31 percent).

Around half of the toilets used by these 156 households were reported to be improved basic toilets (with washable floors and permanent superstructures) which, when combined with the main factors listed above, suggests that occasional use is a behavioral issue rather than something related to the quality or durability of the toilet.

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[19] Indicators of toilet use included: well-trodden path and latrine in good condition (or negative indicators: access blocked by plant growth, drophole blocked or unusable, latrine in poor condition and difficult to use).

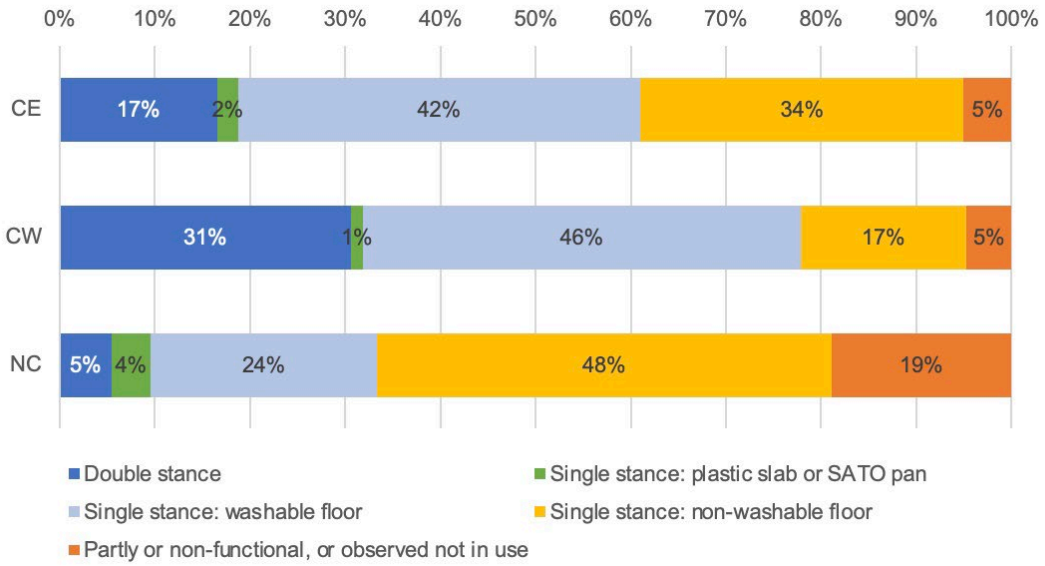
[20] Excreta were not considered contained if the toilet floor was inadequate (visible gaps or holes other than drophole) or there was no floor (open pit or other large openings).

4.3.2 TOILET TYPES

Almost all of the toilets observed in the sustainability survey were dry toilets with a simple drophole (i.e., not flush or pour-flush toilets) built directly above a pit[21].

Figure 11 presents the main toilet types observed by region. Between 5 percent and 31 percent of the observed toilets were double stance toilets with two cubicles and two dropholes. Most of these toilets had superstructures made from durable materials (e.g., burnt brick walls and corrugated iron roofs), and some were more expensive models with separate bathing cubicles and a "curtain wall"22 constructed in front of the toilet block. Double stance toilets were most prevalent in the CW region (31 percent of all observed toilets).

Figure 11. Main toilet types observed by region



Relatively few of the single stance toilets, between 0.3 percent (NC) and 2.2 percent (CE), included "Safe Toilet" plastic toilet pan (SATO) pans (or, in a few cases, another type of plastic pan). A further 4 percent of the toilets in the NC region had plastic slabs. Most of these plastic slabs were United Nations High Commissioner for Refugees (UNHCR) slabs obtained from the IDP camps that previously operated in the region.

SATO pan sales data indicate that BRAC sold 41,000 SATO products in the three regions, and that independent sales aggregators sold another 34,000 SATO products. While these high SATO sales figures might be expected to be visible in the toilet types observed in the sustainability survey, most of the SATO sales were in urban populations outside the main USHA program areas[23].

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21 The sustainability survey (4O.13) suggested that between 2 percent (NC) and 4 percent (CE) of the observed toilets had offset pits. However, none of these toilets had flush or pour-flush pans, and photograph checks confirmed that they were all dry toilets with direct pits.

22 Freestanding wall in front of the toilet building that hides the toilet doors and any washing cubicle (e.g., acts as a curtain in front of the toilet).

23 USHA (2020) *SATO Early Purchasers Survey* Kampala: USHA, learning brief.

4.3.3 TOILETS WITH WASHABLE FLOORS

The 2019 JMP sanitation monitoring definitions24 require that improved sanitation facilities have slabs made from durable materials that are easy to clean. The definitions also state that "slabs made from durable materials [e.g., concrete, bricks, stone, fiberglass, ceramic, metal, wooden planks or durable plastic] *that are covered with a smooth layer of mortar, clay or mud should also be counted as improved*".

The JMP monitoring definitions suggest that the durability of the toilet floor or slab is critical to its long-term use, thus that only toilet slabs made from durable materials should be counted as improved sanitation facilities. But the JMP definitions also recognize that toilet durability is not decreased by a smooth covering of cement or mud and imply that these toilet floors should still be considered 'easy to clean' if the floor is smooth, hard-packed, and easy to sweep and clean.

The USHA program defined an improved basic toilet as a not-shared toilet with a washable slab or floor. In order to examine outcomes in these different toilet types, the sustainability survey examined sustained toilet use and hygiene outcomes across three main floor types:

1. Washable floor (e.g., concrete, cement, tile or terrazo);
2. Smooth non-washable floor (e.g., smooth mud, smooth timber floor); and
3. Rough non-washable floor (e.g., rough or uneven mud, logs, or other).

The sustainability survey also separately assessed the material of the drophole area:

1. Washable drophole (e.g., concrete, cement, ceramic pan, or plastic pan); and
2. Non-washable drophole (e.g., mud, wood, other).

Figures 13 to 15 below present the sustained toilet use data on the main toilet floor types, broken down by region and by sanitation strata, including separate categories for partly functional toilets, toilets with "inadequate slabs", and non-functional toilets. These data are further elaborated in Section 4.3.5 below.

4.3.4 TOILETS WITH INADEQUATE SLABS OR OPEN PITS

The sustainability survey collected observation data on the structural toilet slab above the pit. The term "structural slab" is used to denote the elements of the toilet interface that have the structural strength to support the user above the pit. The structural slab may be separate from the toilet floor surface (e.g., wooden logs provide the structure, but are then covered with other materials), or one component may provide both the structural strength and the finished floor (e.g., a reinforced concrete slab).

Common toilet slab configurations observed in the USHA program area included:

- Wooden log support and mud covering;
- Wooden log support, mud covering, and thin cement screed (2 centimeters [cm])'
- Wooden log support, mud covering, and concrete sanplat (60 x 60 cm);
- Wooden log support, mud covering, and plastic slab;
- Wooden log support, mud covering, and thick cement screed (10 cm); and
- Reinforced concrete slab.

A number of UNHCR plastic slabs were observed (see Section 4.3.2 above) in the NC region. These slabs are designed to be free-standing structural slabs, able to take a central load of 150 kilograms (kg), but most NC households installed them on top of an existing log and mud floor to provide a washable drophole area (like a sanplat).

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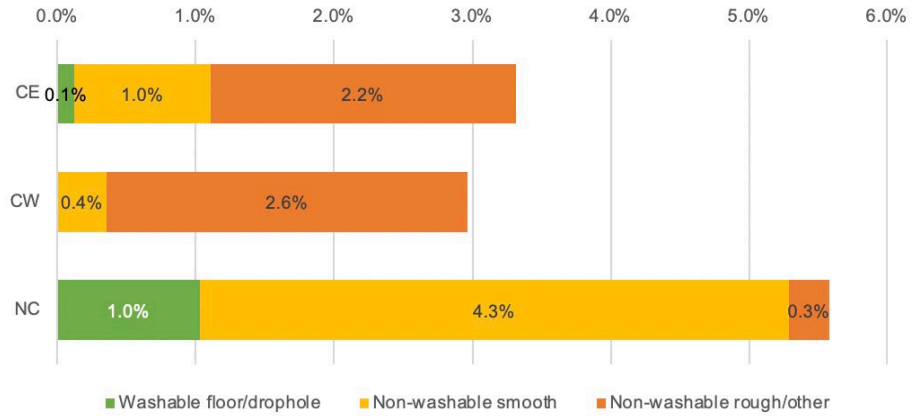
24 UNICEF (2019) Table 3: Monitoring definitions for sanitation facilities.

The survey data on structural toilet slabs did not reliably differentiate between concrete slabs and toilet floors supported by logs. The structural element of the slab or platform is generally concealed underneath a layer of mud or cement screed. In many cases, the enumerator recorded the surface material of the toilet floor (e.g., mud, bricks, cement) as the structural toilet slab, without determining what provided the structural support to this surface layer.

The survey data indicated toilet interfaces that did not adequately contain the excreta in the pit. Two "inadequate containment" categories were recorded:

1. Inadequate toilet slab: visible gaps or holes (other than the drophole); and
2. No toilet floor or slab: large openings in the slab, or an open pit.

Figure 12. Proportion of inadequate toilet slabs and open pits, by region



The structural toilet slab data suggest that 3 percent to 6 percent of toilets have inadequate slabs (or open pits). Very few of these inadequate toilet slabs had washable floors: only 1 percent (from 5.6 percent) in the NC region; 0.1 percent in the CE region, and none in the CW region.

Household "no latrine" surveys

Where the household reported no toilet, or no use of a toilet, the "No Latrine" module was used to interview the household respondent. The data from these "no latrine" interviews provides useful information on the main reasons for non-functional, not-in-use and abandoned toilets:

- CE: 11 households without toilets (four collapsed pits; three never owned, sharing; two collapsed superstructures; one full toilet collapse; and one full pit);
- CW: Three households without toilets (two full pits that collapsed and were considered too expensive to replace; one tenant never owned); and
- NC: 76 households without toilets (30 collapsed superstructures; 28 collapsed pits, slabs and superstructures; eight never owned, including five new households; five full pits; and five new households or sharing problems).

The "no latrine" surveys confirm that, while toilet collapses were quite rare, they were the most common reason given by households who had abandoned their toilets and reverted to open defecation.

4.3.5 SUSTAINED USE OF TOILETS, BY FLOOR AND DROPHOLE TYPE

Figures 13 to 15 present the sustainability survey data on the observed toilet floor types for each of the three sanitation strata in the CE and CW regions, and on the observed toilet drophole area types for the three strata in the NC region.

For each floor or drophole type, the data are presented separately for fully functional toilets and partially functional toilets, alongside the proportion of households found to have either no toilet or a non-functional toilet.

In four of the sanitation strata (CE-1 and CE-2, CW-1 and NC-1), an additional chart is provided below to highlight how the sustained outcomes varied for toilets based on their different endline floor types (washable and non-washable).

Table 5. Sustained use of washable floor toilets, by strata

Survey stratum	EL Washable %	SS Washable %	Sustained %[25]
CE-1	81%	67%	83%
CE-2	79%	70%	89%
CE-3	0%	42%	++
CW-1	93%	82%	88%
CW-2	100%	93%	93%
CW-3	0%	53%	++
NC-1	82%	56%	68%
NC-2	5%	5%	100%
NC-3	25%	25%	100%

Key: EL = Endline; SS = Sustainability Survey; Washable = Washable toilet floor or drophole; Sustained = fully functional (observed in use) toilets.

Table 6. Sustained use of non-washable floor toilets, by strata

Survey stratum	EL Non-washable %	SS Non-washable %	Sustained %
CE-1	19%	19%	100%
CE-2	21%	21%	100%
CE-3	100%	87%	87%[26]
CW-1	7%	7%	100%
CW-2	0%	0%	-
CW-3	100%	85%	85%
NC-1	18%	15%	83%
NC-2	95%	64%	67%
NC-3	75%	50%	67%

Key: EL = Endline; SS = Sustainability Survey; Non-washable = Non-washable toilet floor or drophole; Sustained = fully functional (observed in use) toilets.

Overall, the sustained use results (in the three main sanitation categories for each region) suggest that the washable floor toilets in the CW region were marginally better sustained than those in the CE region, and confirm that sustainability rates in the NC region were 20 percent lower than in the other two regions:

- CE: 83 percent to 89 percent sustained use;
- CW: 85 percent to 93 percent sustained use; and
- NC: 67 percent to 68 percent sustained use.

Little variation was found in the sustainability rates for non-washable and washable floor toilets in the CE and CW regions: 85 percent to 87 percent sustainability rates in the CE-3 and CW-3 non-washable

[25] Sustained % = SS washable % / EL washable % (proportion of toilets that had washable floors at endline that are still functional and in sustained use).

[26] About half of these CE-3 had been upgraded to toilets with washable floors.

floor toilets compared to 83 percent to 93 percent in the washable floor toilets in the CE-1, CE-2, CW-1, and CW-2 strata.

In part, the good sustainability rates in the CE-3 and CW-3 strata reflect the upgrading process revealed by the sustainability survey. Around half the households surveyed in these two strata had upgraded their toilets with washable floors since the endline survey (42 percent upgrades in CE-3 and 53 percent upgrades in CW-3).

