

ASSESSMENT OF WATER, SANITATION, AND HYGIENE
SERVICES AMONG THE POPULATIONS OF 19 CAMPS IN
COX'S BAZAR, BANGLADESH, 2022

Médecins Sans Frontières - Bangladesh

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Abbreviations

CI	Confidence interval
CIC	Camp in Charge
DPHE	Department of Public Health and Engineering
DR	Decision Rule
GIS	Geographic Information System
LQAS	Lot Quality Assurance Sampling
LSTM	Liverpool School of Tropical Medicine
MSF	Médecins sans Frontières
PI	Principal Investigator
RRRC	Refugee Relief and Repatriation Commission
SA	Supervision Area
SC	Study coordinator
UNHCR	United Nations High Commission for Refugees
WASH	Water, Sanitation and Hygiene
WatSan	Water and Sanitation

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1. Executive summary

Context:

The unplanned and spontaneous nature of the post-August 2017 Rohingya refugee camps in Cox's Bazar have combined with high population densities and challenging environmental conditions to produce a crisis with especially acute water, sanitation and hygiene (WASH) needs. A WASH infrastructure was put in place across the camps in Cox's Bazar to address the large needs of the population, however, the monitoring and maintenance of these infrastructures has proven challenging over the last five years. This challenge of maintaining the WASH infrastructure in the Cox's Bazar camps was highlighted by a lot quality assurance sampling (LQAS) community feedback mechanism conducted by MSF in 2018. The COVID-19 pandemic further exacerbated this issue due to a reduced focus and funding for WASH activities in the camps leaving the refugee population vulnerable to WASH-related diseases. To gain an understanding of the current WASH situation in Cox's Bazar, MSF carried out an LQAS across 19 camps in Cox's Bazar.

Methods:

A cross sectional lot quality assurance sampling (LQAS) community feedback mechanism was conducted from January- March 2022. LQAS uses small sample sizes to identify priority areas for intervention based on existing administrative divisions in camp settings, which are known as supervision areas. Nineteen camps in Cox's Bazar were considered as the supervision areas. The LQAS were conducted in two phases: (1) in Operational Centre (OC) Amsterdam catchment areas and (2) OC Paris and Brussels catchment areas.

Nineteen households and parents/guardians of children aged under 5 years were interviewed in each of the 19 camps/supervision areas. Block population figures and probability proportional to size (PPS) sampling were used to identify where the 19 households should be distributed in the camps/supervision areas and the households were selected using random sampling using Geographic Positioning System (GPS). Data were collected on the following categories: water supply and storage, sanitation and hygiene practices, solid waste management and WASH and water-related diseases using an electronic method (KoBoCollect). Target values were established for each of the LQAS indicators and the findings were analysed at the camp (supervision area) level as well as overall for the 19 camps combined against those target values. Crude and weighted averages were calculated for each indicator and the results were compared to the 2018 LQAS.

Results:

The LQAS showed that 16 out of 28 indicators did not meet the pre-determined target coverage threshold values and seven of those were particularly low performing with values at least 30% lower than the target values. Low performing indicators were reported in most categories but particularly for solid waste management and sanitation indicators.

At the supervision area or camp level, there has been a significant improvement in the quality of water provision, with improved water source infrastructure becoming available in most areas. However, when compared to the 2018 LQAS, water supply indicators were similar or worse, including some improvements were observed for water storage indicators and availability of consistent water. This corresponds with wide-spread restrictions in the camp regarding water provision, despite the infrastructure improving.

Furthermore, sanitation indicators have deteriorated, including the less availability of functioning latrines and availability of soap.

All of this corresponds to an increase of skin infections both captured in this assessment, and corresponding to a dramatic increase in scabies cases reported by health facilities in the camps.

Conclusion

In general, the WASH condition in the camp remained hazardous and requires adequate and timely intervention. The finding in this LQAS has shown that some gaps identified in the 2018 LQAS have not changed, where the water storage, sanitation, solid waste management and hygiene indicators have shown the highest gap and are priority for intervention followed by the sanitation indicators. This has created an extended exposure of the camp community to poor WASH situation which is causing health consequences in the camp population, including potential outbreaks of communicable diseases. As a likely consequence of the deterioration in the WASH situation, a high number of waterborne diseases has been reported among children under five years in the LQAS (mainly skin and soft tissue infection and diarrheal diseases). Hence, there is a need for action to improve the WASH situation, in order to prevent and control outbreaks due to water, hygiene and sanitation deterioration.

2. Introduction

2.1 Context - Kutupalong and Balukhali Rohingya Refugee settlements

The Rohingya community has been forced to seek refuge in Bangladesh for many years, with significant points following violent attacks in 1978, 1991-1992, 2016 and in August 2017 that triggered the massive and quickest refugee influx into Bangladesh. Since then, an estimated 773,972 Rohingya people, including more than 400,000 children have fled into Cox's Bazar, Bangladesh. As of March 2022, the population size is 926,561, of which 52% are female, 51% are under 18 years old, 45% are 18 to 59 years old, 4% are 60 years and older, and 4% are individuals with specific needs [1].

The majority of refugees live in 34 extremely congested camps in Ukhiya and Teknaf Upazilas, including the Kutupalong-Balukhali Expansion Sites, which hosts approximately 636,411 (see figure 1). Each of the camp is divided into multiple blocks and the blocks are officially managed by a leader named Majhee (community leader). In addition, Imams, schoolteachers, elders are also treated as influential people in the community. The governance systems for the camps are organized by Camp-In-Charge (CIC); headed by the Refugee Relief and Repatriation Commissioner (RRRC). The key responsibilities of RRRC are daily administration, coordination and delivery of services in conjunction with the government law enforce authorities.

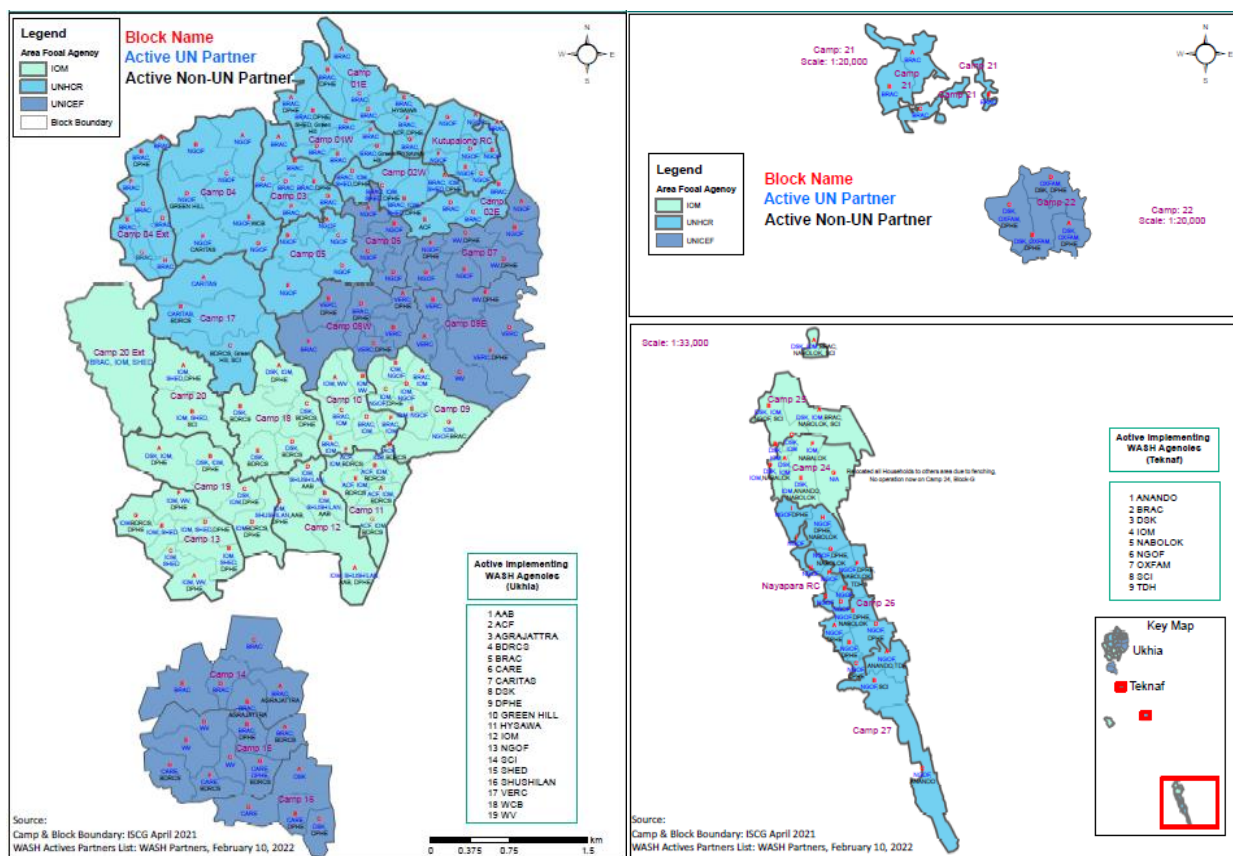


Figure 1: Map of the Cox's Bazar Rohingya Refugee camps and the focal agencies per camp [2]

2.1.1 Humanitarian and health situation

The main health concerns are diarrheal disease including acute watery diarrhoea, skin diseases, jaundice and respiratory tract infections. COVID-19 was also a concern with 99049 confirmed cases of week 16 reported by 24th of April 2022 but unpublished estimates suggesting much higher transmission is likely to have occurred [3]. The increase in prevalence of diarrhoeal and hygiene-related illnesses seems also linked to COVID-19 due to a reduction in WASH activities in the camp. Since the start of 2022, there have been twenty-two rapid diagnostic test confirmed cases of cholera in Cox's Bazar. Concurrently, the fire in Cox's Bazar in March 2021 which led to the destruction of 50,000 households across five camps (8E, 8W, 9, 10 and 11) [15] and multiple health facilities including Balukhali Outpatient department has left large numbers of households highly vulnerable to health concerns due to the loss of their shelters, access to latrines, tap stands and more [4]. In the current context, it is essential to better understand the WatSan situation in order to prioritize future actions.

2.1.2 WASH situation in Cox's Bazar

MSF WatSan teams responded quickly to the influx of refugees and implemented drilling of tube wells, installation of latrines, and bucket chlorination at water points where water-related diseases were suspected. Many other actors also responded to the emergency; however, coordination of activities to meet quality standards has been challenging.

Whilst WASH infrastructure of 13,500 handpumps, 17,800 latrines, and hundreds of small and large water networks have been installed in the Mega Camp, gaps in WASH services still exist. Due to the topography and social constraints some communities are still struggling with access to basic levels of water and sanitation [5].

Maintenance and monitoring of this infrastructure are lacking, and no one is assuming accountability for this. A recent assessment carried out by MSF in Camp 15 found that only 65% of hand pumps were functional, and over half of the functional hand pumps were in need of repair and maintenance, providing low flow or held together with make-shift repairs done by the community themselves. Additionally, of the 67 water networks in Camp 15, only 40 were found to be functioning [6]. Maintenance and monitoring of the WASH infrastructure is lacking, and no one is assuming accountability for this. In addition, in 2021, there was an increase in AWD cases in the camps, further demonstrating the WASH challenges and precarious health situation of the population in the camps.

The issue of maintenance and monitoring has been further exacerbated by the impact of COVID-19, with all actors facing challenges with human resources, supplies, access to the camp, and de-prioritization of regular activities to scale up their response to COVID-19. In response, MSF has scaled up its operations and maintenance activities, providing ad-hoc support to WASH agencies for repairing and rehabilitating hand pumps, tube wells and water networks, as well as providing training and capacity building to the relevant partners. Currently we have activities in camps 10, 18, 19 and 21. Moreover, we are improving the long-term infrastructure for water supply through building four networks (two already operational and two on hold due to restrictions (one at 90% of completion and one on hold) in camp 21 to provide water to 17000 people. Otherwise, in camps 15 and 14 we have five small water networks and also provide water to the community from two primary health centers.

2.2 Lot Quality Assurance Sampling

Lot Quality Assurance Sampling (LQAS) is a survey methodology which uses small sample sizes and allows the classification and prioritization of needs on smaller geographic level management units (called supervision areas [SAs]) [7]. A sample size is established at the SA level and decision rule selected, which is the cut-off below which an area is classified as low performance for an indicator [8]. The SAs level data can be aggregated to calculate a coverage estimate with confidence intervals for an entire survey catchment. LQAS classifies SAs using a decision rule (d), which depends on the sample size (n), thresholds for identifying SAs as high and low performing and probability of misclassifying an area with high coverage as low (α error) and the probability of misclassifying an area with low coverage as high (β error). Nineteen households are typically sampled per SA, which ensures that α and β errors are both kept at $\leq 10\%$ [9,10].

MSF has used LQAS surveys in various locations to identify priority areas for water and sanitation interventions including Bentiu PoC in 2017 and 2019/2020, and in Cox's Bazar, Bangladesh in 2018 [11-13]. The 2018 LQAS study in Cox's Bazar highlighted a need to improve the maintenance of latrines and tube wells and to focus attention on the camps where water chlorination, use of surface water and the disposal of children's and babies' feces were ranked as high priority [13]. While advocacy efforts were made with the recommendations of this survey, fewer actions than ideal were taken due to other emergencies that arose at time of dissemination of the report to relevant actors and this combined with more restrictions on the provision of others watsan infrastructures in the refugee camp.

2.3 Rationale

A comprehensive assessment of the coverage of WASH services throughout the refugee camps in Cox's Bazar is required due to a lack of understanding of the true impact of Covid-19, the difficulties identifying WASH service gaps in the camps following the decrease of NGOs funding, the cessation of monitoring WASH infrastructures by REACH in 2019 and the lack of active and coordinated monitoring of WASH activities in the camps.

In addition to providing a comparison to the LQAS survey conducted in 2018, this LQAS was intended to provide : (1) identification of any gaps still remaining in the camps; (2) identification of specific camps which are facing major challenges/gaps; (3) help to shape the WatSan strategy and highlight geographical areas which may need focus or further investigation for programming new activities; (4) provide insight into the impact of our activities in the camps with regards to water supply; (5) use as an evidence-based advocacy tool at the WASH sector and at any other relevant fora.

3. Materials and methods

3.1 Primary objectives

- To assess water, hygiene and sanitation indicators in the selected refugee settlements to guide operational decision-making (targeted intervention and advocacy)

3.2 Secondary objectives

- To estimate the prevalence of waterborne diseases (Acute Watery Diarrhoea, Acute Jaundice Syndrome, eye and skin infections)
- To understand water usage, sanitation and hygiene practices in the selected refugee settlements
- To compare the findings with those of the 2018 LQAS study conducted in Cox's Bazar if there was improvement or deterioration of the situation following the four years since the previous LQAS.

3.3 Study Design

The study design was a cross-sectional survey employing LQAS sampling methodologies.

A total of 19 camps were included in this LQAS study (see table 1). Data collection occurred in two phases, first in January 2022 (Camps 2E, 2W, 6, 7, 8E, 8W, 9, 10) and then in March 2022 for the rest of the camps (Camps 11,12,13,14,15,16,17,18,19,20,20Ext). The study population included residents of the 19 camps in Cox's Bazar at the time of the study.

Two populations, or 'universes', were sampled. The first universe was made up of households and the second universe of parents/guardians of children aged <5 years. The first universe was used to obtain information regarding water, sanitation, and hygiene. The second universe was used to obtain the prevalence of diarrhoea, jaundice, eye and skin infections among children <5 years.

3.3.1 Inclusion and exclusion criteria

For Universe 1 and 2, inclusion of a household was based on consent from an adult living in the randomly selected household (see definitions section for the definition of a household).

For Universe 2, inclusion of a household was also based on at least one household member belonged to the target age group for the secondary objective of the survey (children under five years).

A household was excluded from the study if no adult was available to participate in the interview at the time of the team's visit. For Universe 2, a household was also excluded if none of the household members belonged to the target age group for the secondary objective of the survey (children under five years).

3.3.2 Supervision areas (SAs)

As we are interested in WASH services within each camp, these were selected as the SAs. This is in keeping with the LQAS guidelines, which state the division of the SAs should ensure that classifications can lead to program decisions (4). The LQAS sampling methodology requires at least 95 survey sites total (clusters) and 19 survey sites per supervision area. When the sample size of all SAs combined is 95 or greater, the performance of indicators at the project level can be calculated. A sample of 19 households per SA ensures that α and β errors are both kept at $\leq 10\%$. The sampling plan includes 19 households and 19 parents/guardians of children aged <5 years per SA.

Table 1 shows the population size by camp used for the sampling frame. [14]

Table 1. Population of 19 supervision areas, 30 September 2021

No.	Supervision area	Population
1	Camp 2E	26,779
2	Camp 2W	24,574
3	Camp 6	24,267
4	Camp 7	37,637
5	Camp 8E	30,452
6	Camp 8W	31,808
7	Camp 9	33,756
8	Camp 10	30,659
9	Camp 11	31,216
10	Camp 12	27,083
11	Camp 13	43,388
12	Camp 14	32,845
13	Camp 15	52,323
14	Camp 16	21,416
15	Camp 17	18,081
16	Camp 18	28,622
17	Camp 19	24,900
18	Camp 20	7,267
19	Camp 20Ext	7,283

3.3.3 Area coverage

The LQAS sampling methodology requires at least 95 survey sites or greater in order to calculate the performance of indicators at the project level. Some camps have higher population counts compared to other camps and therefore the results of each SA was weighted to avoid giving too much influence to SAs with smaller population sizes and too little influence to SAs with larger population sizes. In order to determine prevalence and coverage of the indicators at a program, or OCA, OCB and OCP-catchment areas, level, responses from all 19 respondents in all 19 SAs were combined for a total minimal sample size of 361 for each universe. Using population data from each supervision area, a crude average coverage or prevalence was calculated for the MSF catchment areas, as well as a weighted average coverage or prevalence.

3.3.4 Supervision area classification

Supervision areas in this document refers to camp boundaries. All camps, which have their own Camp in Charge (CIC). The responses of the 19 households and 19 parents/guardians of children aged <5 years were used to classify each of the supervision areas according to two decision rules (DRs). These DRs were calculated using a LQAS table (see appendix- 8.1). Using a sample size of 19 for each SA keeps the α and β errors (the chance of incorrectly classifying an SA as either unacceptable or acceptable at less than 10%).

One DR has set according to the weighted average coverage and the second DR was set according to a target coverage (established by the WatSan team). The target coverage is the upper threshold that helps to identify high or acceptably performing SAs and typically 30% below the upper threshold has been taken as the lower threshold, which helps to identify lower performing SAs. For example, if the upper threshold for an indicator was set at 90% then a lower performing SA would be one with a score under 60%. This target was set after discussion with key decision makers in the field following the calculation of the crude average.

The data allowed for a three-way prioritisation:

4. High priority - those that have not met the DR for either the average coverage and target coverage
5. Medium priority - those that have not met the DR for the target coverage only
6. Low priority - those that have met both DRs, i.e., they are higher than the average and target coverage.

3.3.5. Sampling Strategy

The sampling frame included the camps as listed in Table 1. Within each SA, probability proportional to size sampling (PPS) based on the population size of each block was conducted to identify the number of households required. The population data used was as of September 2021 and collected by the United Nations High Commission for Refugees (UNHCR) [1]. The R package 'rgdal' was used to generate geospatially random points within each block, based on the number calculated through PPS and block-level shapefiles provided by the WatSan GIS team.