Figure 13. Central Eastern (CE): Main toilet floor types by sanitation strata

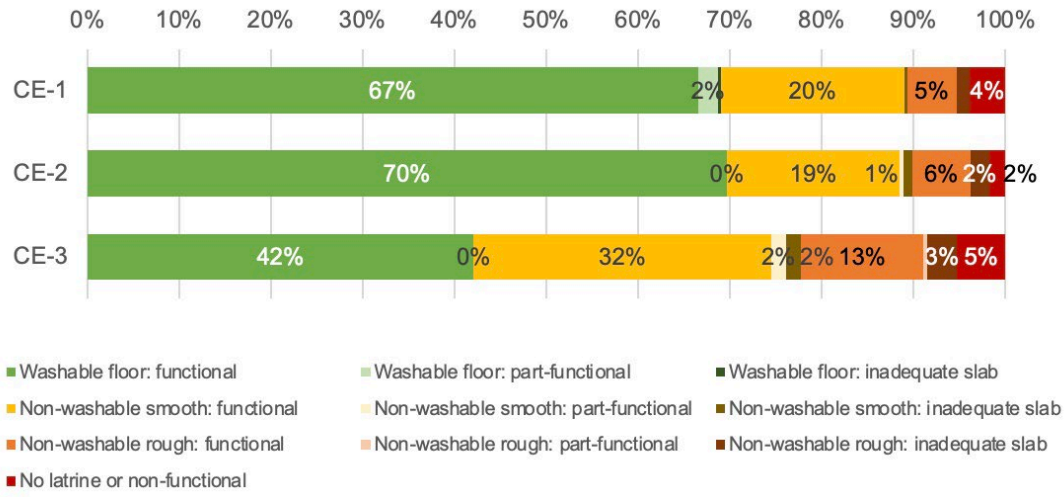
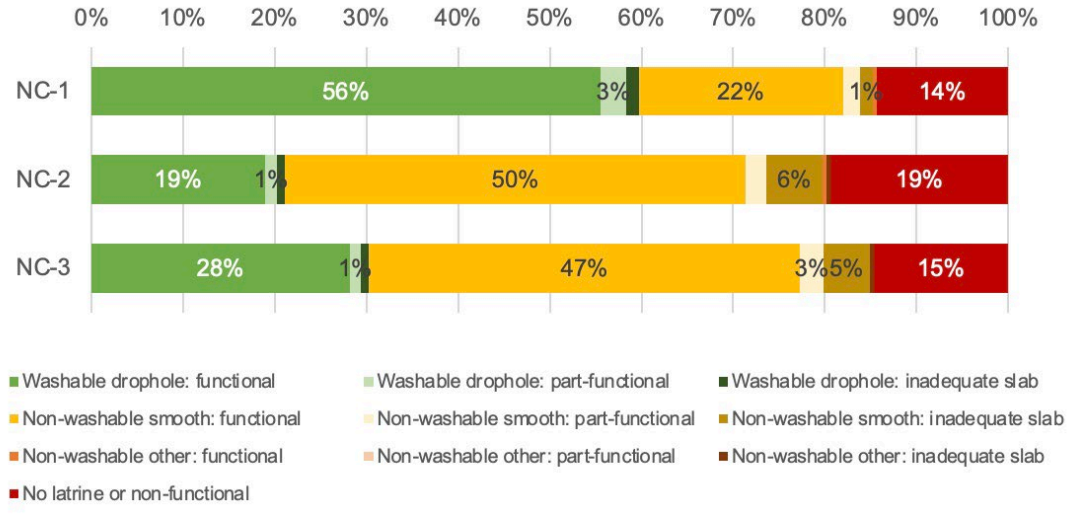


Figure 14. Central Western (CW): Main toilet floor types by sanitation strata

Figure 15. Northern Cluster (NC): Main toilet floor types by sanitation strata



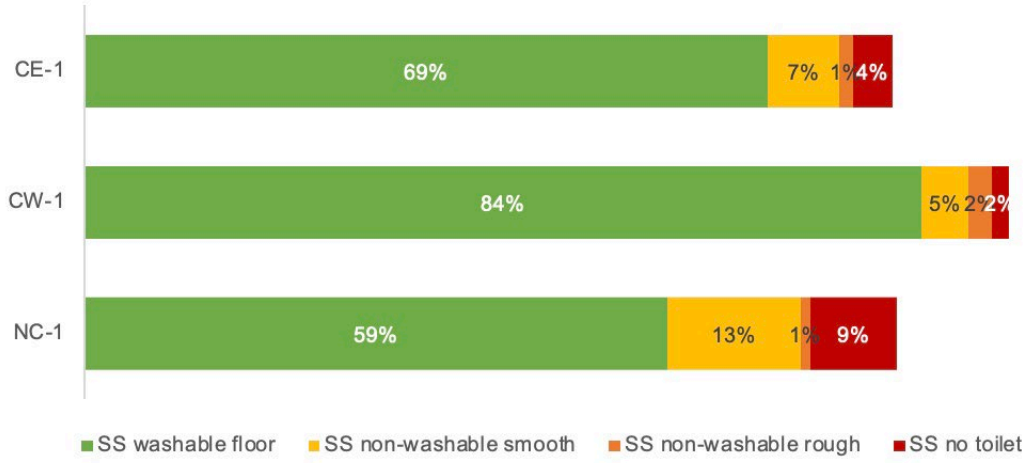
Sustained toilet use: households who built new toilets with washable floors

Three of the sanitation strata (CE-1, CW-1 and NC-1) include only households who built new toilets (or upgraded existing toilets) with washable floors. All of these households previously had either no toilet or used a toilet with a non-washable floor.

These three strata include some households with re-classified toilets (7 percent to 21 percent now classed as toilets with non-washable floors). Among the households reported to use new or upgraded toilets with washable floors by the endline survey (i.e., excluding the reclassified non-washable floor toilets), the higher wealth of the CW-1 stratum is apparent: 80 percent to 84 percent of the CE-1 and NC-1 households had no toilet at baseline, whereas only 40 percent of the CW-1 households had no toilet at baseline.

Figure 16 below presents the sustained toilet use data for the toilets with washable floors (excluding the non-washable floor toilets) to allow a comparison of the rates of change to lower levels of service found by the sustainability survey.

Figure 16. Toilets with washable floors: changes from endline, by strata



There were far fewer new toilets with washable floors in the ODF villages in the NC region than in the CE region (only 10 percent in NC compared to 45 percent in CE), so these results are far less representative of the overall NC situation. The rates of sustained use varied from 72 percent to 91 percent across the three strata, with the highest sustained use of toilets found in the CW-1 stratum:

- CE-1: 85 percent sustained use of washable floor toilets (69 percent/81 percent);
- CW-1: 91 percent sustained use of washable floor toilets (84 percent/93 percent); and
- NC-1: 72 percent sustained use of washable floor toilets (59 percent/82 percent).

The majority of the new toilets that did not sustain washable floor status had degraded to non-washable floors (with most of this degradation thought likely to be from the break-up of thin screed floors):

- CE-1: 11 percent degraded to non-washable floor toilets (8 percent/81 percent);
- CW-1: 8 percent degraded to non-washable floor toilets (7 percent/93 percent); and
- NC-1: 18 percent degraded to non-washable floor toilets (14 percent/82 percent).

A similar result was found in the CE-2 stratum (9 percent degradation of washable floor toilets to non-washable floors), suggesting that a relatively high proportion (8 percent to 18 percent) of the new or

upgraded washable floors were constructed with low-quality, thin cement screeds that have degraded within only 1–2 years of completion.

USHA also promoted a thick cement screed floor, spread on top of a compacted earth and aggregate sub-base. The village visits suggested that these thick cement screeds were durable and often hard to distinguish from a concrete slab. However, because of affordability constraints, most households installed thin cement screeds with no sub-base and limited durability.

Sustained toilet use: households with non-washable floor toilets

Four of the sanitation strata (CE-3, CW-3, NC-2, and NC-3) include households who were using toilets with non-washable floors or dropholes at endline. Two of these strata (NC-2 and NC-3) include some households with mis-classified toilets (5 percent to 25 percent now classed as toilets with washable dropholes).

Figure 17 below presents the sustained toilet use data for the toilets with non-washable floors or dropholes (excluding the washable floor toilets) to compare the rates of change to other levels of service found by the sustainability survey.

Figure 17. Toilets with non-washable floors: changes since endline, by strata

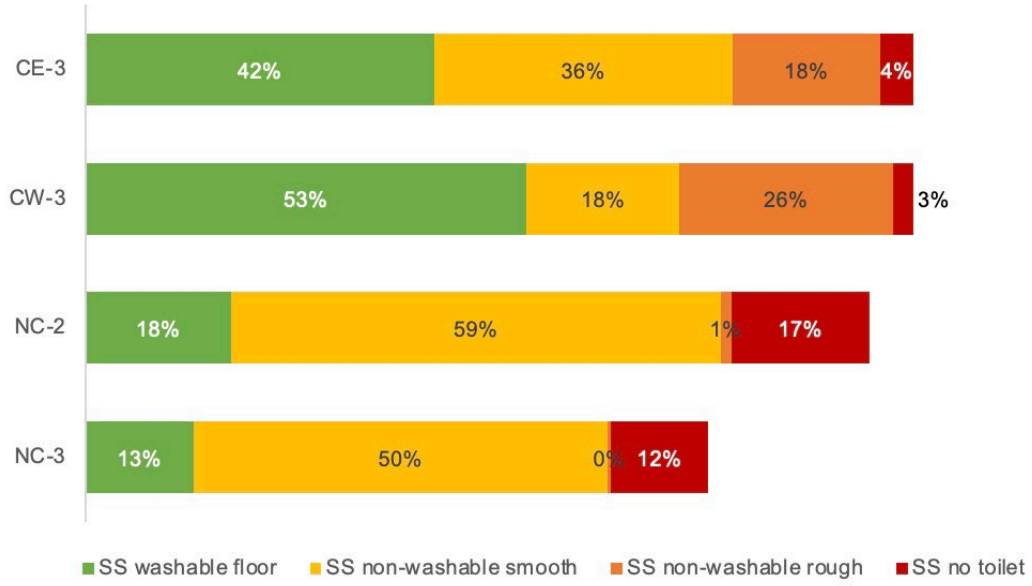


Figure 17 highlights the significant gains in washable floor (or washable drophole) toilets found in these four strata:

- CE-3: 42 percent households upgraded to toilets with washable floors;
- CW-3: 53 percent households upgraded to toilets with washable floors;
- NC-2: 19 percent households upgraded to washable drophole toilets (18 percent/95 percent); and
- NC-3: 17 percent households upgraded to washable drophole toilets (13 percent/75 percent).

The upgrades to non-washable drophole toilets in the NC strata were slightly offset by some degradation observed among the washable drophole toilets reported at endline, particularly in the NC-3 stratum: 7 percent of the 25 percent NC-3 washable drophole toilets (29 percent) degraded to non-washable drophole toilets, so that the overall NC-3 gain in washable drophole toilets was relatively small (3 percent gain plus 3 percent part-functional or inadequate slab).

much higher proportions of non-functional toilets in the NC region: the NC-2 stratum had the highest percentage of non-functional toilets (19 percent), with only slightly lower percentages in NC-3 (16 percent) and NC-1 (11 percent). The NC-2 stratum comprised households who practiced open defecation at baseline and then built toilets with non-washable dropholes, but these households have only slightly worse outcomes than the NC3 households, all of whom already had toilets at baseline.

These findings suggest that a coarse assessment of toilet floor types (washable or non-washable) is insufficient to predict durability. The type of underlying structural toilet slab, and the thickness and construction quality of any washable floor material, appear to be more significant sustainability factors. In addition, the context factors, such as poverty levels and baseline sanitation coverage, appear to have a more significant effect on sustained use, with sustainability losses twice as high in the NC region (for both washable drophole and non-washable drophole toilets).

4.3.6 TOILET SUPERSTRUCTURE TYPES

As noted earlier, the USHA program promoted toilets with durable superstructures, including durable walls, roof and door. The intention was that a durable and attractive superstructure would protect the toilet interface and substructure from rain and other climate events, provide privacy to the toilet users, and encourage hygienic outcomes and sustained use.

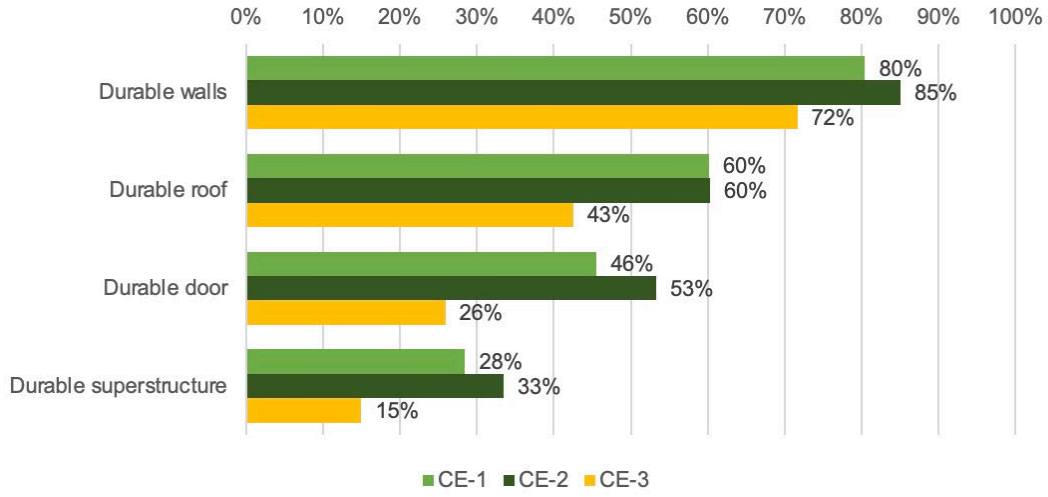
The sustainability survey collected data on all of the main elements of the toilet superstructure, with enumerators asked to class each superstructure component (walls, roof and door) into the following categories[27]:

- Durable and private;
- Non-durable and private;
- Inadequate (not private or degraded/damaged); or
- None.

As expected, toilets with washable floors tend to have better superstructures than toilets with non-washable floors. However, the differences are not large: in most cases, the difference in the proportion of toilets with durable superstructure components is 10 percent to 25 percent (between washable floor and non-washable floor toilets).

[27] With minor variations to reflect the particular component (e.g., curtain wall) and mention of the typical materials considered durable or non-durable for each component.