Stage 1: identification of blocks

As data are available at the block level of the supervision area (camp), probability proportional to size was used to adjust the sampling taking into consideration the relative population size of the blocks. The number of blocks per camp and blocks population size was available from information supplied by UNHCR.

Stage 2: Identification of households

Maps of the camps and their blocks were used to generate sample points (using a random point generator) of x-y coordinates in each SA.

The predetermined x-y coordinates, or waypoints, for surveying were loaded onto smartphones with GPS functionality using OsmAnd. Interviewers were trained in the use of smartphones and OsmAnd to find waypoints in the camps and locate the nearest household for interview.

Stage 3: Identification of the individual to be interviewed

Once a household was randomly selected in a block, the data collector team requested the head of the household (or the adult member of the household best able to answer questions related to water, hygiene, and sanitation access and behaviours) to participate in the survey. If there was no adult available, the team went to the next nearest household (closest door to the left). We have chosen the best time to visit households to maximise our chances of finding an adult at home via the pilot study and through discussions with community health workers. After completing the household questionnaire (universe 1), if there was a parent/guardian of a child <5 years of age living within the household and the parent/guardian agrees to participate, the parent/guardian questionnaire (universe 2) has also been administered. If not, the team went to the next nearest household (to the left), until a parent/guardian of a child <5 years was identified. If the parent or guardian had more than one child <5 years, one was selected at random.

3.4 Study team, training and supervision

Sixteen interviewers were conducted the survey, paired into eight teams of two that are balanced by age and gender. There were two supervisors supporting the eight teams during the data collection process. A two-day training session have carried out to ensure that the data retrieved are of high quality and that the principles of random sampling were maintained.

To ensure the data quality of the survey, two days training in Rohingya- Chittagonian as this is the MSF local working language was conducted at Rubber garden-MSF facility followed by a refresher training after 2 months at MSF Balukhali facility, prior to the final data collection for both phases. A total of 20 surveyors, including the supervisors and team leaders completed the training.

Survey members were formed into teams of one male and one female for gender balance. All the participants were assessed with a pre-test at the beginning of the training and a post-training assessment based on their skillsets and compatibility to pair up for the data collection. Responsibilities, including the role of team leaders, were assigned at the end of the training.

The training discussions covered the main purpose of the LQAS survey and the key WatSan indicators. In addition, the training included the criteria and steps for random household selection as well as use of selected data collection tools and explanations of each team members role. Finally, a part of the training was focused on ethical issues according to the protocol: security, informed consent, privacy and confidentiality.

A 'training' meeting was held with associated staff such as WatSan team, logisticians, community liaisons and Health promotion team to explain the overall study and their roles and expectations.

3.5 Definitions

3.5.1 Household

A household is defined as a group of people who slept under the same roof (i.e., in the same shelter) the previous night. If there are children under five years of age in the selected household, we have to include one of them. If two or more eligible children were found in a household, one was randomly chosen. In this way we ensured that every child had the same probability of being selected.

3.5.2 Parent/guardian

A parent/guardian was defined as the household member who was aged ≥ 18 years who cares for the child <5 years, was present at the time of the survey, and could provide accurate information on all questions asked.

3.6 Questionnaire

Communities (such as Majhees, religious leaders, opinion makers) in the study area was consulted about the purpose of the study, an information sheet was provided when requested, and their approval has been sought. Before data collection, the coordination team has seated respectfully with the Civil surgeon from Cox's bazar to explain the objective of the study, what to expect from the results and to obtain written approval from him. However, since we conducted the survey in our catchment areas, we opted for additional written approval from RRRC, rather informed and consulted with the authorities.

In the households randomly selected according to the above methodology, the interviewer team explained the purpose of the survey to the head of the household in the language he or she was familiar with. Written consent was obtained to conduct the interviews.

Data was collected using two questionnaires (one for each universe) based on a selected set of WatSan indicators (see appendix 8.3). The questionnaire was translated into Burmese language by one of the team leaders and the translation checked by the other team leader to ensure quality of the translation.

The indicators and questions have been reviewed and edited by the MSF-OCA WatSan Unit and Epidemiology Advisor. Small modifications in phrasing were done from field-testing the questionnaire in order to adapt the questions to the specific contexts.

To maintain confidentiality interviews were conducted in the dwelling if possible or where preferred by the respondent to attempt to provide privacy for the household. No identifying individual data have been collected for this survey (i.e., names of respondent, phone numbers or household numbers) maintaining confidentiality of the information gathered. All survey data are securely stored on MSF's KoBoToolBox server and internal SharePoint, with limited access and analysis conducted only by the Epidemiologists.

The LQAS questionnaire has been adapted from LQAS surveys that were previously conducted in Cox's Bazar and in Bentiu Protection of Civilians camp (South Sudan), and has been developed in an electronic format using KoboCollect. Smartphones were used for data collection by a team of trained Rohingya interviewers using these electronic forms.

The following categories of data were collected: (1) demographics; (2) water supply; (3) water storage and safety; (4) hygiene including menstrual hygiene (5) latrines and sanitation (6) solid waste management and (7) water borne disease indicators. See annex for the indicators list.

3.7 Data collection and management

Data was collected in the field using an electronic questionnaire and entered into the KoboCollect mobile application by trained teams of data collectors.

All data was anonymised (no names or other personal identifiable information were collected) and electronic files were stored on the MSF's secure KoBoToolbox server. The participants in the survey were identified by a serial number and no univocal or sensitive information was recorded in the LQAS survey. These measures were applied to ensure the anonymity of the participants. Furthermore, only study investigators have access to these data files. Data cleaning was done to check for inconsistencies in data entry and responses.

Data collected using KoBoCollect will be stored on MSF's cloud server for a period of five years. For analysis purposes, a download of the final database was made, and the database is stored on MSF SharePoint servers which is country management level for processing and analysis. Access to the database is restricted to those with access to the Mission SharePoint folders. After five years, the electronic database will be archived.

3.8 Data analysis

Data analysis has been undertaken using Microsoft Excel, and mapping visualisation in R. The LQAS methodology allows for data to be analysed both at the level of the whole area and the SAs. At SA level the data was tabulated using the LQAS Generic Health Results Excel Sheet. For the data analysis of the whole area level, the same Excel spreadsheet was used. The responses of the households and parents/guardians of children aged less than five years were used to:

1. Determine the crude coverage per indicator per SA.
2. Determine the crude average coverage per indicator for the whole surveyed camp areas by combining the data from all 19 SAs.
3. Calculating the weighted average coverage (and 95% confidence intervals) per indicator for the whole catchment. To produce the weighted average, the number of correct responses per SA was weighed according to the population size of each SA.
4. Classify each of the supervision areas according to two DRs. Each SA (camp) was classified according to whether it had met the decision rule (DR) for weighted average and target coverage. This target was agreed *a priori* upon after discussion with WatSan Advisor and WatSan coordinator. The decision rule for each indicator was calculated using the LQAS table (appendix #) and determined the minimum number of households out of 19 that met the threshold for acceptable level of performance. Where the denominator was less than 19 (respondent did not answer), the target decision rule was calculated accordingly, maintaining the standard of alpha- and beta- errors being less than 10%.

5. Supervision areas that did not meet either decision rules (weighted average or target coverage) were classified as high priority for attention or intervention to address that indicator. Supervision areas that met the weighted average DR but did not meet the target coverage DR were classified as medium priority, signifying that they were within the overall camp average. All other SAs were classified as low priority, where the value is equal or above the target DR.
6. Maps identifying whether each sector is high, medium or low priority for each indicator was produced

In addition, a comparison of the 2018 LQAS indicators was conducted in order to understand if any progress has been made on any of the indicators in the past four years.

3.9 Ethical issues

The survey was conducted in accordance with the World Medical Association Declaration of Helsinki, Ethical Principles for Medical Research Involving Human Subjects (2013) and the 2016 International Ethical Guidelines for health-related research involving humans (CIOMS). As with all community activities, any sick individual was referred for free health care at the nearest health facilities of that household.

MSF-OCA commits to sharing survey results with everyone who has participated in the survey. The local community was informed of the results of the survey through this local network of community leaders.

The protocol was submitted to the MSF research committee and MSF ERB and to the Civil Surgeon in Cox's Bazar for approval.

In addition, the protocol was shared with the WASH sector coordinator and other relevant WASH actors to inform them of this activity.

3.10 Obtaining informed consent

Prior to their involvement, all participants were informed about the objectives and methods of the study. Consent was briefly outlined verbally to ensure respondent comprehension, with voluntary consent being obtained, with a record of this in writing.

3.11 Confidentiality and privacy

Privacy and confidentiality for the participants were ensured both during and after the conduct of the survey. All participants included in the study had the investigations explained to them in a language with which they were familiar. To ensure confidentiality, all data is kept private and confidential. No personal identifiable information was collected from the participants. All data is stored, and password protected on our secure Microsoft SharePoint Mission and project-specific Epidemiology folder. Participants were informed that if anyone in their household was sick with a suspected immediately reportable disease that we will be required to inform the Ministry of Health of their names for any follow-up actions.

4. Results

A total of 361 households and parents/guardians of a child <5 years from the 19 SAs were included in the survey, with interviews spanning over 18 days in January and March 2022. The majority of respondents were female (59%) (Table 2). Most households were male-headed households (76%) with a median household size of six members.