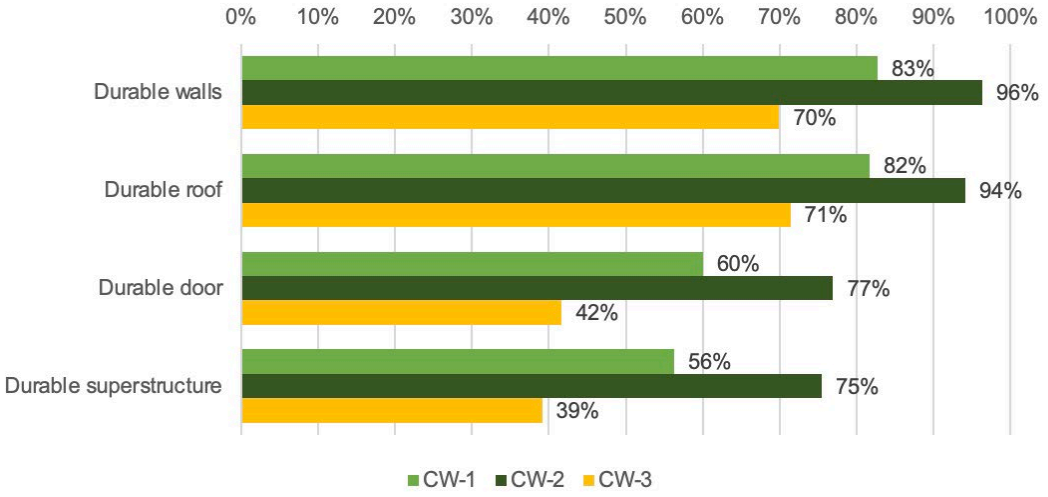
Figure 18. Central Eastern (CE): Durable toilet superstructures[28]



In the CE region, the majority of toilets have durable walls and roofs (see Figure 18), but durable doors are less common (around half the CE-1 and CE-2 toilets have durable doors, but only 26 percent of the CE-3 toilets).

Around 30 percent of the CE-1 and CE-2 toilets have a full durable superstructure, compared to only 15 percent of the CE-3 toilets. On average, 90 percent of the full durable superstructure toilets have washable floors (i.e., only 10 percent of toilets with non-washable floors have full durable superstructures).

Figure 19. Central Western (CW): Durable toilet superstructures

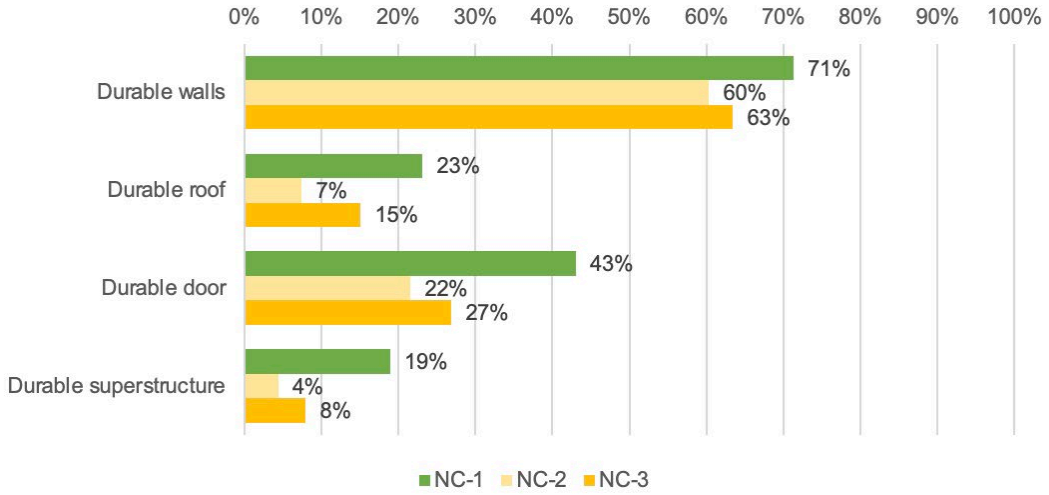


Durable toilet superstructures are far more common in the CW region, with even the CW-3 non-washable floor toilets reporting more durable superstructures (39 percent, see Figure 19) than all of the CE strata (15 percent to 33 percent). Three-quarters of the CW-2 toilets and 56 percent of CW-1

[28] Durable superstructure = all durable components (e.g., durable walls, roof and door).

toilets have full durable superstructures. As in the CE region, a very high proportion (95 percent) of durable superstructure toilets also have washable floors.

Figure 20. Northern Cluster (NC): Durable toilet superstructures



Far fewer durable toilet superstructures were observed in the NC region, particularly in the two strata comprised largely of non-washable floor toilets (NC-2 and NC-3). Nonetheless, the proportion of toilets with durable walls was 60 percent to 71 percent (only 10 percent to 15 percent lower than in the CE strata), with little variation between the toilets with washable floors and toilets with non-washable floors.

The lower superstructure quality in the NC region was also evident in the data on durable toilet roofs and doors: only 7 percent to 23 percent of NC toilets had durable roofs (compared to CE and CW averages of 55 percent and 82 percent), while 22 percent to 43 percent had durable doors. Overall, 19 percent of the CE-1 toilets had full durable superstructures, compared to only 4 percent to 8 percent in the NC-2 and NC-3 toilets.

The village visits suggested that the quality of the brick walls (and other superstructure components) was generally lower in the NC region, with un-burnt mud bricks often used, and evidence of poor construction techniques[29]. As a result, many of the non-durable toilet superstructures were already partially degraded (e.g., rain affected), and appeared unlikely to remain in sustained use for much longer.

4.3.7 SUSTAINED USE OF TOILETS, BY WALL TYPE

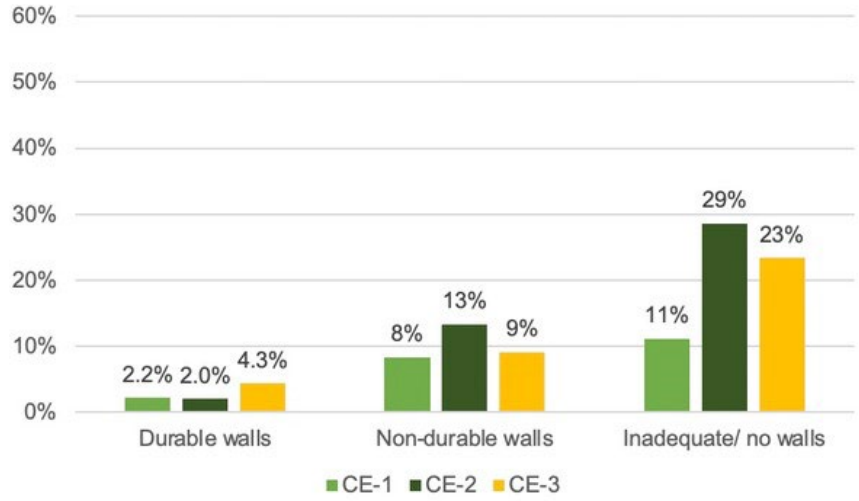
The survey data suggest weak associations between the different superstructure types and the sustained use of toilets. The strongest association was between wall type and sustained use, with the presence of non-durable walls and inadequate/no wall associated with a significantly higher proportion of sustainability problems.

An analysis of the proportion of "not in use" and "inadequate/no slab toilets" associated with each superstructure type found that only 2 percent to 3 percent of CE and CW toilets with durable walls were not in use or had inadequate toilet slabs, whereas on average 10 percent to 12 percent of CE and

[29] For example, a number of toilets were observed with bricks laid vertically (instead of flat) to reduce the number of bricks used to construct the walls. This construction greatly decreases the stability of the walls. In addition, the roofs often did not have adequate overhangs, which meant that any non-durable or badly constructed walls were badly affected by rain.

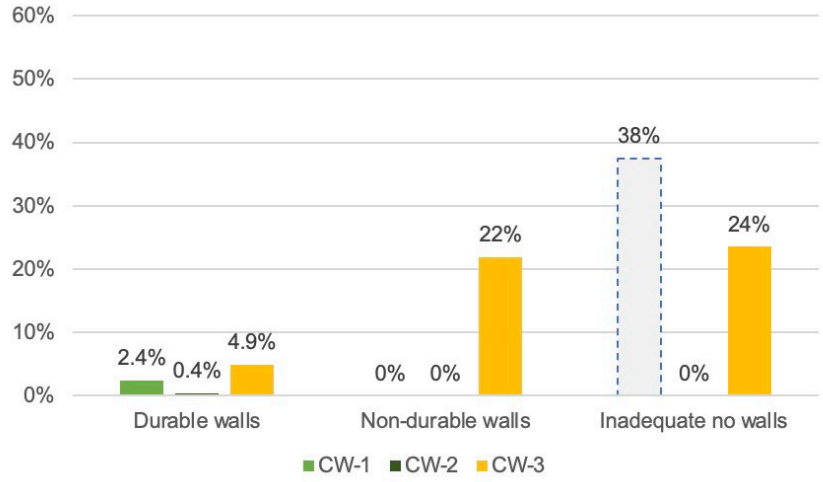
CW toilets with non-durable walls were not in use or had inadequate slabs (see Figure 21 and Figure 22 on toilet sustainability losses by wall type for each sanitation strata).

Figure 21. Central Eastern (CE): Toilet sustainability losses, by wall type



The quality of the toilet roof had a slightly lower effect on the sustained use of toilets (CE: 2 percent to 8 percent loss for non-durable roofs, 12 percent to 15 percent for no roof) than that associated with toilet walls (CE: 8 percent to 13 percent loss for non-durable walls), and the lack of a door (or an inadequate or non-durable door) had even less effect (CE: 0 percent to 10 percent loss).

Figure 22. Central Western (CW): Toilet sustainability losses, by wall type

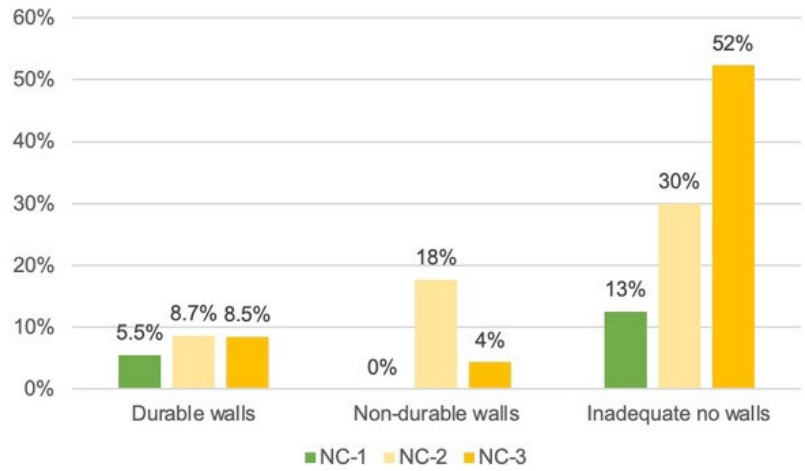


The sustainability losses associated with different wall types in the CW region highlight the very low losses associated with washable floor toilets in the CW-2 stratum. As 96 percent of the CW-2 toilets have durable walls, and the overall sustainability losses (across all of the different toilets in this stratum) are very low[30], there is little variation in sustained use by toilet wall type. Nonetheless, quite high sustainability losses were reported for CW-3 toilets with non-durable or inadequate/no walls (22

[30] Apart from the 38 percent sustainability loss reported for CW-1 toilets with inadequate/no walls, which is because of a very small sample size in this category (only 10 CW-1 toilets with no walls) so this result has a very high margin of error.

percent to 24 percent)[31]—with similar levels of functionality and use observed for CW-3 toilets with non-durable walls and toilets with no walls.

Figure 23. Northern Cluster (NC): Toilet sustainability losses, by wall type



By far the highest sustainability losses were reported in the NC region. The exception was the NC-1 losses which were comparable with those in the washable floor toilet strata in the CE and CW regions, if twice as high for toilets with durable walls (5.5 percent compared to 2.2 percent to 2.4 percent). While almost two-thirds of the NC toilets had durable walls, the small proportion with inadequate/no walls (6 percent) had very high sustainability losses: 30 percent in NC-2 and 52 percent in NC-3, with 50 percent to 70 percent of NC households apparently unwilling to use toilets with no walls.

4.3.8 USE OF SHARED TOILETS

The JMP sanitation service ladder classes "use of improved facilities shared between two or more households" as a limited sanitation service, while use of a basic sanitation service requires "use of improved facilities that are not shared with other households".

The lower classification of shared toilets by the JMP reflects the way in which the JMP global, regional, and country estimates are generated. The household surveys used by the JMP are multi-sector surveys, which do not include toilet observation32 and are reliant on self-reporting (by household respondents) of toilet type, status, and condition. Given the risk of social desirability bias in self-reports on toilet status and hygiene, the JMP opts to class all shared toilets as a lower level of service because of the higher risk that shared toilets may have unhygienic sanitation outcomes.

Where observation data on toilet hygiene and condition are available, there is no need to adopt the conservative JMP approach, as the observed toilet condition confirms whether the household is using a clean and hygienic shared toilet, which provides the same level of service as a not-shared improved basic toilet, or whether they are using a dirty and unhygienic shared toilet, with a lower level of service.

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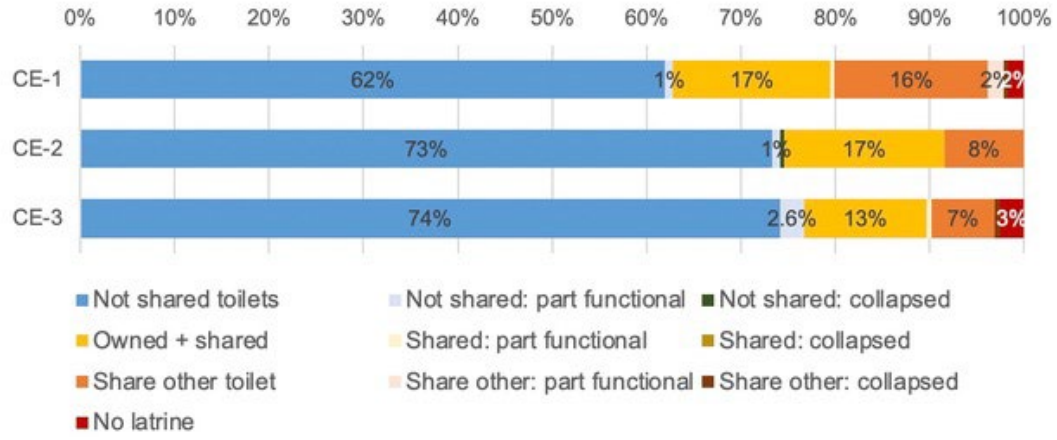
31 All of these toilets were reported by the household to be functional (or partly functional). The classification of non-functional, not in use or "not adequately contained" is based on the observation data from the sustainability survey.