Table 2. Characteristics of the study sample

Characteristic	N = 361 ¹
Household size	
4 or less	103 (29%)
5 to 7	177 (49%)
8 to 10	69 (19%)
More than 10	12 (3.3%)
Sex of head of household	
Female	85 (24%)
Male	276 (76%)
Sex of respondent	
Female	213 (59%)
Male	148 (41%)

¹ Statistics presented: n (%)

4.1 Prevalence and coverage of WatSan indicators in the study catchment areas

4.1.1 Coverage of water supply and quality indicators

The target coverage was met for three indicators: The weighted average for the indicator, proportion of households that use an improved water source calculated as 99.4% [98.5%-100%] (Appendices- Table 20), 93.1% [95% CI 90.4%-95.7%] of households that used a tube well or tap stand reported that the taste of water from was acceptable; and 90.6% [95% CI 87.9%-93.4%] of households reported that water from tube wells was used for all activities including drinking, cooking, washing dishes, washing hands, bathing, and washing clothes (Table 3).

Less than half (43.9%) [95% CI 38.9%-48.8%] of all respondents reported that water had been continuously available in the previous week. However, 84.3% [95% CI 81.9%-86.8%] of households reported that surface water was not used for drinking or cooking.

Table 3. Water supply and quality coverage indicators in Cox's Bazar, Bangladesh, Jan-March 2022.

#	Water supply indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
1	Proportion of households that use an improved water source for drinking	95%	99.4%	99.4%	98.5%-100%	16	N/A
2	Proportion of households that report the taste of the water from the nearest improved water source is acceptable	80%	93.4%	93.1%	90.4%-95.7%	13	15
3	Proportion of households that use the same improved water source for all activities	90%	88.4%	90.6%	87.9%-93.4%	15	15
4	Proportion of households that DO NOT report using surface water for drinking or cooking	95%	84.2%	84.3%	81.9%-86.8%	16	15
5	Proportion of households who report that water was continuously available from their habitual water source for the last week	80%	44.8%	43.9%	38.9%-48.8%	13	5

4.1.2 Coverage of water storage indicators

For water storage, the target coverage was only met for two indicators: 96.4% [95% CI: 94.4%-98.5%] of households had water containers that when combined had a total capacity of at least 10 liters (indicator 6), and all households (100%) cleaned the inside of their water storage containers at least once a week (indicator 7). However, only a quarter of households (27.4%) [95% CI: 22.8%-32.0%] reported that water was kept in the container for less than 1 day (indicator 8) (Appendices- Table 21).

Chlorination coverage nearly met the target of 80%, as 77.6% [95% CI: 73.0%-82.1%] households reported that their water was chlorinated either at point of storage or collection (indicator 10). Additionally, 74.3% [95% CI: 69.6%-79.1%] of households reported that the taste of chlorinated water was acceptable (indicator 9).

Table 4. Water storage indicators in Cox's Bazar, Bangladesh, Jan-March 2022.

#	Water storage indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
6	Proportion of households that have water containers of at least 10 litres total capacity	90%	97.0%	96.4%	94.4%-98.5%	15	19
7	Proportion of households that clean the inside of water containers at least once a week	80%	100.0%	100.0%	100.0%-100.0%	13	19
8	Proportion of households that keep water in household containers for less than one day	90%	25.5%	27.4%	22.8%-32.0%	15	2
9	Proportion of households that find the taste of chlorinated water to be acceptable	80%	75.9%	74.3%	69.6%-79.1%	13	12
10	Proportion of households whose water was treated with chlorine, either tablet (Aquatabs) or at the point of collection when they last collected drinking water	80%	79.2%	77.6%	73.0%-82.1%	13	12

4.1.3 Coverage of hygiene practice indicators

None of the coverage targets were met for hygiene practice. However, most households (91.1%) [95% CI: 88.5%-93.6%] demonstrated that they had at least one piece of soap (indicator 11). The majority of respondents had soap and water available in the home for handwashing (83.4%) [95% CI: 79.6%-87.2%] (indicator 12) and had been visited by a hygiene promoter (75.3%) [95% CI: 70.6%-80.0%] (indicator 13).

Regarding feminine hygiene, 61.6% [95% CI: 56.9%-66.2%] of households reported use of acceptable materials (reusable) for their menstrual hygiene (indicator 14), while 73.7% [95% CI: 70.7%-76.7%] reported ever having received menstrual hygiene products from a distribution (indicator 15). Most households (86.6%) [95% CI: 82.8%-90.5%] reported appropriate disposal of single use menstrual hygiene products (indicator 16) (Appendices- Table 22).

Table 5. Hygiene practice and coverage indicators in Cox's Bazar, Bangladesh, Jan-Mar 2022.

#	Hygiene indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
11	Proportion of households that can show at least one piece of soap	95%	91.9%	91.1%	88.5%-93.6%	16	15
12	Proportion of households that currently have soap and water available for handwashing in the household	90%	84.7%	83.4%	79.6%-87.2%	15	13
13	Proportion of households that have been visited by a hygiene promoter	80%	77.6%	75.3%	70.6%-80.0%	13	12
14	Proportion of households whose female members use acceptable materials for menstrual hygiene	95%	63.7%	61.6%	56.9%-66.2%	16	9
15	Proportion of households that has ever received menstrual hygiene products from a distribution	95%	75.3%	73.7%	70.7%-76.7%	16	11
16	Proportion of households that dispose of single use menstrual hygiene products appropriately	95%	91.1%	86.6%	82.8%-90.5%	16	14

4.1.4 Coverage of sanitation indicators

Sanitation coverage was well below the targets for all indicators. Very few, like 11.4% [95% CI: 8.0%-14.7%] and 10.8% [95% CI: 7.5%-14.0%] households used latrines that met the criteria for being an improved sanitation facility¹ (Indicators 17 and 18) (Appendices- Table 23). Regarding disposal of children's feces, 70.8% [95% CI: 66.2%-75.4%] of households reported disposing of them in a latrine (indicator 19), and 15% reported not having any children.

¹ Criteria : Latrine must have a functional lockable door, is not overflowing, does not have any visible feces, is within 50 steps of the household, and has an acceptable handwashing station with soap and water

Table 6. Sanitation indicators practice and coverage in Cox's Bazar, Bangladesh, Jan-Mar 2022

#	Sanitation indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
17	Proportion of households whose male members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	90%	11.6%	11.4%	8.0%-14.7%	15	N/A
18	Proportion of households whose female members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	90%	11.1%	11.0%	7.5%-14.0%	15	N/A
19	Proportion of households that dispose of children's and babies' faeces in an appropriate manner	95%	67.6%	70.8%	66.2%-75.4%	16	11

4.1.5 Coverage of solid waste management indicators

Of solid waste management indicators, the targets were met for two indicators: 85.9% [95% CI: 82.7%-89.1%] of households reported disposing of their waste via communal waste collection (indicator 20) (Appendices- Table 24), and of those 97.6% [95% CI: 95.8% - 99.4%] reported satisfaction with the frequency of waste collection by the communal services (indicator 22) (Appendices- Table 24).

A low proportion (17.0%) [95% CI: 13.5%-20.5%] of households rely on other methods to get rid of their waste (indicator 21), and 29.9% [95% CI: 25.5%-34.3%] of households reported that specific types of waste are collected for reuse and recycling (indicator 23). In terms of solid waste storage in the home, 25.0% [95% CI: 20.9%-29.0%] of households had at least 1 bucket/garbage bin of 20L (indicator 24).

Table 7. Solid waste management indicators in Cox's Bazar, Bangladesh, Jan-Mar 2022.

#	Solid waste management indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
20	Proportion of households that dispose of their waste via communal waste collection	80%	85.6%	85.9%	82.7%-89.1%	13	14
21	Proportion of households that rely on other methods to get rid of their waste	60%	17.5%	17.0%	13.5%-20.5%	9	N/A
22	Proportion of household which are satisfied with the collection frequency of the waste by communal services	80%	97.7%	97.6%	95.8%-99.4%	13	19
23	Proportion of households for which specific types of waste are collected for reuse, recycling	50%	32.7%	29.9%	25.5%-34.3%	7	3
24	Proportion of households that has at least 1 bucket/garbage bin of 20L for solid waste storage	70%	24.7%	25.0%	20.9%-29.0%	11	2

4.1.6 Prevalence of water, sanitation and hygiene related disease

The target prevalence among children under 5 years old was met for not having eye infections (96.3%) [95% CI: 94.1%-98.5%] (Indicator 26) and not suffering from jaundice (92.7%) [95% CI: 91.5%-94.0%] (Indicator 28). However, the prevalence of skin infection was 68.4% [95% CI: 63.5%-73.2%] of children under 5 years old not reported to have skin infections (indicator 27) and 78.9% [95% CI: 74.5%-83.4%] of children under 5 years not reporting to have diarrhoea (indicator 25).

Table 8. Water, sanitation and hygiene related disease indicator in Cox's Bazar, Bangladesh, Jan-Mar 2022.

#	Disease indicator	Target coverage	Crude average	Weighted average	95% CI	Target DR	WtAv DR
25	Proportion of households reporting NOT HAVING diarrhoea among children <5 years in the last two weeks	80%	78.7%	78.4%	73.9%-82.9%	13	12
26	Proportion of households reporting NOT HAVING eye infections among children <5 years in the last two weeks	80%	97.0%	96.3%	94.1%-98.5%	13	16
27	Proportion of households reporting NOT HAVING skin infections among children <5 years in the last two weeks	80%	68.1%	68.4%	63.5%-73.2%	13	11
28	Proportion of households reporting NOT HAVING jaundice among children <5 years in last two weeks	80%	97.0%	92.7%	91.5%-94.0%	13	15

4.2 Coverage of WASH Indicators by camp

4.2.1 Water supply indicators by priority and camp

Both of the indicators, households using an improved water source for drinking (indicator 1) and the acceptance of the taste of the water from the nearest water source (indicator 2) was considered low priority for all SAs. All camps but Camps 11 and 20 were classified as high priority regarding the proportion of households using the same water source for all activities (indicator 3). These SAs were also classified as high priority on use of surface water for drinking or cooking (indicator 4), and camp 14 was classified as medium priority.

Regarding continuous availability of water from the habitual water source (indicator 5), Camps 2W, 6, 7, 8E, 15, 16, 20 Ext, 11, 13, 17 and 20 were classified as medium priority, and Camps 9, 8W and 18 were calculated as high priority. All other camps were low priority.

Table 9. Water supply and quality SA prioritization in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20
Indicator	Prioritization of attention needed for each indicator																		
1 Proportion of households that use an improved water source for drinking	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
2 Proportion of households that report the taste of the water from the nearest improved water source is acceptable	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
3 Proportion of households that use the same improved water source for all activities	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	HIGH
4 Proportion of households that DO NOT report using surface water for drinking or cooking	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MED	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	HIGH
5 Proportion of households who report that water was continuously available from their habitual water source for the last week	LOW	MED	MED	MED	HIGH	LOW	MED	HIGH*	LOW	MED	MED	MED	MED	LOW*	MED	MED	HIGH	LOW	MED

*Alpha or beta errors are greater than or equal to 10%.

4.2.2 Coverage of water storage indicators by priority and camp

All SAs were classified as low priority on water storage capacity and cleanliness (indicators 6 and 7). However, regarding storage of water in the household for less than one day (indicator 8), Camps 10, 8W, 20 extension, 12 and 20 were classified as high priority and all other camps were considered medium priority.

Acceptance of the taste of chlorinated water (indicator 9) was low priority in all SAs except in Camps 2W, 15 and 12, which were classified as high priority. Regarding treatment of water with chlorine (indicator 10), only camp 7 was classified as high priority and Camps 9 and 11 were considered medium priority.

Table 10. Prioritization on water storage system in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20	
Indicator	Prioritization of attention needed for each indicator																			
6 Proportion of households that have water containers of at least 10 litres total capacity	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
7 Proportion of households that clean the inside of water containers at least once a week	LOW*	LOW	LOW	LOW	LOW	LOW*	LOW	LOW	LOW	LOW*	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW*	LOW	LOW*
8 Proportion of households that keep water in household containers for less than one day	MED	MED	MED	MED	MED	HIGH	MED	HIGH	MED	MED	MED	HIGH	MED	HIGH	MED	MED	MED	MED	MED	HIGH
9 Proportion of households that find the taste of chlorinated water to be acceptable	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	LOW
10 Proportion of households whose water was treated with chlorine, either tablet (Aquatabs) or at the point of collection when they last collected drinking water	LOW	LOW	LOW	HIGH	MED	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MED	LOW	LOW	LOW	LOW	LOW

*Alpha or beta errors are greater than or equal to 10%.

4.2.3 Hygiene coverage indicators by priority and camp

All SAs were low priority for being able to show at least one piece of soap (indicator 11) except Camps 10 and 18, which were calculated as high priority. The same camps were also classified as high priority in terms of having soap and water available for handwashing in the household (indicator 12), and Camp 15 was classified medium. Regarding visits from hygiene promoters (indicator 13), Camps 2W and 8W were calculated as high priority and Camp 15 as medium priority.

In terms of menstrual hygiene, Camps 2E, 8W, 20 extension and 18 were assessed to be high priority for use of acceptable menstrual hygiene materials (indicator 14), whereas Camps 2W, 6, 7, 10, 8E, 14, 15, 11, 13, and 17 were medium priority. For access of menstrual hygiene materials from a distribution (indicator 15), Camps 2E, 6, 14, 11 and 12 were calculated as high priority and then Camps 10, 16 and 18 were medium priority. Appropriate disposal of single-use menstrual hygiene products (indicator 16) was classified as low priority in Camps 2E, 8W, and 20 extension, and could not be calculated for other SAs due to low sample sizes (<12).

Table 11. Hygiene practice and coverage indicators prioritization in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20	
Indicator	Prioritization of attention needed for each indicator																			
11 Proportion of households that can show at least one piece of soap	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW
12 Proportion of households that currently have soap and water available for handwashing in the household	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	MED	LOW	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW
13 Proportion of households that have been visited by a hygiene promoter	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	MED	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
14 Proportion of households whose female members use acceptable materials for menstrual hygiene	HIGH*	MED	MED	MED	LOW	MED	MED	HIGH	MED	MED	LOW	HIGH	MED	LOW	MED	MED	HIGH	LOW	LOW	LOW
15 Proportion of households that has ever received menstrual hygiene products from a distribution	HIGH*	LOW	HIGH	LOW	LOW	MED	LOW	LOW	HIGH	LOW	MED	LOW	HIGH	HIGH	LOW	LOW	MED	LOW	LOW	LOW
16 Proportion of households that dispose of single use menstrual hygiene products appropriately	LOW*	N/A	N/A	N/A	N/A	N/A	N/A	LOW	N/A	N/A	N/A	LOW*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Alpha or beta errors are greater than or equal to 10%.

4.2.4 Coverage of sanitation indicators by priority and camps

None of the households in any camps reported use of an improved sanitation facility with an acceptable handwashing area with soap water and functional latrine, for male or female members (indicators 17 and 18). Therefore, all SAs were classified as not applicable as the crude and weighted average were <15%. Regarding disposal of child feces, Camps 2E, 6, 10, 20 extension, 11, 13 and 20 were classified as high priority and Camps 2W, 14, 15, 16, 12 and 18 were classified as medium priority.

Table 12. Sanitation indicators prioritization in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20
Indicator	Prioritization of attention needed for each indicator																		
17 Proportion of households whose male members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18 Proportion of households whose female members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19 Proportion of households that dispose of children's and babies' faeces in an appropriate manner	HIGH	MED	HIGH	LOW	LOW	HIGH	LOW	LOW	MED	MED	MED	HIGH	HIGH	MED	HIGH	LOW	MED	LOW	HIGH

4.2.5 Coverage of Solid waste management indicators by priority and camps

Regarding disposal of waste materials by communal waste collection (indicator 20), Camps 6 and 14 were high priority, and all others were classified as low priority. Satisfaction with the frequency of communal waste collection methods (indicator 22) was low priority in all camps except for Camps 6 and 14, where the sample size was too low to determine prioritization. For reliance on other methods to dispose of waste (indicator 21), the weighted average coverage was too low to determine a decision rule, so all camps below the target were considered high priority – this included all camps except Camps 6, 14 and 17 were low priority.

Waste collection for reuse and recycling (indicator 23) was classified as high priority for Camps 2W, 10, 8E, 8W, 20 extension, 11, 12, and medium priority for Camps 7, 9, 18, and 19. Regarding household possession of one bucket or garbage bin of 20L capacity for solid waste storage, Camps 2E, 2W, 6, 9, 11, 12 were classified as high priority, while Camps 10, 8E, 14, 15, 16, 20 extension, 13, 17, 18 and 20 were classified as medium priority.

Table 13. Prioritization on solid waste management indicators in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20	
Indicator	Prioritization of attention needed for each indicator																			
20 Proportion of households that dispose of their waste via communal waste collection	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
21 Proportion of households that rely on other methods to get rid of their waste	HIGH	HIGH	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	HIGH	HIGH	HIGH	HIGH
22 Proportion of household which are satisfied with the collection frequency of the waste by communal services	LOW*	LOW	N/A	LOW**	LOW	LOW	LOW*	LOW*	N/A	LOW	LOW*	LOW	LOW	LOW*	LOW*	LOW*	LOW*	LOW*	LOW*	LOW*
23 Proportion of households for which specific types of waste are collected for reuse, recycling	LOW	HIGH	LOW	MED	MED	HIGH	HIGH	HIGH	LOW	LOW	LOW	HIGH	HIGH	HIGH	LOW	LOW	MED	MED	LOW	LOW
24 Proportion of households that has at least 1 bucket/garbage bin of 20l for	HIGH	HIGH	HIGH	LOW	HIGH	MED	MED	LOW	MED	MED	MED	MED	HIGH	HIGH	MED	MED	MED	LOW	MED	MED



*Alpha or beta errors are greater than or equal to 10%.

**Alpha or beta errors are greater than 15%.

4.2.6 Prevalence of diseases related with water and hygiene by priority and camps

Prevalence of not having eye infections and jaundice in children under 5 years old was calculated as low priority across all SAs. Regarding prevalence of not suffering from diarrhoea in the same age group, Camp 11 was classified as medium priority. Prevalence of not having skin disease in children under 5 years old was calculated as high priority in Camps 6, 8E, 16 and 11 and medium priority in Camps 14, 12, 13 and 17.

Table 14. Prioritization on water borne disease indicators in Cox's Bazar, Bangladesh, Jan-March 2022.

Camp:	2E	2W	6	7	9	10	8E	8W	14	15	16	20ext	11	12	13	17	18	19	20
Indicator	Prioritization of attention needed for each indicator																		
25 Proportion of households reporting NOT HAVING diarrhoea among children <5 years in the last two weeks	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MED	LOW	LOW	LOW	LOW	LOW	LOW
26 Proportion of households reporting NOT HAVING eye infections among children <5 years in the last two weeks	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
27 Proportion of households reporting NOT HAVING skin infections among children <5 years in the last two weeks	LOW	LOW	HIGH	LOW	LOW	LOW	HIGH	LOW	MED	LOW	HIGH	LOW	HIGH	MED	MED	MED	LOW	LOW	LOW
28 Proportion of households reporting NOT HAVING jaundice among children <5 years in last two weeks	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW

4.3 Comparison of results between 2018 and 2022 LQAS in study catchment camps

4.3.1 Coverage of water supply and quality indicators

The proportion of respondents who utilize a functional improved water source increased by 46% in 2022. Additionally, the availability of continuous water supply in the previous week decreased by 2% over time and continued to fall short of the target coverage (80%). The acceptability of tube well and tap stand water taste among respondents increased by 7% compared to 2018 and sustained meeting the target coverage (80%).