32 Ostensibly because the surveys are already very long, to cover questions on multiple sectors, and toilet observation would increase the time taken. But also because some survey enumerators are not comfortable observing people's sanitation facilities.

Overall data on shared use of household toilets:

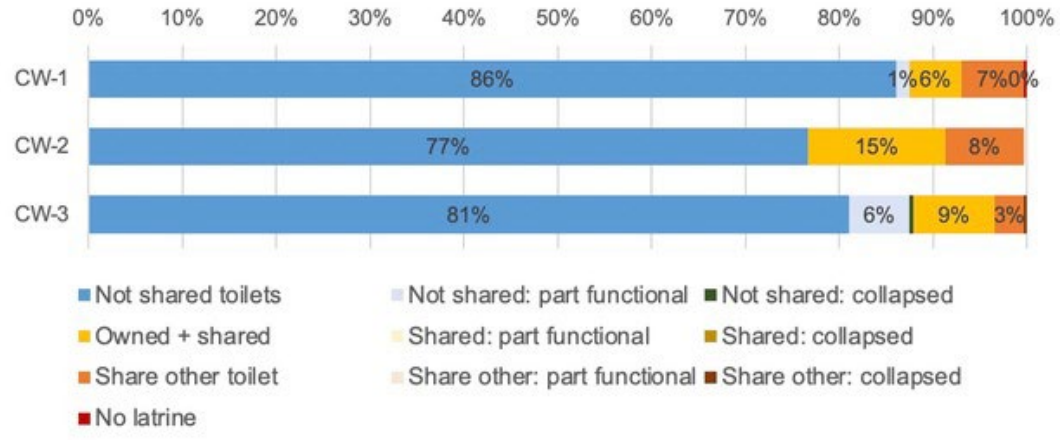
- CE: 71 percent toilets not shared; 29 percent shared (19 percent by two or more households)
- CW: 85 percent toilets not shared; 15 percent shared (7 percent by two or more households)
- NC: 58 percent toilets not shared; 42 percent shared (30 percent by two or more households)

Figure 24. Central Eastern (CE): Shared toilet use, by strata[33]



The three shared toilet use charts show "not shared" toilets, which are used only by the households who own them, in blue. It also shows both sides of the sharing equation: the yellow and orange bars show the proportion of households who reported shared use of toilets—the yellow bars show households who own the toilet used but share it with other households; while the orange bars show households who do not own a toilet and share the use of a toilet owned by another household.

Figure 25. Central Western (CW): Shared toilet use, by strata



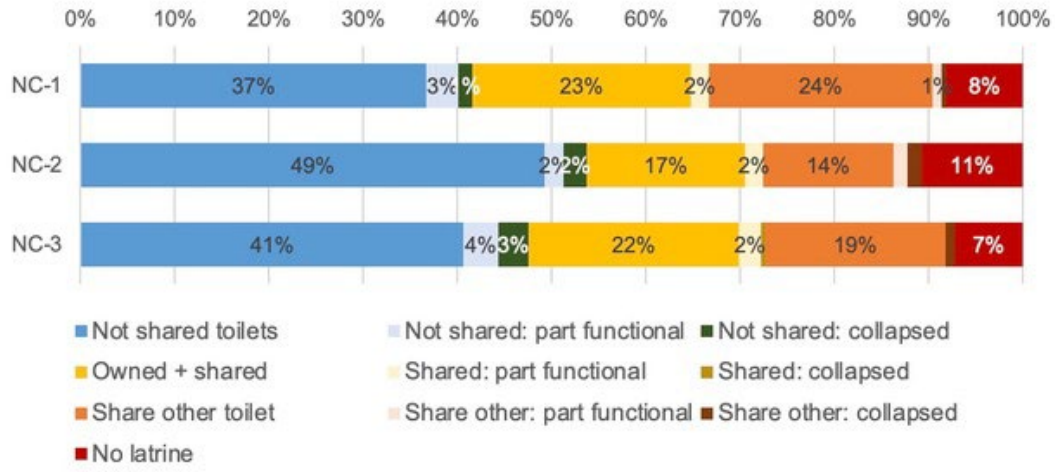
The orange and yellow bars should be a similar length (as for each toilet owner that reports shared use, there should be at least one other household reporting shared use of another toilet), with a slightly

[33] Not shared toilets = households toilets not shared with other households; owned + shared = households who own the toilet used, but share it with other households; share other = households who do not own a toilet, and share a toilet owned by another household.

longer orange bar expected where shared use by more than two households is reported (e.g., in the NC region, where 11 percent of toilets were reported to be shared by 3–5 households).

In general, the "shared other" toilet (orange) category appears to be under-reported in the data presented here. Only the NC-1 stratum shows a higher proportion of households sharing other toilets than of toilet owners who report shared use.

Figure 26. Northern Cluster (NC): Shared toilet use, by strata



The three charts on the shared use of toilets suggest that toilet sharing does not appear to be related to the quality of the toilet, or the type of toilet floor. The sustainability losses in the shared and not-shared toilets were broadly similar in all strata in a region and were often lower in the non-washable floor toilet strata (CE-3, CW-3, NC-2, and NC-3) than in the washable floor toilet strata from the same region.

Sanitation coverage: proportion of households who own toilets

Data on the shared use of toilets is only available from the household interviews (as shared use cannot be inferred from observation of the toilets). As a result, these data are not completely reliable. Nonetheless, the data on the shared use of toilets allow an estimate of the total number of toilets in the sample, given that some households are reporting shared use of a toilet owned by another household.

The shared toilet use data suggest that[34]:

- CE: 83 percent of households own toilets (72 percent private and 11 percent shared);
- CW: 90 percent of households own toilets (85 percent private and 5 percent shared); and
- NC: 76 percent of households own toilets (58 percent private and 18 percent shared).

Sustainability losses associated with shared toilet use

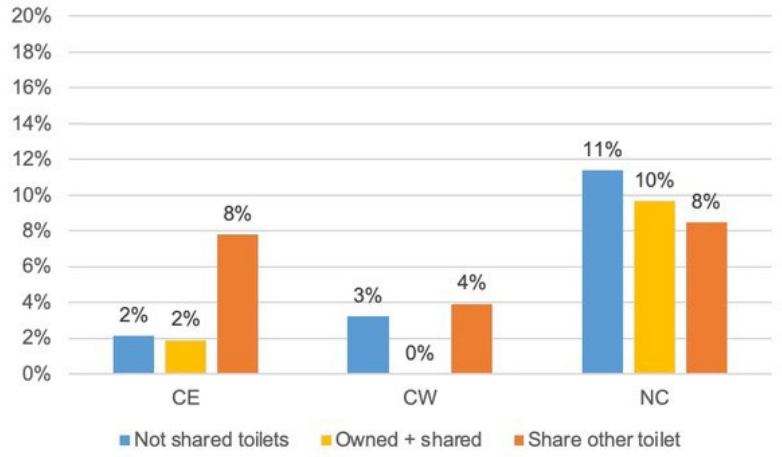
Shared use of toilets is usually considered a lower level of service, with a higher risk of hygiene and sustainability problems related to the larger numbers of people from different households using the toilet, and potential conflicts around who is responsible for cleaning, maintaining, and replacing the toilet.

The survey data on partially functioning and collapsed toilets suggest that shared use does not have major sustainability effects (see Figure 27). Sustainability losses are low in the not-shared and owner-

[34] The households who have no toilet either share use of someone else's toilet (owned by another household), or practice open defecation.

shared categories in the CE and CW regions (2 percent and 1 percent respectively) but are higher in the shared-other category.

Figure 27. Toilet sustainability losses, by shared use category



The sustainability losses were higher in the NC region, but little difference was apparent across the three NC sharing categories (8 percent to 11 percent) suggesting that shared use was not the main factor influencing the sustainability losses in these NC toilets.

4.3.9 JMP IMPROVED BASIC TOILETS

Estimates of the JMP sanitation service level for each region were based on the following criteria (using the USHA definitions of improved basic toilets):

- JMP basic: Not-shared toilets with washable floors (washable drophole areas in NC region);
- JMP limited: Shared toilets with washable floors (washable dropholes in NC);
- JMP unimproved: All other toilets (non-washable floor toilets plus toilets with inadequate slabs or open pits); and
- JMP open defecation: All households that reported not using toilets, or had collapsed, non-functional or observed not-in-use toilets.

Toilets with washable floors were used as a proxy for toilets with slabs made from durable materials, which is the JMP requirement for improved basic toilets. The JMP definition strictly requires that the structural toilet slab is made from durable materials, and there is a question over the use of logs as the structural element in a toilet slab[35] because of concerns over rotting, termite damage and other types of deterioration found in wooden structural components used in rural toilets.

However, both the sustainability survey and the village visits confirmed that people in these ODF villages are generally aware of the types of log that are durable under local conditions, with good evidence that the structural log platforms in these toilets were generally durable and expected to last for 10–15 years. The one exception was in some areas of the NC region, where durable logs were becoming more

[35] The current JMP sanitation monitoring definitions suggest that "wooden planks" are the only timber product considered to be a durable material for a toilet slab, with the suggestion that "sticks, logs and bamboo" should be classified as not durable and, therefore, unimproved. This materials-based monitoring approach is designed to be easy for survey enumerators to utilize but neglects the wide variation in the durability of timber products caused by differences in the type of wood, the thickness and shape of the timber, and any products or coverings applied to the wood.

difficult and expensive to source, which meant that some households were using less durable logs to construct toilet slabs.

4.3.10 JMP SAFELY MANAGED TOILETS

Assessment of the use of safely managed sanitation services was not one of the main aims of this sustainability study. However, because most of the toilets in the USHA program areas are dry pit latrines, assessment of the safe management of the toilets is relatively easy: the two main criteria are a) whether the excreta are safely contained in the pit during the life of the pit; and b) what happens when the pit is full—whether it is covered and closed (replaced by a new pit), or whether it is emptied and re-used (and, if so, what happens to the fecal sludge emptied from the pit).

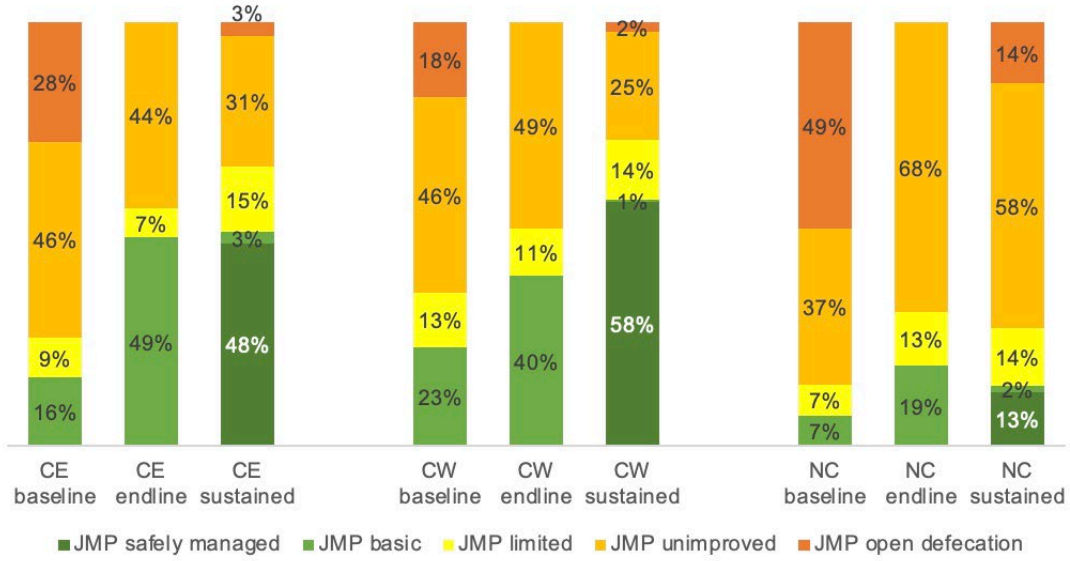
Toilet pit emptying was not reported to be a common practice in rural Uganda, so the household survey focused on safe containment: whether the excreta were safely contained in the toilet pit during the life of the pit (i.e., while it is filling up). The sustainability survey asked the household respondent whether the toilet leaked or overflowed wastes at any time of the year, and observed whether the toilet had any visible outlets or pipes from the pit (or other containment system).

The self-reported data on surface outflows from toilet pits suggest that, as expected, few of these improved basic toilets (with washable floors or dropholes) appear to have unsafely managed containment:

- CE: 95 percent improved basic with no surface outflows (48 percent safely managed);
- CW: 98 percent improved basic with no surface outflows (58 percent safely managed); and
- NC: 90 percent improved basic with no surface outflows (13 percent safely managed).

The JMP service ladders (see Figure 28 below) show the evolution of the sanitation service levels in each region since the USHA baseline survey, with the use of JMP safely managed sanitation services only reported for the sustainability survey (as relevant data were not available from the other surveys).

Figure 28. JMP sanitation service levels in ODF villages, by region



When the sustainability survey results for the three strata in each region are applied to the entire ODF population[36], the JMP service ladders reveal that the proportion of not-shared toilets with washable floors has increased since endline in both of the MBSIA regions, and decreased marginally in the NC region:

- CE: 51 percent sustained use of Improved basic toilets (+2 percent since endline);
- CW: 59 percent sustained use of Improved basic toilets (+19 percent since endline); and
- NC: 14 percent sustained use of Improved basic toilets (–5 percent since endline).