However, the usage of similar water sources for all activities (drinking, cooking, dishwashing, handwashing, bathing, and washing clothing) has dropped by 8% in 2022 but remains within the target coverage (90%). Respondents reporting not using surface water for drinking or cooking increased by 9% in 2022, but remain below the desired target coverage (95%)

Table 15. Water supply and quality coverage indicators in the catchment areas in Cox's Bazar, Bangladesh, 2018 - 2022.

#	Water supply indicator	Target coverage	2018 weight average (95% CI)	2022 weighted average (95% CI)	Proportion difference (2022-2018)	Change	Status
1	Proportion of households that use an improved water source for drinking	95%	53% (46%-59%)	99.4% (98.5%-100.2%)	46%	Improved	Target met
2	Proportion of households that report the taste of the water from the nearest improved water source is acceptable	80%	86% (83%-90%)	93% (90%-96%)	7%	Stable	Target met
3	Proportion of households that use the same improved water source for all activities	90%	99% (98%-100%)	91% (88%-93%)	-8%	Deteriorated	Target met
4	Proportion of households that DO NOT report using surface water for drinking or cooking	95%	83% (81%-86%)	92% (89%-94%)	9%	Improved	Target NOT met
5	Proportion of households who report that water was continuously available from their habitual water source for the last week	80%	46% (41%-51%)	44% (39%-49%)	-2%	Stable	Target NOT met/low performing

4.3.2 Coverage of water storage indicators

The proportion of households with water containers of at least 10L capacity has improved marginally (2%) from the last LQAS result and continued meeting the target coverage (90%). Similarly, the proportion of homes reporting cleaning inside containers at least once a week increased by 1% and remained within the target coverage (80%). However, the proportion of households who retain water in household containers for less than one day fell by 70% over time and failed to attain the target coverage (90%). In 2018, both the indicators; acceptance of chlorinated water taste and the households whose water was treated with chlorine were below target coverage (80% respectively), despite increase in proportion over the time by 16% and 35% respectively, the indicators remained below target coverage in 2022.

Table 16. Water storage indicators in the catchment areas in Cox's Bazar, Bangladesh, 2018 - 2022.

#	Water storage indicator	Target coverage	2018 weight average (95% CI)	2022 weighted average (95% CI)	Proportion difference (2022-2018)	Change	Status
6	Proportion of households that have water containers of at least 10 litres total capacity	90%	94% (91%-96%)	96% (94%-99%)	2%	Stable	Target met
7	Proportion of households that clean the inside of water containers at least once a week	80%	99% (97%-100%)	100% (100%-100%)	1%	Stable	Target met
8	Proportion of households that keep water in household containers for less than one day	90%	97% (95%-98%)	27% (23%-32%)	-70%	Deteriorated	Target NOT met/low performing
9	Proportion of households that find the taste of chlorinated water to be acceptable	80%	58% (52%-64%)	74% (70%-79%)	16%	Improved	Target NOT met
10	Proportion of households whose water was treated with chlorine, either tablet (Aquatabs) or at the point of collection when they last collected drinking water	80%	43% (39%-48%)	78% (73%-82%)	35%	Improved	Target met

4.3.3 Coverage of hygiene practice indicators

In 2018, the proportion of households reported having at least one piece of soap was within target coverage; however, by 2022, the proportion had declined by 7% and failed to reach target coverage (95%). The proportion of households with soap and water accessible for handwashing has remained stable over time and has stayed below the target coverage (90%). The proportion of households visited by at least one hygiene promoter in 2018 was within target coverage; however, in 2022, the proportion declined by 6% and failed to reach target coverage (80%). Similarly, the proportion of households with female members that use acceptable materials for menstruation hygiene dropped by 36% in 2022, falling short of the target coverage (95%). Although data from 2018 on the indicators of the proportion of households that have ever received menstrual hygiene products from a distribution and the appropriate disposal of single use menstrual hygiene products are not available to compare, both indicators failed to meet the target coverage (95% respectively) in 2022.

Table 17. Hygiene indicators in the catchment areas in Cox's Bazar, Bangladesh, 2018 - 2022.

#	Hygiene indicator	Target coverage	2018 weighted average (95% CI)	2022 weighted average (95% CI)	Proportion difference (2022-2018)	Change	Status
11	Proportion of households that can show at least one piece of soap	95%	98% (97%-99%)	91% (89%-94%)	-7%	Deteriorated	Target NOT met
12	Proportion of households that currently have soap and water available for handwashing in the household	90%	83% (79%-87%)	83% (80%-87%)	0%	Stable	Target NOT met
13	Proportion of households that have been visited by a hygiene promoter	80%	81% (77%-85%)	75% (71%-80%)	-6%	Stable	Target met
14	Proportion of households whose female members use acceptable materials for menstrual hygiene	95%	98% (96%-99%)	62% (57%-66%)	-36%	Deteriorated	Target NOT met/low performing
15	Proportion of households that has ever received menstrual hygiene products from a distribution	95%	-	74% (71%-77%)	-	-	Target NOT met
16	Proportion of households that dispose of single use menstrual hygiene products appropriately	95%	-	87% (83%-91%)	-	-	Target NOT met

4.3.4 Coverage of sanitation indicators

For both male-focused and female-focused indicators on utilization of an improved sanitation facility with an acceptable handwashing area with soap and water point, the target coverage increased from 80% in 2018 to 90% in 2022. Nonetheless, the proportions for both indicators increased by 3% over time, remaining below the target coverage (90% respectively). The proportion of households that properly dispose of children's and babies' feces continued to fall short of the target coverage (95%) and declined by 1% over time.

Table 18. Sanitation indicators in the catchment areas in Cox's Bazar, Bangladesh, 2018 - 2022.

#	Sanitation indicator	Target coverage	2018 weighted average (95% CI)	2022 weighted average (95% CI)	Proportion difference (2022-2018)	Change	Status
17	Proportion of households whose male members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	90%	8% (6%-10%)	11.4% (8.0%-14.7%)	3%	Stable	Target NOT met/low performing
18	Proportion of households whose female members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	90%	8% (5%-10%)	11% (7.5%-14.0%)	3%	Stable	Target NOT met/low performing
19	Proportion of households that dispose of children's and babies' faeces in an appropriate manner	95%	72% (67%-77%)	71% (66%-75%)	-1%	Stable	Target NOT met

4.3.5 Coverage of solid waste management indicators

There is no data on solid waste management indicators from the 2018 report to compare to the findings in 2022. However, in the recent study we found there to be a functioning waste collection system. Indeed, two out of five solid waste management indicators met the targets, namely the number of households disposing of their waste via communal waste collection and the satisfaction with the frequency of waste collection by the communal services. It can be concluded that there appears to be a systematic approach to waste collection which helps to prevent piling up rubbish, bad smell in the environment and vectors.

However three indicators out of five performed poorly, namely, having at least one garbage bin covered by lid with 20L, recycling/reusing practices, and having more than one method to get rid of waste are capacity as communal waste management service.

4.3.6 Prevalence of water, sanitation and hygiene related diseases

In 2018, the proportions of children under 5 years old not reported to have had diarrhoea, eye infection, skin infection, and jaundice were within the target prevalence, however, the situation deteriorated with time. The proportion of children under 5 years old in 2022 that were not reported to have had diarrhoea and skin infection failed to attain the target prevalence (80% respectively) in 2022, and the proportion of children under 5 years old not reported to have had jaundice decreased but remained within the target prevalence. On the other hand, the proportion of children under 5 years old not reported to have had eye infection remained stable and within the target coverage (80 percent).

Table 19. Disease indicator in the catchment areas in Cox's Bazar, Bangladesh, 2018 - 2022.

#	Disease indicator	Target coverage	2018 weighted average (95% CI)	2022 weighted average (95% CI)	Proportion difference (2022-2018)	Change	Status
25	Proportion of households reporting NOT HAVING diarrhoea among children <5 years in the last two weeks	80%	80% (76%-84%)	79% (75%-83%)	-1%	Stable	Target met
26	Proportion of households reporting NOT HAVING eye infections among children <5 years in the last two weeks	80%	98% (96%-99%)	96% (93%-98%)	-2%	Stable	Target met
27	Proportion of households reporting NOT HAVING skin infections among children <5 years in the last two weeks	80%	93% (91%-96%)	69% (64%-74%)	-24%	Deteriorated	Target NOT met
28	Proportion of households reporting NOT HAVING jaundice among children <5 years in last two weeks	80%	100% (99%-100%)	93% (92%-94%)	-7%	Deteriorated	Target met

5. Discussion

The LQAS survey provided an assessment of the WASH situation in 19 Rohingya refugee camps among the 27 previously planned in Cox's Bazar district, Bangladesh and identified key WASH services that require attention more generally and at the camp level. Of the 28 indicators examined, 16 did not meet the target threshold values and of those, seven high priority indicators were identified with values at least 30% lower than the target threshold values. The seven high priority indicators signal the need for continuous access to habitual water sources and the linked observation of extended water storage time in households, greater access to bins for solid waste management, as-well as the provision and the use of acceptable materials for menstrual hygiene and the use of sanitation facilities for men and women in the camps.

5.1 Water supply and storage

Whilst there has been a significant improvement in the proportion of refugees who have access to improved quality of water in 2022 compared to 2018, a similar improvement in quantity was not seen. Of the five indicators examined for water supply, the finding was at an unacceptable level for the indicator on refugees receiving water from a continuously available water source. This indicator was already highlighted as a high priority area in the 2018 LQAS and further deterioration was observed in this survey. It must be noted that significant funding has been allocated to water networks and chlorination, which is reflected in the data. However, since 2019, water provision has been rationed to two times a day in many camps and in some instances, orders have been given to decrease the minimum number of liters per day. This corresponds to a shift in risky water storage practices.

For example, two out of five indicators for water storage met the target threshold values, however, the proportion of households keeping water in household containers for less than one day was unacceptable. That means the majority of households are storing water for a long time which could be due to lack of water supply signaling less distribution than the actual need and the distance of water source from the households. In 2018, most of the respondents reporting keeping water in their households for less than one day was at a higher level but this has greatly decreased in 2022. The current high proportion of households keeping water for more than one day may suggest a possible coping mechanism that beneficiaries use to secure water as long as they can due to its low accessibility. However, the longer storage of water increases the risk of households having water without less or no free residual chlorine, therefore can put them at higher health risk as the water becomes vulnerable to contaminations.

5.2 Hygiene practice

Only one out of six hygiene indicators met the target threshold values. In 2018, the proportion of households reported having at least one piece of soap was within target coverage; however, by 2022, the proportion had reduced by 7% and failed to reach the target coverage (95%). Proper hand washing is the most effective way of preventing and controlling communicable diseases [20]. Due to improper hygiene practice, outbreaks will continue to propagate and this has been seen with recent increases in scabies cases across the camps. Similarly, the proportion of households with female members that use acceptable materials for menstruation hygiene dropped by 36% in 2022. The distribution of the menstrual hygiene products was relatively higher than the usage among females of reproductive age group. However, it must be noted that the majority of refugees prefer to use reusable menstrual hygiene pads, due to cultural and historical reasons. Expectations on this indicator are indicative of potential health risks due to unhygienic

practices more than indicative of effectiveness of WASH programming. Nevertheless, in a crowded camp, which has poor hygiene standards, menstrual hygiene education and programs are important health-activities. It must be noted that data from 2018 on the indicators of the proportion of households that have ever received menstrual hygiene products from a distribution and the appropriate disposal of single use menstrual hygiene products are not available to compare.

5.3 Sanitation conditions

Overall, the sanitation status in the camps remains not only poor but it has deteriorated significantly over the last four years. Whilst there was a 3% increase in both male and female usage of improved sanitation facilities to 11.6%; there was a notable drop in the functionality. Even if we account for the difficulties in maintaining a soap stand at communal areas in the camp, in 2018, 70% of respondents indicated there was no visible faeces in the latrine, however that dropped to 42% in 2022. Furthermore, only 24% of latrines were not overflowing which is a deterioration from roughly 66% in 2018. This drop in quality of the latrines shows that less latrines are being de-sludged in a timely manner, as well as not being cleaned and maintained. Whilst lockable doors and covers over opening indicators increased, which shows improvements in providing privacy, the maintenance of the latrines by desludging to improve utilization needs appropriate attention.

This is further evidenced by the fact that more people are travelling further to use latrines, with roughly 42% using latrines within 50 steps of the household compared to 72% in 2018. (Appendices- Table 23). These findings represent that whilst sanitation infrastructure is available, the functionality and the usability of them are poor. Desludging services are not adequate or sufficient and sanitation facilities are not properly serviced and maintained. It appears however, improvements were only seen in physical improvements like locked doors and covers.

The proportion of households that properly dispose of children's and babies' feces also continued to fall short of the target coverage (95%) and declined by 1% over the period of four years.

5.4 Waste Management

The findings show that there is a functioning waste management system, this is reflected in indicators 16, 20-24. That being said, there is a shortage of adequate waste storage in households and waste is still very visible through out the camps. With any communal waste-based systems, the frequency of collection must be also given attention. Indeed, communal waste areas apart from the aesthetic devaluation of the environment created, are good breeding grounds for rodents, flies and mosquitoes. This therefore increases the risk for vector borne diseases like dengue fever and malaria; both of which are now rising in prevalence in the camp at the time of writing this report. Additionally, flies facilitate the spread of faeco-oral disease such as cholera and dysentery and others.

5.5 Health indicators

Of the four health indicators assessed, only the target value for skin infections among children was not met. This corresponds with the findings of less availability of water, and soap as presented in this report which consequently facilitate the spread of water-washed diseases such as scabies, although not being the only cause. The other indicators related to diarrhoea, eye infections and jaundice met or exceeded

the target thresholds in 2018 and 2022. The higher proportion of skin infections among children follows the large increase in scabies infections observed in MSF health facilities since the end of 2021 and in 2022. This increase in scabies infection could be indirectly linked with the reduced access to water and soap at WASH facilities. Some scabies treatment protocols recommend applying the medicine after showering and reduced quantities of water does not facilitate this treatment or promote good hygiene practices.

5.6 Strengths and limitations

A key strength of this study was that WASH services were assessed in 19 out of 27 camps, which provided a good overview of the current WASH situation in most of the camps and would likely also be indicative of the WASH situation in the other camps in Cox's Bazar. In addition, comparison of the data with the 2018 survey allowed identification of areas where improvements have been made and equally identified areas which have not changed or further deteriorated and thus require urgent action.

Nevertheless, the survey has several limitations. Firstly, as with all LQAS, the small sample sizes used mean that they are not highly powered surveys and can incorrectly classify poorly performing areas as higher or acceptably performing. This survey has focused mainly on the coverage and quality of the WASH services in the camps; however, it doesn't generally assess the knowledge, attitude and practices of these services. Access to services without the knowledge of utilisation of the services makes it incomplete. In addition, most of the questions are based on the self-report of the household which could be affected by social desirability bias. However, part of this effect was mitigated through the inclusion of observation data. In addition, due to some approval issues, we had to downsize the study area from 27 to 19 camps

5.7 Recommendations

Priority recommendations for the Government of Bangladesh, WASH actors and donors:

Water Supply:

- WASH PROVIDERS: Not only ensure provision of infrastructure of water in the areas of the population, but mostly ensure accessibility to safe chlorinated water and sufficient water quantity.
- WASH SECTOR: Ensure availability of a real time mapping of the camp water points (including other Wash facilities) particularly with their functionality status (operational/damaged/not available etc.) and assign recommendations for improvement.
- WASH CLUSTER and PROVIDERS: To work toward removal of restrictions on provision of water in the refugee camps and adapt to real humanitarian needs (based on documented populations and sphere standards) since the populations need real access to sufficient quantities and quality of water, and although not always easy, it is important to include functioning handwashing points at latrines to maintain healthy and dignified lives.
- DONORS: Ensure closer monitoring of the implementing agencies' performance and reporting, and compliance with SPHERE guidelines.

Sanitation

- WASH PROVIDERS: Desludging activities should be urgently prioritized to increase the functionality of latrines.
- WASH PROVIDERS: Hygiene maintenance of sanitation facilities must be routinely carried out in a systematic and accountable way to ensure their usability.
- DONORS: Ensure proper monitoring and evaluation reporting thresholds are adhered to in-line with this report's findings.

Hygiene and Health Promotion

- WASH PROVIDERS: More consistent and frequent soap distributions.
- WASH PROVIDERS: Ensure functioning handwashing points at latrines to maintain healthy and dignified lives.
- WASH PROVIDERS: Ensure health promotion messages feature menstrual hygiene together with adequate distribution of hygiene related products.

Waste Management

- WASH PROVIDERS: Distribution of 20litre household waste containers.
- WASH PROVIDERS: Ensure frequent and rigorous cleaning of communal waste areas, to avoid vector borne risks.

Admin

- ISCG & RRRC: Streamline and improve issuing approvals, and coordination support to WASH actors in the camps to allow them to work more efficiently.
- WASH SECTOR: To take the lead in a more active role for WASH services provision monitoring and follow up.
- WASH SECTOR: To promote and facilitate routine LQAS or third-party experts with proven capacity and willingness to monitor and improve WASH conditions in the camp.

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7. Appendices

7.1 LQAS table

LQAS Table: Decision Rules for Sample Sizes of 12-30 and Coverage Targets/Average of 10%-95%																		
Sample Size*	Average Coverage (Baselines) / Annual Coverage Target (Monitoring and Evaluation)																	
	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
12	N/A	N/A	1	1	2	2	3	4	5	5	6	7	7	8	8	9	10	11
13	N/A	N/A	1	1	2	3	3	4	5	6	6	7	8	8	9	10	11	11
14	N/A	N/A	1	1	2	3	4	4	5	6	7	8	8	9	10	11	11	12
15	N/A	N/A	1	2	2	3	4	5	6	6	7	8	9	10	10	11	12	13
16	N/A	N/A	1	2	2	3	4	5	6	7	8	9	9	10	11	12	13	14
17	N/A	N/A	1	2	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	N/A	N/A	1	2	2	3	5	6	7	8	9	10	11	11	12	13	14	16
19	N/A	N/A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
20	N/A	N/A		2	3	4	5	6	7	8	9	11	12	13	14	15	16	17
21	N/A	N/A	1	2	3	4	5	6	8	9	10	11	12	13	14	16	17	18
22	N/A	N/A	1	2	3	4	5	7	8	9	10	12	13	14	15	16	18	19
23	N/A	N/A	1	2	3	4	6	7	8	10	11	12	13	14	16	17	18	20
24	N/A	N/A	1	2	3	4	6	7	9	10	11	13	14	15	16	18	19	21
25	N/A	1	2	2	4	5	6	8	9	10	12	13	14	16	17	18	20	21
26	N/A	1	2	3	4	5	6	8	9	11	12	14	15	16	18	19	21	22
27	N/A	1	2	3	4	5	7	8	10	11	13	14	15	17	18	20	21	23
28	N/A	1	2	3	4	5	7	8	10	12	13	15	16	18	19	21	22	24
29	N/A	1	2	3	4	5	7	9	10	12	13	15	17	18	20	21	23	25
30	N/A	1	2	3	4	5	7	9	11	12	14	16	17	19	20	22	24	26

N/A: *Not Applicable*, meaning LQAS can not be used in this assessment because the coverage is either too low or too high to assess an SA.

This table assumes the lower threshold is 30 percentage points below the upper threshold.

light-shaded cells indicate where *alpha* or *beta* errors are greater than or equal to 10%.

dark-shaded cells indicate where *alpha* or *beta* errors are greater than 15%.