The main focus of this study was on the sustainability of the new and upgraded improved basic toilets built following USHA interventions. The study found that some of these new and upgraded toilets are no longer functional or in use, others have degraded to lower sanitation service levels, and significant proportions of these toilets are shared by several households. However, the strata containing the new and upgraded improved basic toilets comprise only 7 percent to 18 percent of the population of the ODF villages surveyed, and these JMP service ladders demonstrate that the sustainability losses in these new and upgraded toilets are more than offset by the recent gains observed in the much larger population reported to use unimproved toilets at endline.

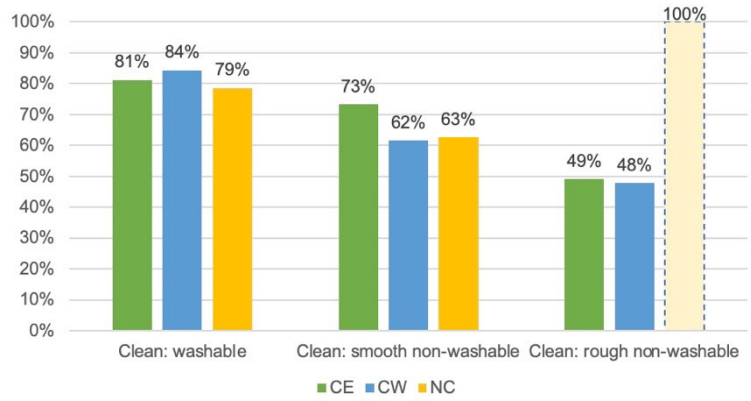
In the CE and NC regions, the sustainability losses almost balanced the gains from the upgrading of non-washable floor toilets (2 percent to 4 percent increase in improved basic toilet coverage plus additional 6 percent to 8 percent gains in the shared use of IBTs). In the CW region, IBT coverage was found to have increased by 19 percent since endline, with most of these gains due to CW-3 households who upgraded their toilets from non-washable floors to washable floors in the 12–18 months since the USHA endline survey.

[36] The regional JMP estimates were constructed by applying the sustained toilet use data from each stratum to the proportion of households in the matching toilet category in the selected ODF villages in the region, with an adjustment for the stratum survey weighting.

4.3.11 TOILET HYGIENE AND CONDITION

The survey provided data on the cleanliness of the toilet interface, and whether the toilet was flyproof (i.e., an adequate drophole cover or other seal, is in place).

Figure 29. Cleanliness of functional toilets, by region and toilet floor type



The data on toilet cleanliness indicate similar outcomes for each toilet floor type: across the three regions, 79 percent to 84 percent of functional toilets[37] with washable floors were clean; 62 percent to 73 percent of toilets with smooth non-washable floors or dropholes were clean; and 48 percent to 49 percent of toilets with rough non-washable floors or dropholes[38] were clean.

Toilets with washable floors were generally cleaner and more hygienic than toilets with non-washable floors. However, the difference between the proportion of clean toilets with smooth non-washable floors and those with washable floors is relatively small—on average, 15 percent more washable floor toilets were clean (66 percent clean smooth non-washable floor toilets versus 81 percent clean washable floors).

Flyproof toilets

The USHA program promoted the use of tight-fitting drophole covers (or SATO pans) and included drophole covers and SATO pans in the standard toilet options offered by USHA masons. The covers are intended to make dry pit toilets flyproof, and limit smell and fly nuisance in the toilet enclosures.

The sustainability survey data reported the following presence of drophole covers (on functional and in-use toilets):

- CE: 11 percent tight-fitting drophole covers + 18 percent loose, not-in-place covers;
- CW: 13 percent tight-fitting drophole covers + 21 percent loose, not-in-place covers; and
- NC: 6 percent tight-fitting drophole covers + 23 percent loose, not-in-place covers.

These data agree with the observations from the village visits. Less than 10 percent of the observed toilets had good drophole covers that were in place, with most of the covers found to be either loose-fitting (not flyproof) or not in place.

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37 Figure 37 only reports cleanliness data for toilets observed to be functional, in use, and providing adequate containment.

38 The NC data on cleanliness in other non-washable dropholes was excluded from the average, as only one toilet from this category was observed.

User satisfaction with household toilets

During the sustainability survey, the household respondents were asked "How satisfied are you with your current toilet?". For households using functional and in-use toilets, the proportion of households who reported themselves either "extremely satisfied" or "satisfied" (responses 5 and 4 on the Likert rating scale) ranged from a low of 49 percent up to 85 percent:

- CE: 62 percent satisfaction with washable floor toilets; 49 percent with rough non-washable floor toilets;
- CW: 85 percent satisfaction with washable floor toilets; 54 percent with rough non-washable floor toilets; and
- NC: 82 percent satisfaction with washable drophole toilets; 67 percent with non-washable drophole toilets.

The toilet satisfaction levels for NC households is similar or higher than those in the other two regions, despite the generally lower quality of the toilets. This finding suggests that the lower quality toilets in the NC region are considered normal and acceptable, perhaps because very few households have better quality toilets.

4.4 Sanitation and hygiene behavior

4.4.1 OPEN DEFECATION

During the household survey, the enumerator checked around the house and in the household compound for any visible human or animal excreta. Similarly, after the Village KII, the lead enumerator was asked to undertake a short transect walk around the village, including to any named (previous or current) open defecation sites, to observe whether human or animal excreta were visible.

The household observation data on visible open defecation are broadly comparable with the proportions of households who reported no toilet or a non-functional toilet (even though these households did not report the practice of open defecation):

- CE: 5 percent OD + 3 percent no latrine = 8 percent total (self-report: 7 percent without latrines);
- CW: 7 percent OD + 2 percent no latrine = 9 percent total (self-report: 5 percent without latrines); and
- NC: 7 percent OD + 14 percent no latrine = 21 percent total (self-report: 23 percent without latrines).

There was little variation in the observed open defecation rates in the three strata of the CE and CW regions, which suggests that sanitation behavior and toilet use in these ODF villages were broadly similar across households with all types of toilet.

The exception was the NC region, where OD rates increased as the quality of the toilet decreased: 5 percent visible OD was observed in households using washable floor toilets; 10 percent OD for smooth non-washable floor toilets; and 33 percent OD for rough non-washable floor toilets[39]. These data suggest that weak sanitation behavior change was associated with lower investment in toilet construction and use.

[39] Although the number of sampled NC households observed to have rough non-washable floor toilets was very low, so this result (33 percent OD) is likely to have a high margin of error.

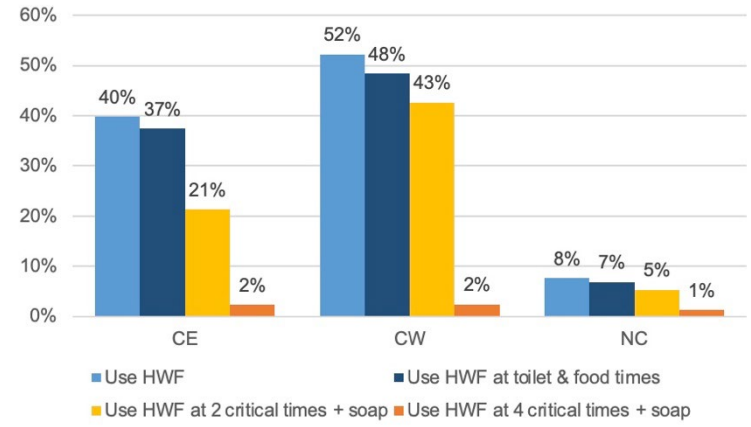
4.4.2 HAND HYGIENE

As noted earlier, the Ministry of Health ODF Verification Parameters required that all households have a handwashing facility (HWF) near the toilet with soap and water available, but the USHA ODF verification criteria did not include any hand hygiene requirements (although USHA did continue to promote good hand hygiene).

One of the reasons for USHA's decision to drop the 100 percent hand hygiene outcome from its ODF requirements was that CLTS interventions often achieve limited change in hand hygiene behavior, and low sustained use of handwashing facilities. CLTS often results in the construction of temporary handwashing facilities (generally tippy taps) before ODF verification. Few CLTS interventions include effective hand hygiene promotion, and there is often limited capacity for monitoring or follow-up.

Figure 30 presents self-reported hand hygiene outcomes for each region. Self-reported data on hand hygiene tend to over-estimate positive outcomes (due to the risk of social desirability bias), so the hand hygiene outcomes observed and assessed by the survey enumerators have been presented for comparison in Figure 31. As expected, the self-reported hand hygiene data are generally higher than the observed outcome data (10 percent to 16 percent higher in the CE and CW regions), although the NC outcome data are similar in both datasets.

Figure 30. Self-reported hand hygiene outcomes, by region



The data are reported as composite assessments of hand hygiene. The self-reported data counts only households who meet the following four criteria:

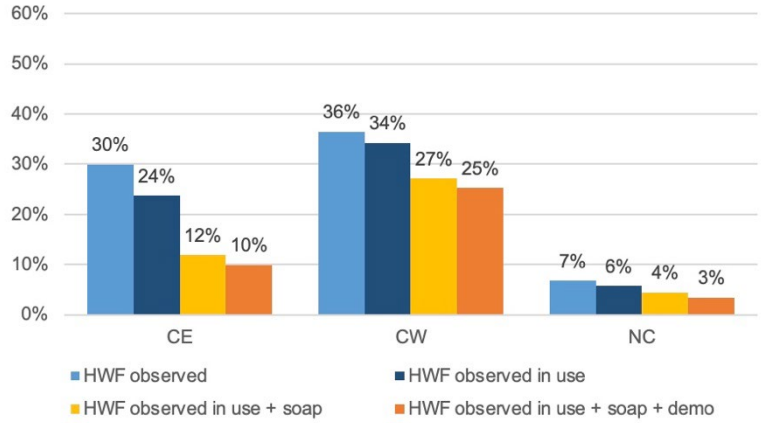
- Reported use of handwashing facility (in chart: Use HWF);
- Reported use of HWF at toilet and food critical times[40] (in chart: Use HWF at toilet and food times);
- Reported use of HWF with soap and water at 2 critical times (in chart: Use HWF at two critical times and soap); and
- Reported use of HWF with soap and water at 4 critical times (in chart: Use HWF at four critical times and soap).

The composite indicator shows the gradually declining proportion of households who meet all of the handwashing criteria. This approach is used to address the challenge of collecting reliable data on handwashing practices related to different activities, at different times of the day, in different places.

[40] Critical "toilet times" for handwashing with soap include: after toilet use, after anal cleansing, and after cleaning a toilet. Critical "food times" include: before eating, before food preparation and before feeding children.

The self-reported use of a handwashing facility with soap and water at four critical times (with infant and animal critical times added[41]) was very low: only 1 percent to 2 percent of households in the three regions met these criteria, which reflects the low practice of handwashing with soap at times that are critical to young children and infants.

Figure 31. Observed hand hygiene outcomes, by region



The observed hand hygiene outcomes are also presented as a composite indicator with four sub-indicators:

- Observed presence of a handwashing facility (in chart: HWF observed);
- Evidence of use of the handwashing facility (in chart: HWF observed in use);
- Evidence of HWF use plus availability of soap and water (in chart: HWF observed in use + soap); and
- Evidence of HWF use plus soap and water plus at least an "average" demonstration of handwashing by a child from the household[42] (in chart: HWF observed in use + soap + demo).

These findings suggest that around 10 percent to 20 percent of CE households have good hand hygiene; around 25 percent to 40 percent of CW households; and only 4 percent to 5 percent of NC households.

4.5 Outcome factors

4.5.1 SUSTAINED USE OF TOILETS BY WEALTH QUINTILES

As the sanitation strata were selected based on toilet floor types, the wealth distribution of toilets with different floor types does not vary much from the overall wealth distribution for each region. The analysis of the sustained use of toilets by households in the different wealth quintiles confirmed that, as expected, wealthier households have higher proportions of toilets with washable floors (or dropholes).

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41 Critical "infant times" for handwashing with soap include: after cleaning or handling child feces; after washing potties or other soiled receptacles; and after disposal (or cleaning) of a used diaper. Critical "animal times" include: after contact with animals, after contact with animal products, or after contact with animal wastes.

42 A child from the household (or adult if no children are present) is asked to wash their hands, and the enumerator observes the handwashing practice and classifies it into one of six categories: excellent (each finger and nail rubbed for a long time, soap used); good (hands rubbed well with soap); average (quick wash with soap); poor (reuse of water in bowl, no soap; very bad (dirty water, no soap); no handwashing.

Figure 32. Central Eastern (CE): Toilet floor types, by wealth quintile

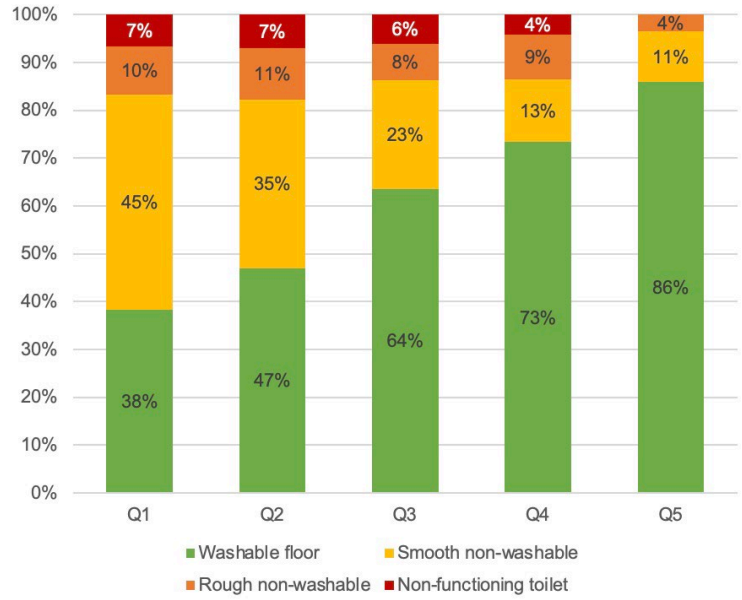
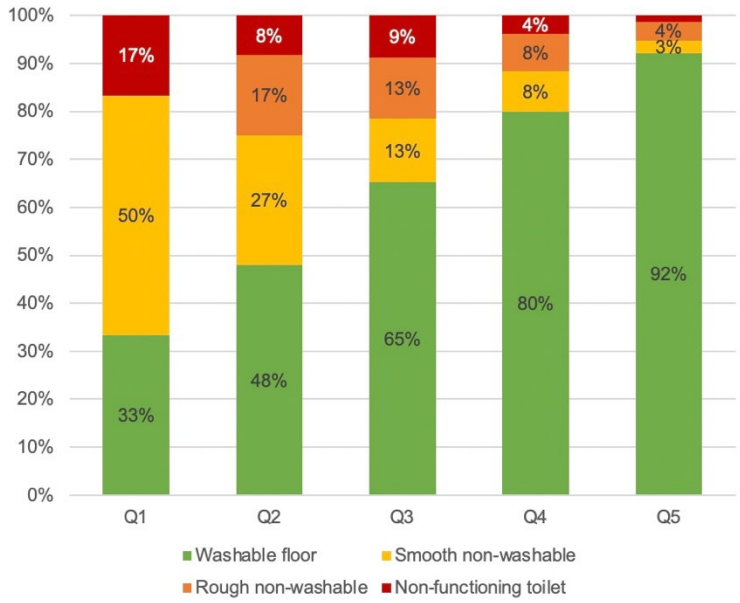


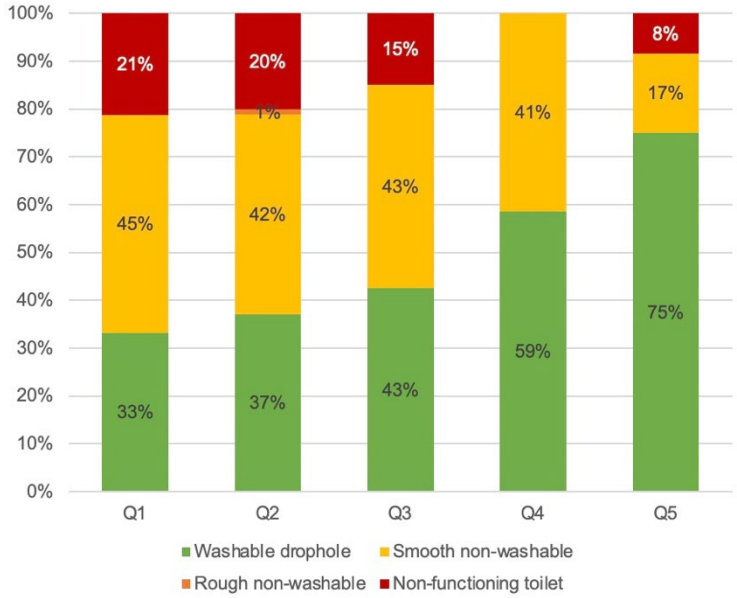
Figure 33. Central Western (CW): Toilet floor types, by wealth quintile



What is not apparent from the wealth distribution charts is that the bulk of the washable floor toilets are used by households in only a few wealth quintiles in each region (related to the different wealth profiles for the selected strata in each region):

- CE: 68 percent of washable floor toilets in Quarter (3) and Q4 quintiles;
- CW: 77 percent of washable floor toilets in Q4 and Q5 quintiles; and
- NC: 80 percent of washable floor toilets in Q1 and Q2 quintiles.

Figure 34. Northern Cluster (NC): Toilet drophole types, by wealth quintile



The wealth distribution data also confirm that the households with non-functioning toilets are broadly similar to those using toilets, with a sizeable proportion of the non-functioning toilets in the CE and CW regions used by households from the top two wealth quintiles (but very few in the NC region as only 7 percent of NC households are in the top two wealth quintiles):

- CE Q4 and Q5: 20 percent of all non-functioning toilets (5 percent of all toilets)[43];
- CW Q4 and Q5: 42 percent of all non-functioning toilets (5 percent of all toilets); and
- NC Q4 and Q5: 1 percent of all non-functioning toilets (19 percent of all toilets).

4.5.2 MAIN SANITATION PROBLEMS

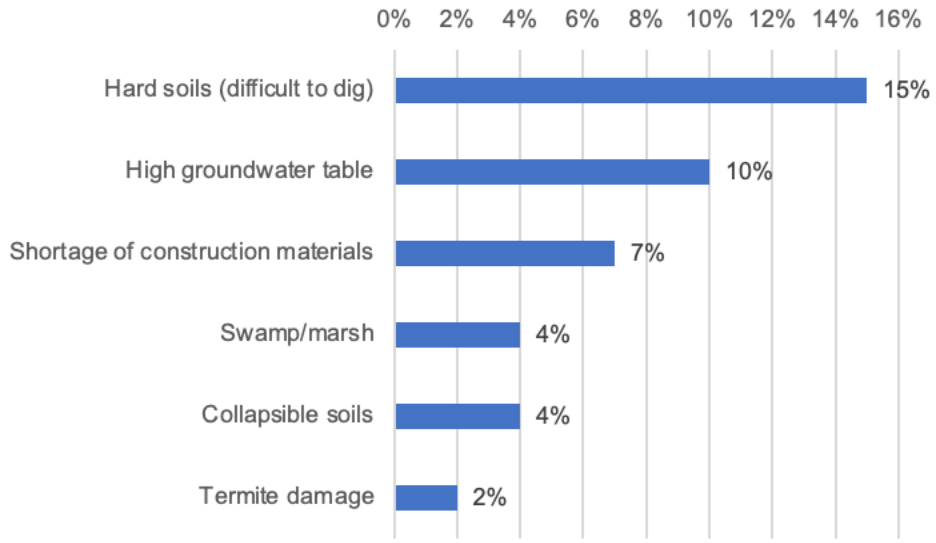
The Village Key Informants were asked about the main problems that households faced in toilet construction, use and maintenance. Among the 95 village KIIs, 27 village key informants noted that problems had been faced, with the main problems in these villages listed in Figure 35 below.

Four of the main reported problems relate to soil conditions, including the two most significant problems reported (hard soils and high groundwater table). In 40 percent of the villages that reported some problems with toilet construction, use or maintenance, open defecation sites were reported, despite claims that most people with collapsed or abandoned latrines share other household toilets or use institutional toilets.

The 10 percent to 15 percent hard soils and high groundwater tables reported in the village KIIs were not evident in the household survey data or in the village visits. Collapsible soils were suggested as one of the most serious sustainability risks, but these were mentioned in only 4 percent of the village KIIs.

[43] Five percent of all CE toilets are non-functional (or not in use). Twenty percent of these non-functional toilets (i.e., 1 percent of all toilets) are used by households in the Q4 and Q5 quintiles.

Figure 35. Main problems for toilet construction, use, and maintenance



Source: USHA sustainability survey - Village Key Informant Interviews (N=95)

The main finding on soil conditions is that the more serious problems occur in only 5 percent to 10 percent of villages, and that very few surveyed households reported toilet pit collapses (only 33 reported in 2,105 household interviews, 1.6 percent).

4.6 Sustainability factors

4.6.1 OVERALL SUSTAINABILITY ISSUES AND FACTORS

The JMP service level estimates (see Figure 28) suggest that, overall, the proportion of households using improved basic toilets has increased in all three regions since the endline survey. This impressive result conceals a wide range of sustainability issues and factors found in different household groups and sanitation categories, some of which have offset each other (i.e., the sustainability losses were generally lower than the gains from toilet upgrades and improvements).

An ODF norm was evident in most CW villages: open defecation was no longer considered acceptable, and all new households (entering villages since the USHA endline survey) had either built toilets or were in the process of building a toilet. New sanitation challenges were emerging in better-off CW villages, with soiled disposable diapers found under bushes beside toilets in one village beside the main road.

The proportion of washable drophole toilets in NC households only increased by 4 percent between the USHA baseline and endline. Most of these new washable drophole toilets were constructed using pre-existing "small slabs" (subsidized sanplats and plastic slabs from IDP camps) or low-cost cement screed upgrades, with very little investment in more permanent and good quality toilet slabs or floors.

In some areas, 21 percent to 26 percent of the NC toilets were non-functional or not-in-use, and the village visits suggested further deterioration is likely: a high proportion of NC toilets were observed to be in poor condition, and some may not last another year. Finally, some of the "shared other" toilet use reported by NC households seems unlikely, given high distances between households and weak ODF norms.

Significant sustainability issues were found across the NC region, with only minor differences in the sustained use of washable floor and non-washable floor toilets. While the lowest quality and worst constructed toilets have been the first to become non-functional, the study findings suggest that technical factors were not the main drivers of these problems. The contextual factors (poverty, history and low population density) and low starting sanitation status (49 percent open defecation) mean that most NC households build lower quality toilets, and that sustained toilet use and ODF status are not adequately valued or supported.

Toilet floor and structural slab types

Relatively few of the washable floor toilets reported by the USHA endline survey used reinforced concrete toilet slabs: 11 percent of the new and upgraded CE toilets had concrete slabs; and 40 percent of the new and upgraded CW toilets. These new and upgraded concrete slab toilets comprised few of the sustainability survey toilets (7 percent CE and 14 percent CW), with most washable floor toilets from cement screed upgrades.

Most of the washable floor toilets and non-washable floor toilets are constructed using the same type of structural log platform, which is then sealed with mud, and either finished with a cement screed, or covered with a smooth layer of compacted mud. The common structural basis for these latrines explains why similar rates of sustained use were found in CE and CW toilets with cement-screed floors and toilets with smooth mud floors.

Structural log floors were also widely used in toilets in the NC region. However, because of the higher poverty and weaker social norms for sanitation, these toilets were generally less well constructed, using less durable materials and less protective or private superstructures, which resulted in far higher sustainability losses.

4.6.2 EQUITY AND INCLUSION

While fewer households from the bottom wealth quintile (Q1) built washable floor toilets, the proportion of washable and non-washable toilets in sustained use by Q1 households was similar in all three regions (within 5 percent to 10 percent).

Shared toilet use was generally higher in the bottom wealth quintile, which reduced the number of JMP improved basic toilets reported for Q1 households. In the CE region, only 30 percent of the functioning toilets with washable floors used by Q1 households were not-shared (compared to 75 percent to 80 percent in the other wealth quintiles).

Similarly, few poor households constructed toilets with durable superstructures. Only 4 percent of the washable floor toilets used by Q1 households in the CE region had durable superstructures, compared to 20 percent to 67 percent in the other wealth quintiles.

A number of equity factors influence the low sustained use rates in the NC region:

- Larger household sizes (6.2 compared to 4.3 in the CW region);
- High proportion of households with a disabled member (24 percent);
- 86 percent of households in the bottom two wealth quintiles;
- Legacy of conflict, IDP camps and aid dependency; and
- 49 percent open defecation rate in the USHA baseline survey.

These factors combine to increase the challenge of the sustained use of improved basic toilets in the NC region. In particular, the high levels of poverty and high baseline open defecation rates mean that the use of improved basic toilets is not the norm. The ODF process encouraged rapid sanitation behavior change, which led to the construction of a lot of toilets with non-washable floors, but at least 16 percent

of these NC toilets are now non-functional or not-in-use, which suggests that the social norm in these villages has not yet shifted towards the use of improved basic toilets.

Lessons from other rural sanitation programs, notably the Plan International Pan-African CLTS program[44], confirm that rapid increases in toilet coverage from previously low levels can cause sustainability problems. Social norms take time to change, hence rural communities often need longer periods of follow-up and support, with a more phased approach to sanitation development until the use of more durable and hygienic toilets becomes the new social norm.

4.6.3 ECONOMIC FACTORS

The construction of toilets with washable floors and durable superstructures requires household investment. The economic status of the three regions, and of the specific villages surveyed, significantly affected the level of investment made by households.

The qualitative fieldwork suggested that poor and marginalized households are generally slower to respond to sanitation interventions, because of the challenge of mobilizing capital and resources for toilet investments. Some households were reported to take 1–2 years to upgrade their toilet, often in several stages as and when funds were available. This economic constraint probably explains why 40 percent to 50 percent of the CE and CW households using toilets with non-washable floors only upgraded their toilets to washable floors in the last year, after the interventions had finished.

The USHA program tried to link households with micro-finance institutions and savings and credit organizations to address the some of the sanitation finance constraints faced by poor households, and potentially accelerate progress, but had only limited success and eventually discontinued these interventions.

In the NC region, key informants also noted that the history of IDP camps in the area, and the dependency culture associated with the humanitarian organizations that supported the displaced populations, had decreased the willingness to pay for toilets. In addition, previous experiences of washable floor toilets and distributions of subsidized concrete sanplats have lowered household willingness to invest in lower levels of sanitation service such as non-washable floor toilets or thin cement screeds. One of the USHA district focal points suggested that toilets with cement screed floors were not considered durable or desirable in his district, highlighting the challenge of encouraging household investment in more durable toilets by poor households.

4.6.4 DEMOGRAPHIC FACTORS

Sustainability problems appeared to be greater in large villages, where more heterogeneous populations and complex settlement patterns made it difficult to trigger and motivate community-wide sanitation behavior change, and where there were often a number of diverse groups with specific challenges (e.g., tenants).

Migration was another problem noted by key informants at district, subcounty and village levels. Mobile populations of farmers and fisherfolk move for several months at a time to practice their livelihoods in other locations, thus are often unwilling to invest in or maintain a good latrine (which will not have full-time use) and rarely use toilets when at the farm plots or fishing camps.

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[44] Robinson, A (2016) *Final evaluation: Pan African CLTS program 2010–2015* Amsterdam: Plan Netherlands, report.

4.6.5 RUSHED ODF PROCESS

In the NC region, the ODF process was accelerated because of the later start and the high ODF targets for the region. The USHA grantees received "milestone" payments for the completion of each program phase (e.g., triggering an agreed number of villages), which encouraged completion of each phase in every village before moving on to the next activity. This sometimes resulted in gaps between triggering, post-triggering or follow-up visits in a village, which was reported to diminish the effectiveness of the triggering or other activities.

Some local governments used sanctions to accelerate ODF achievement. Under Ugandan law, all households should have a sanitary toilet, and local governments are able to fine households who do not own or use toilets. This law is not usually enforced but was used by some local governments when they encountered reluctant or resistant households who were blocking ODF achievement. While sanctions had not been used in the villages visited, most stakeholders agreed that the use of sanctions was not a positive step, as it tended to generate a minimal response (e.g., the construction of a simple toilet with a very shallow pit) and was not likely to change sanitation behavior or encourage the sustained use of improved basic toilets.

4.6.6 REGULAR MONITORING AND FOLLOW-UP

An active Local Council One (LC1) Chairperson and Sanitation Promoter (SP) were essential to maintaining ODF status and to the sustained use of toilets. Where the LC1 Chairperson and SP remained active, sanitation monitoring data continued to be available, households without toilets were tracked, and new households were required to build toilets before moving into their houses. During Phase II, the SPs were paid an incentive if households constructed an improved basic toilet. However, the endline survey suggested that the financial benefits were not what motivated most SPs, which perhaps explains why some continued their sanitation work after the USHA interventions ended.

The village visits in the CW region provided evidence of the benefits of active LC1 Chairpersons and SPs, with a strong ODF culture apparent in most of these villages. In contrast, there was less evidence of collective action or sanitation activists in the villages visited in the CE and NC regions. In these villages, when toilets collapsed or faced problems, the households were generally encouraged to replace or repair the toilets, but little further action or follow-up occurred if nothing happened.

In particular, the village sanitation committees established in the NC region did not seem effective at promoting IBTs or following up on sanitation progress or problems. The village visits found little evidence or mention of the role of these sanitation committees, despite the important role intended for these committees in the USHA CLTS+ approach. Some of the difference between the active SPs and the less active sanitation committees may be because the committees did not receive any monthly payment or financial incentives.

4.6.7 LIMITED IMPACT OF USHA TECHNICAL GUIDANCE

The USHA program developed significant technical capacity and a number of high-quality tools (technical guides and product catalogues) that provided practical and appropriate information on the construction of improved basic toilets in rural Uganda.

Both the village triggering sessions and the SP door-to-door "demand activation" visits, which were targeted at households without toilets or those using unimproved toilets, shared this information on "best-fit products", tried to connect households with trained masons, and encouraged the construction and use of improved basic toilets with durable superstructures.

However, the USHA endline survey found that only 9 percent of the MBSIA toilets (in the CE and CW regions) were constructed using USHA trained masons, and a smaller percentage still had used trained

masons in the NC region. More than 90 percent of households in the USHA program villages either built non-washable floor toilets themselves (DIY) or hired untrained masons to build washable floor toilets. USHA should be credited for encouraging households to build better quality toilets with washable floors and durable superstructures, and for achieving 100 percent toilet access in these ODF villages. Nonetheless, there was little evidence that the toilets constructed following USHA interventions were more durable than those previously constructed in rural Uganda.

In the NC region, the CLTS+ approach was designed to promote higher quality toilets and encourage the use of low-cost materials and services. Despite this design, the study suggests that the approach used in the NC region was little different from CLTS—the main activities were triggering events and follow-up visits to create sanitation demand and encourage people to build simple toilets, with little evidence that the better-quality USHA toilet models and products had been utilized.

The USHA endline results included significant reporting of non-washable floor toilets that had been upgraded with a cement screed. This upgrading approach was promoted by the Ministry of Health (and its partners) before the USHA program, and the USHA team included it as a low-cost upgrading option. The study suggests that some of these thin cement screed upgrades are not durable, with 7 percent to 14 percent of these washable toilet floors already degraded after only 12–18 months.

4.6.8 ENVIRONMENTAL CONDITIONS

The sustainability survey data suggest that difficult soil conditions are found in 5 percent to 10 percent of villages. In the later phases of the program, USHA developed technical guides for improved latrine products in difficult soils (for the two MBSIA regions, and for the NC region), which included toilets with lined pits, alternating twin-pit toilets, and raised double vault toilets. Due to their late roll out, the technical guides for areas with difficult soils were never widely used. In addition, all of these designs are more expensive than the standard toilet options marketed by USHA, which may have suppressed demand for those products.

The USHA experience (and that from other countries) is that the marketing of the more expensive toilet options for these areas has a low success rate, which suggests that it may be necessary to use toilet subsidies to increase the uptake of climate-resilient and durable toilets in the areas where the usual toilets options are unlikely to be sustainable or effective.

4.7 Comparative analysis with other programs

The design of the sustainability study did not allow for the inclusion of any surveys in other settings or sanitation conditions (e.g., in USHA villages that were not verified ODF) that might have enabled comparative analysis. Nonetheless, this section examines how the sustainability results of the USHA program compare with those from past rural sanitation programs in Uganda for which data is publicly available and suggests what these results mean for the implementation of future sanitation programs in rural Uganda.

Two rural sanitation and hygiene programs in Uganda were identified as appropriate comparators for the USHA sustainability results:

1. 2010–2015 Plan Uganda Pan African CLTS (PAC) program[45]
2. 2014–2020 SNV Uganda Sustainable Sanitation and Hygiene for All (SSH4A) program[46].

Both of these programs were part of larger multi-country programs, with large-scale implementation in Uganda (Plan Uganda PAC: 124,400 program population in 2 districts; SNV Uganda SSH4A: 2.3 million program population in 15 districts in the Rwenzori and West Nile regions). Both programs also implemented well-designed and representative household surveys to assess final program results[47], and also conducted some sort of sustainability survey to assess sustained toilet use and hand hygiene at least a year after implementation ended.

The program areas for the two programs are broadly similar to those of the USHA program, which is important given the distinct economic and contextual situations reported in the three USHA regions:

- Plan Uganda PAC: Luwero and Tororo districts (Central and Eastern regions); and
- SNV Uganda SSH4A: 8 Western districts and 7 Northern districts.

The major difference is that, while both the USHA sustainability study and the Plan Uganda PAC evaluation examined outcomes in ODF villages in which everyone had been verified to use a toilet[48], the SNV Uganda SSH4A program results were from non-ODF villages, with only 64 percent average toilet coverage in the program area at the end of the SSH4A program.

Plan Uganda Pan African CLTS program: sustainability results

The final evaluation of the Plan Uganda PAC took place 5 years after the first villages were triggered, with some villages verified ODF more than three years before the household survey. The PAC program had a 91 percent overall ODF success rate and achieved the first entirely ODF subcounties in Uganda.

The Plan Uganda PAC final evaluation reported very good sustainability results (based on a multi-stage cluster-randomized household survey):

- 94 percent sustained non-shared use of toilets; and
- 6 percent decrease in not-shared toilet use (5 percent shared use + 1 percent OD).

The household survey found that 42 percent of the surveyed villages had maintained 100 percent non-shared toilet use, another 28 percent had 90 percent to 100 percent toilet use, and only 24 percent of the surveyed villages had less than 90 percent toilet use. The survey results also reported:

- 91 percent toilets assessed as clean (94 percent free of fecal smears or other wastes);
- 68 percent toilets provide adequate privacy (functional, complete superstructures); and
- 34 percent toilets with concrete slabs (washable floors).

SNV Uganda SSH4A program: sustainability results

The SNV Uganda SSH4A program was part of the DFID-supported WASH Payment by Results program implemented between mid-2014 and end-2018, with a rapid 18-month implementation period to achieve the main program results by end-2016, and then a two-year sustainability period during which the

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45 Robinson A (2016) *Final Evaluation: Pan African CLTS program 2010-2015* Amsterdam: Plan Netherlands, final report.

46 SNV (2021) Sustaining sanitation achievements after project completion: the case of Sustainable Sanitation and Hygiene for All (SSH4A) in 15 districts in Uganda Kampala: SNV, Sustainability brief.

47 Although both lacked USHA's ability to longitudinally track household progress

48 91 percent of PAC program villages were verified ODF by the end of the program.

sustained use of toilets and practice of hand hygiene were supported by the program, with the final program results evaluated by household survey at end-2018[49].

In early 2020, SNV financed its own sustainability assessment (implemented by Emory University) in 10 SSH4A country programs[50] (including the Uganda SSH4A and several others not supported by DFID). The final sustainability assessment was undertaken around 15 months after the program end in Uganda, which was more than three years after the main implementation activities were completed.

The 2022 Emory sustainability evaluation reported that:

- 57 percent sustained non-shared use of improved basic toilets[51];
- 21 percent decrease in not-shared IBT use (from 78 percent at end of program); and
- 80 percent toilet use (all toilet types, including unimproved) + 20 percent no latrine (OD and shared use of other household toilets).

While the reported decrease in the proportion of households using JMP improved basic toilets in the SNV SSH4A program was large (21 percent), there was only a 1 percent decrease in the sustained use of all toilets (from 81 percent to 80 percent) with the other 20 percent drop caused by the degradation of JMP improved basic toilets to unimproved toilets.

Comparison of program sustainability rates

A crude ranking of the sustained toilet use data from the three programs (Plan PAC, SNV SSH4A and USHA regional data) highlights the high levels of sustained use of improved basic toilets (66 percent to 72 percent including shared use of owned toilets) achieved in the USHA MBSIA areas (CE and CW regions). Both the Plan PAC and SNV SSH4A programs encouraged the use of improved basic toilets through sanitation marketing, but these interventions did not achieve scale, with most toilets built with non-durable slabs following CLTS interventions with intensive follow-up and support.

Despite the much higher proportion of toilets with washable floors, the sustainability results from the USHA CW and CE regions were marginally worse than the sustained toilet use reported by the Plan Uganda PAC program: 1 percent OD reported, compared to 3 percent OD in the CE region and 2 percent in the CW region. Both of these USHA MBSIA regions reported better results than the SNV SSH4A program (6 percent OD).

The worst sustainability results in this comparison were in the USHA NC region, in which 14 percent of households were not using toilets; and only 28 percent of households were found to be using improved basic toilets.

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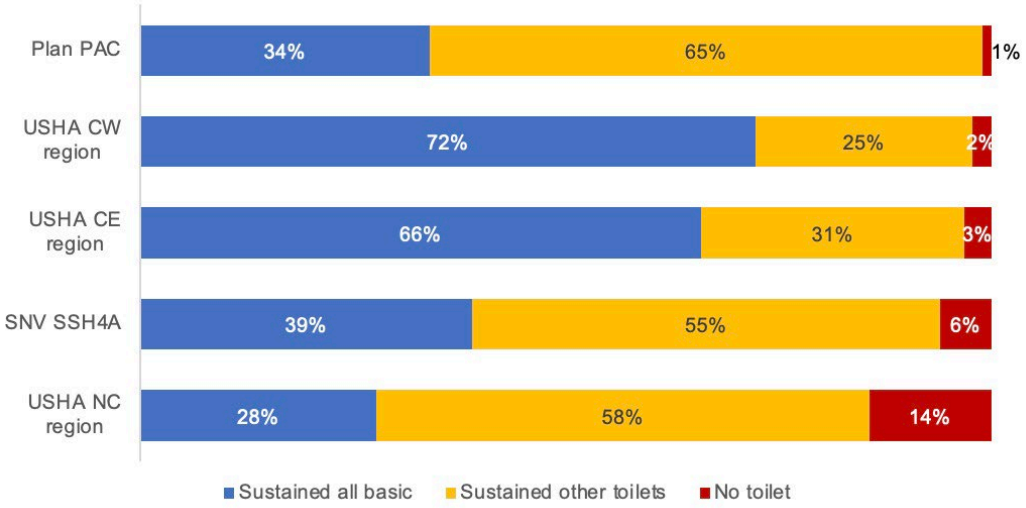
[49] Freeman et al (2020) Assessing the impact and equity of an integrated rural sanitation approach: A longitudinal evaluation in 11 Sub-Saharan Africa and Asian Countries International Journal of Environmental Research and Public Health **2020**, 17, 1808; doi:10.3390/ijerph17051808.

[50] Garn et al (2022) Assessing the sustainability of an integrated rural sanitation and hygiene approach: A repeated cross-sectional evaluation in 10 countries Global Health: Science and Practice August 2022, 10(4):e100564.

[51] The monitoring definition used in the Emory University evaluation for classification of JMP improved basic toilets was different to that used by SNV: only 39 percent of the Uganda toilets were rated as improved basic in the 2021 SNV Uganda SSH4A sustainability brief.

Figure 36. Sustained toilet use rates in Uganda sanitation programs



Key: Sustained all basic = use of improved basic toilets (shared and not-shared); Sustained other toilets = use of unimproved toilets; No toilet = no toilet, or non-functional or not-in-use toilets.

The study findings suggest that the lower NC results reflect the more challenging contexts in the Northern Cluster districts. Around half the SNV SSH4A results were achieved in a similar context, in the Western Nile area of the Northern region. As the SSH4A sustainability results lie midway between the USHA CE and NC regional results, it appears that the USHA NC sustainability results are at best similar to, if not lower than, the results achieved by the SNV SSH4A in its Northern districts.

5.0 CONCLUSIONS

5.1 Overall sustainability results

The study reported variations in the sustained use of toilets across the three USHA program regions. The different economic, social, and historical contexts played a significant role in these results:

- **Central Western (CW) region**: best results (sustained use of 59 percent improved basic toilets), with sustained ODF outcomes, low sustainability losses, and a 19 percent increase in the use of improved basic toilets since the endline survey.
- **Central Eastern (CE) region**: moderate results (sustained use of 51 percent improved basic toilets), with sustained ODF outcomes, and a 2 percent increase in the use of improved basic toilets since the endline survey.
- **Northern Cluster (NC) region**: the lowest sustained use of improved basic toilets (14 percent), with high sustainability losses (14 percent) and generally lower quality toilets, with a 5 percent decrease in the use of improved basic toilets.

Despite these contextual variations, the proportion of households with sustained use of improved basic toilets has increased since the endline survey in both of the USHA MBSIA regions. The gain was relatively small in the CE region (2 percent), but there was a remarkable 19 percent increase in the use of improved basic toilets in the CW region.

These gains largely reflect recent toilet upgrades by households who did not improve their toilets during the USHA program period but had been sufficiently influenced by the USHA sanitation interventions that they made toilet improvements over a longer period, as their capacity and resources allowed. As a result, the gains made by toilet upgrades in the large groups of existing toilet owners in each region more than offset the minor sustainability losses and service level decreases among the smaller groups of households who were using new and upgraded toilets built during the USHA program.

5.2 Long-term sustainability

The USHA interventions were generally successful in the promotion of better-quality toilets, and in encouraging ODF outcomes, and these efforts have caused some shifts in the social norms for sanitation which encouraged households to continue upgrading and improving their toilets after the program end. But it remains unclear whether these short-term sustained use results will be maintained over the long-term.

The sustainability study took place only 1–2.5 years after many of the toilets were constructed, or after toilet upgrades and improvements were completed. As the sustainability survey showed, the rate of non-functional and not-in-use toilets was generally low in the CE and CW regions - only the worst designed and constructed toilets, or those built with the least durable materials, had collapsed after 18 months.

Better quality toilets and strong ODF norms were evident in the CW region, but these positive outcomes reflect the much higher economic status and generally better housing and sanitation practices in this region. More households used concrete toilet slabs, thick cement screed toilet floors, and durable toilet superstructures, and local leaders conducted more intensive follow-up, monitoring and support to maintain ODF status. Sustainability losses were low in the CW region, and the combination of more durable toilets and good sanitation behavior change means that most toilets are likely to remain in sustained use over the long-term.

In the CE and NC regions, the lower economic status and lower housing and sanitation status was matched by lower quality toilets, more shared use of toilets, and less well-maintained ODF outcomes. The sustainability of many of these CE and NC toilets is questionable over the long-term: thin cement screed toilet floors are degrading fast, as are non-durable and badly constructed superstructures. Sanitation behavior change was also less convincing in these regions, with limited evidence of follow-up or support when households face sustainability problems with their toilets.

5.3 Market-based sanitation results

While significant program efforts were made to encourage market-based sanitation, more than 90 percent of households in the program area used untrained local masons to build or upgrade their toilets[52]. While many toilets were built or upgraded, little evidence was found of the installation of USHA-optimized toilet models (materials quantities and dimensions), or that the USHA toilet catalogues or technical guidance had directly resulted in the installation of better-quality toilets.

The sustainability results confirm that the wider sanitation demand generation and promotional efforts to encourage the construction and use of better-quality toilets, including targeted promotion to all households without toilets, were successful in improving the sustained use of improved basic toilets, and contributed to the low sustainability losses reported in the CE and CW regions.

The comparative analysis in Section 4.7 confirmed that, while MBSIA resulted in higher sustained use of improved basic toilets in the CE and CW regions, the USHA sustainability losses were generally similar to those achieved by other more CLTS-based programs.

The study highlights the significant challenge of developing market-based sanitation services in low-income rural populations. Where economic status is low, and rural populations are not yet well connected with markets, market-based sanitation services take time to develop, and often have limited uptake until the use of better-quality toilets becomes the social norm.

5.4 Sustained use of toilets with durable slabs

In each region, the rates of sustained use of toilets with washable floors and toilets with smooth non-washable floors were similar. About 7 percent of the washable floor toilets in the CE and CW regions degraded to non-washable floors, with twice this degradation rate in the NC region (14 percent). Most of the degraded washable toilet floors were constructed using thin cement screed layers without a sub-base.

Toilets with structural log slabs

The majority of the toilets have the same type of structural slab: a small proportion have reinforced concrete toilet slabs, but most are reliant on a log platform sealed with mud. The main difference between washable and non-washable floors was generally that one floor type was covered with a thin layer of cement screed, and the other was finished with a layer of compacted mud. Where the non-washable toilet floor was smooth and easy to clean, the rate of sustained use was similar to the washable floor toilets.

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[52] USHA (forthcoming) *Scaling market-based sanitation in rural Uganda – key learnings* Arlington: Uganda Sanitation for Health Activity Learning Brief.

The sustainability study differentiated between smooth mud floor toilets, which could be easily swept and cleaned, and rough mud floor toilets, which could not be easily cleaned. The study confirmed that, compared to rough non-washable floor toilets, smooth non-washable toilets had:

- Better sustained use (fewer non-functional, not-in-use, not contained toilets);
- Cleaner toilets (18 percent more clean toilets, on average); and
- Higher reported user satisfaction.

5.5 Sustained use of shared toilets

Shared use of improved basic toilets was not found to have sustainability effects: in each of the three regions, similar rates of sustained toilet use were observed in not-shared and shared toilets. The study suggests that, where observation data are available to confirm that shared toilets are functional, hygienic and in-use, shared toilets with durable slabs provide a similar level of service to not-shared toilets and should be counted as improved basic toilets.

The exception is in ODF villages where high proportions of households do not own toilets but report shared use of other household toilets. In the CE and NC ODF villages, where 13 percent to 20 percent of households reported shared use of other toilets, the study findings questioned whether this level of shared use was genuine.

In the CW region, the evidence of open defecation was very low (up to 1.6 percent) and shared use of other toilets was low and generally only by extended family members. However, in the NC region, open defecation rates were estimated to be as high as 16 percent, which suggests that there is less pressure to use toilets, and that self-reported data on shared toilet use is unlikely to be reliable.

5.6 Sustained use of toilets with durable superstructures

The economic differences in the three regions were apparent in the proportion of durable toilet superstructures observed: 39 percent to 75 percent of CW toilets had durable superstructures; 15 percent to 33 percent of CE toilets; and only 4 percent to 19 percent of NC toilets.

Toilet walls made from durable materials had a stronger association with sustained use than either toilet roofs or doors: toilets with durable walls reported 2 percent to 3 percent non-functional or not-in-use toilets, which increased to 10 percent to 12 percent for toilets with non-durable walls, and 21 percent to 25 percent for toilets with no walls (50 percent to 75 percent in the NC region).

The study generally supported the USHA concept that more durable toilet superstructures are likely to improve the sustained use of improved basic toilets. The study took place only 1–2 years after the construction or improvement of many of the new and upgraded toilets, which meant that some of the long-term outcomes were not apparent. Nevertheless, the study found that many of the lower quality toilets with non-durable superstructures were in poor condition and are likely to have short lifespans. Where toilets use structural log platforms covered with mud or cement screed, built on non-durable foundations, long-term use will be increased by a superstructure that protects the toilet sub-structure from rain and climate events.

5.7 Sustained ODF status

Villages with verified ODF status are often assumed to have similar sanitation outcomes, when in practice the population of ODF villages usually contains a wide variety of collective sanitation outcomes.

The study confirmed that there is a big difference in the chances of a sustained ODF outcome in ODF villages with high proportions of improved basic toilets (with durable slabs and durable superstructures) compared to ODF villages in which most households use toilets that are not durable.

The ODF village outcomes in the CE and CW regions were significantly different to the ODF outcomes in the NC region. While many of these differences reflect the diverse economic, social, and historical contexts, and the effectiveness of the sanitation behavior change in these areas, it was also apparent that ODF outcomes are more difficult to sustain in villages with high proportions of non-durable toilets.

While shared use of toilets was not strongly associated with toilet sustainability losses, the study also suggested that high self-reported levels of shared use by households without toilets may indicate some reversion to open defecation. Where the combined level of households with no toilet (even if these households reported shared toilet use), or with non-functional and not-in-use toilets, exceeded 5 percent to 10 percent of the population, it was likely that ODF outcomes had not been sustained.

6.0 RECOMMENDATIONS

6.1 Use integrated and phased area-wide approaches

Market-based sanitation services take time to expand and develop in low-income rural populations like the CE and NC, and often serve only some population segments. In many low-income contexts, market-based sanitation alone is unlikely to be enough to move rural communities towards sustained and universal use of improved basic sanitation.

MBSIA recognized that a blend of approaches are required to create demand for better-quality and more durable toilets, encourage ODF outcomes that change social norms for sanitation, promote hand hygiene and other household environmental health outcomes, and strengthen local governance and systems.

Area-wide strategies for rural sanitation and hygiene need to allow for longer-term and comprehensive implementation processes, which integrate the gradual phasing in and expansion of market-based sanitation services into wider sanitation and hygiene programs as social norms change and sanitation markets develop. Sustainability monitoring, follow-up and support should be provided to all areas, with particular attention paid to populations identified as having higher sustainability risks.

6.2 Increase and expand sanitation promotion channels

The USHA program was successful in increasing the use of improved basic toilets in the MBSIA regions, but program impact could be increased by broadening the target audience for the technical tools, information and training. The chances of technical guidance on toilets being effectively used should be increased by providing tools, information and training to a much wider group of stakeholders, including a far higher proportion of local masons and local influencers. Efforts should also be made to identify areas and populations in which households are not using trained sanitation actors and are not aware of the technical guidance or promotional messages, and allow for increased training, promotional activities, follow-up, monitoring and support in these areas.

6.3 Strengthen and disaggregate monitoring

The study highlighted the challenge of assessing whether toilets have durable slabs, durable pits and durable superstructures. Routine sanitation monitoring systems often count functional toilets without providing any assessment of toilet durability or hygiene, and even some periodic evaluations (such as this study) fail to assess some toilet functions and features reliably.

More detailed monitoring and evaluation of the durability and hygienic outcomes of different toilet structural slabs and toilet floor constructions (e.g., thin or thick cement screeds, with or without sub-base) and whether different types of durable superstructures contribute to higher sustained use of improved basic toilets, will further enhance sector understanding of sustainability factors for rural sanitation.

Shared use of toilets was identified as another area in which better monitoring is required. The sanitation practices of households without toilets, who report sharing of other toilets, should be monitored more closely, particularly in communities where the proportion of these households is greater than 5 percent.

Monitoring of hand hygiene

Hand hygiene is important to public health, particularly among young children who are often reliant on caregivers to provide them with sanitation and hygiene services (e.g., anal cleansing, emptying, and washing of diapers and potties, and personal hygiene) and prepare their food and feed them.

The study showed that more reliable and useful information on hand hygiene can be readily obtained from household surveys, and that these data can inform more effective promotion and support for good hand hygiene, including the marketing of more durable and permanent handwashing facilities.

6.4 Develop approaches and capacity for challenging contexts

The study highlighted the significantly greater challenge in achieving and sustaining the use of improved basic toilets in low-income and scattered populations, such as the Northern Cluster districts. The USHA program also identified a range of other challenging contexts (e.g., high water tables, collapsible and rocky soils) and developed technical guidance and product catalogues for these. These interventions and approaches are often different from those used in other areas, with different capacity and resource needs, and different timelines.

Where sanitation programs aim to cover entire administrative units, the planning process should aim to identify challenging contexts and low-income populations at the start, and ensure that sufficient time, capacity and budget is allocated to tailored interventions and longer-term support in these areas. In the NC region, where USHA research identified that an MBS approach was unlikely to work, a longer-term program is required to develop sanitation markets and systems, with some form of toilet subsidy (or other support) likely to be needed to support poor and marginalized households to develop durable toilets.

6.5 Independent verification of sanitation results

The sustainability survey revealed over- and mis-reporting problems in the otherwise excellent USHA monitoring system. These problems appear to have been related to the incentives paid to the implementers for improved basic results, which may have encouraged them to falsify or over-report some monitoring data.

This finding is consistent with most evaluations of large-scale monitoring systems: where there are insufficient checks and balances, or insufficient awareness of the checks and balances, people mis-report data.

All large-scale monitoring systems should have systematic and regular checks on monitoring quality and reliability. Wherever possible, these checks should be made by both internal stakeholders (within the program) and external stakeholders (independent of the program), and include both remote data checks (on photographs, classification decisions, GPS coordinates, data collection times and durations) and back or spot checks (repeat surveys of randomly selected households to confirm whether there are any differences in the data reported).

6.6 JMP toilet classification: non-washable and shared toilets

The study findings suggest that the JMP sanitation monitoring definitions and toilet classification criteria are not always appropriate for national or program monitoring.

The main argument for discounting shared improved basic toilets and toilets with non-durable slabs from the JMP improved basic service level is that these toilets have a higher risk of being non-functional, unhygienic or not-in-use. While the JMP is unable to use observation data for its sanitation estimates,

national and program monitoring systems are now able to collect reliable toilet observation data on these outcomes and can provide more accurate and appropriate toilet classifications.

The USHA monitoring definitions allowed that only not-shared toilets with washable floors were classed as improved basic toilets. In contrast, the JMP monitoring definitions require both that the structural toilet slab is durable (e.g., platform made from durable logs, or a concrete slab) and that the toilet floor is "easy to clean".

The study found that smooth, mud-covered toilet floors built above durable log platforms meet the JMP requirements and provide similar rates of sustained toilet use to washable toilet floors. Similarly, the study found little difference in sustained use or hygienic outcomes in not-shared toilets with washable floors and shared toilets with washable floors.

Where observation data confirm that toilets are functional, hygienic and in-use, and the toilets have durable structural slabs and either durable floor coverings or smooth non-durable floor coverings, these toilets provide the JMP improved basic service level, whether or not the toilets are shared or have washable floors.

Only toilets observed to have non-durable structural slabs, rough non-washable toilet floors or toilet slabs that do not adequately contain feces in the pit (or other containment system) should be classed as unimproved toilets. NB If this revised classification was applied to the JMP improved basic toilets reported in this study, it would dramatically increase the proportion of JMP improved basic toilets USHA would have reported.

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