7.2 Indicator list and target coverage

Universe 1

Section 1: Water Supply

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/ missing	Target Avg
Water 1	Proportion of households that use an improved water source for drinking	Tube well with plaque, concrete apron, >15 steps to latrine; or tap stand with functional tap; or water tank or tanker truck	W1 Answer 1 AND W2 Answers 1, 2, AND 3 OR W1 Answer 2 AND W3 Answers 1, 2 AND 3 OR W1 Answers 4 OR 5			95%
Water 2	Proportion of households that report the taste of the water from the nearest improved water source is acceptable	Taste of water from nearest tube well or tap stand is acceptable	W5 Answer 1			80%
Water 3	Proportion of households that use the same improved water source for all activities	Tube well or tap stand used for drinking, cooking, washing dishes, washing hands, male and female bathing, and washing clothes	W1 Answers 1 OR 2 AND W6 Answers 1 OR 2 AND W7 Answer 1 OR 2 AND W8 Answer 1 OR 2 AND W9 Answer 1 OR 2 AND W10 Answer 2			90%
Water 4	Proportion of households that DO NOT report using surface water for drinking or cooking	Does NOT use water from a river, stream, puddle, shallow hole, or other still water source for drinking	W10 Answer 2 OR (W10 Answer 1 AND W12 NOT Answer 1 OR 2)			95%
Water 5	Proportion of households who report that water was continuously available from their	Access to water supply was uninterrupted in 1 week preceding the survey	W4 Answer 2			80%

	habitual water source for the last week					
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Section 2: Water Storage and Safety

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/ missing	Target Avg
Storage 1	Proportion of households that have water containers of at least 10 litres total capacity	Water containers of at least 10 litres total capacity	SS6a * 8 + SS6b *10 + SS6c *12 + SS6d * 20 + SS6e * 20 >= 10	SS6a * 8 + SS6b *10 + SS6c *12 + SS6d * 20 + SS6e * 20 < 10 OR SS1 Answer 2	SS1 Answer 1 AND SS2 Answer2	90%
Storage 2	Proportion of households that clean the inside of water containers at least once a week	Inside of water containers cleaned at least once a week	SS10 Answers 1 OR 2 OR 3 OR 4			80%
Storage 3	Proportion of households that keep water in household containers for less than one day	Store water in household for less than one day	SS11 Answer 1			90%
Storage 4	Proportion of households that find the taste of chlorinated water to be acceptable	Taste of chlorinated water is acceptable	SS15 Answer 1			80%
Storage 5	Proportion of households whose water was treated with chlorine, either tablet (Aquatabs) or at the point of collection when they last collected drinking water	Bucket chlorination implemented at water point at time of last drinking water collection or chlorination tablets used	SS13 Answer 1 or SS14 Answer 1			80%

Section 3: Hygiene including menstrual hygiene

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/ missing	Target Avg
Hygiene 1	Proportion of households that can show at least one piece of soap	Soap seen by interviewer	H3 >0	H1 Answer 2	H1 Answer 1	95%

					AND H2 Answer 2	
Hygiene 2	Proportion of households that currently have soap and water available for handwashing in the household	Soap and water present in household at time of interview	H3 >0 AND H4 Answer 1	H1 Answer 2 OR H4 Answer 2	H1 Answer 1 AND H2 Answer 2	90%
Hygiene 3	Proportion of households that have been visited by a hygiene promoter	Visited by hygiene promoter within the last week	H5 Answer 1			80%
Hygiene 4	Proportion of households whose female members use acceptable materials for menstrual hygiene	Reusable menstrual hygiene products are used	H7 Answer 2			95%
Hygiene 5	Proportion of households that has ever received menstrual hygiene products from a distribution	Ever received menstrual hygiene products from a distribution	H8 Answer 1			95%
Hygiene 6	Proportion of households that dispose of single use menstrual hygiene products appropriately	Disposable menstrual hygiene products disposed into household or communal latrine OR burned OR via communal waste collection, NOT into cess pit OR pour flush latrine OR septic tank	H9 answer 1, 2, 3 or 4			95%

Section 4: Latrines and sanitation

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/missing	Target Avg
Sanitation 1	Proportion of households whose male members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	Male members of household use a household or communal latrine that has a handwashing area with soap and water available at time of interview, had a functional lockable door, was not overflowing or had visible feces, and was within 50 steps of the household.	SA1 Answer 1 or 2 AND SA6 Answer 1 AND SA7 Answer 1 AND SA8 Answer 1 AND SA5 Answers 1, 3, 5, 6			90%

Sanitation 2	Proportion of households whose female members use an improved sanitation facility with an acceptable handwashing area that has soap and water point	Female members of household use a household or communal latrine that has a handwashing area with soap and water available at time of interview, had a functional lockable door, was not overflowing or had visible feces, and was within 50 steps of the household.	SA 9 Answer 1 or 2 AND SA15 Answer 1 AND SA16 Answer 1 AND SA17 Answer 1 AND SA5 Answers 1, 3, 5, 6 OR SA13 Answer 1 AND SA6 Answer 1 AND SA7 Answer 1 AND SA8 Answer 1 AND SA5 Answers 1, 3, 5, 6			90%
Sanitation 3	Proportion of households that dispose of children's and babies' faeces in an appropriate manner	Disposal in household or communal latrine	SA18 Answer 1 OR 2			95%

Section 5: Solid waste management

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/missing	Target Avg
Solid waste management 1	Proportion of households that dispose of their waste via communal waste collection	Household solid waste collected via a communal waste collection system	SWM1 answer 1			80%
Solid waste management 2	Proportion of households that rely on other methods to get rid of their waste	Household solid waste is burned in open fire, buried, other	SWM1 answer 2, 3, 4			60%

Solid waste management 3	Proportion of household which are satisfied with the collection frequency of the waste by communal services	Waste is collected regularly, preventing littering, bad smell and vectors	SWM1 answer 1 AND SWM2 answer 1			80%
Solid waste management 4	Proportion of households for which specific types of waste are collected for reuse, recycling	Waste collector (formal or informal) collect cans, plastics, paper as a source of income	SWM3 answer 1 OR 2 OR 3 OR 4			50%
Solid waste management 5	Proportion of households that has at least 1 bucket/garbage bin of 20l for solid waste storage	Bucket of 20l with lid present for waste disposal at time of interview	SWM4 answer 1			70%

Universe 2

Section 6: WASH related Morbidities/Disease

Number	Indicator	Definition	Correct (1)	Incorrect (0)	Skip/missing	Target Avg
Disease 1	Proportion of households reporting NOT HAVING diarrhoea among children <5 years in the last two weeks	Three or more loose or watery stools in last two weeks NOT reported	WD2 Answer 2 OR WD3 Answer 2	WD3 Answer 1		80%
Disease 2	Proportion of households reporting NOT HAVING eye infections among children <5 years in the last two weeks	Eye infection NOT reported	WD2 Answer 2 OR WD4 Answer 2	WD4 Answer 1		80%
Disease 3	Proportion of households reporting NOT HAVING skin infections among children <5 years in the last two weeks	Skin infection NOT reported	WD2 Answer 2 OR WD5 Answer 2	WD5 Answer 1		80%
Disease 4	Proportion of households reporting NOT HAVING jaundice among children <5 years in last two weeks	Jaundice NOT reported	WD2 Answer 2 OR WD6 Answer 2	WD6 Answer 1		80%

7.3 Questionnaire

Water, Sanitation, and Hygiene Household Questionnaire

HOUSEHOLD IDENTIFICATION

Camp (စခန်း) _____

Block _____

Random Location (1 – 19) _____

Team # (အသင်း/စာဖွဲ့) _____

Date of interview လူတွေ့မေးမြန်းသည့်ရက်စွဲ _____/_____/_____

DEMOGRAPHICS (လူဦးရေစာရင်းကောက်မှား)

How many people slept here last night?

လူနဲ့ခဲသောသတင်းအိမ်မှာလူဘယ်နှယောက်အိပ်ခဲ့သနည်း။

How many children less than 5 years old live here?

(၅)နှစ်အောက်ကလေးမည်မျှနေထိုင်သနည်း။

How many people more than 50 years old live here?

(၅၀)နှစ်ထက်ကြီးသောလူမည်မျှနေထိုင်သနည်း။

Who is head of household? (Circle one)

MALE

FEMALE

ကျား

မ

Gender of respondent?

ဖြေဆိုသူသည် ကျား/မ လား။

MALE

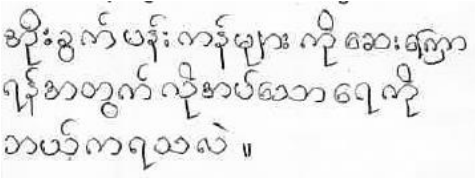
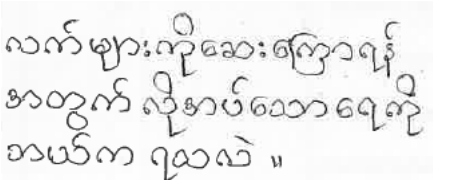
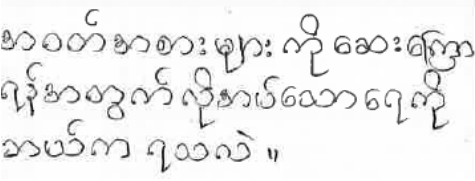
FEMALE

ကျား

မ

Section 1: Water Supply

No.	Questions	Answers	Coding	Skips
W1	<p>Where do you get drinking water?</p> <p>PICK ONE</p> <p>သစ်တို့သည် သောက်ရေကို ဘယ်ကရရှိသနည်း။ (တစ်ခုကိုရွေးပါ။)</p>	<p>TUBE WELL</p> <p>TAP STAND (PIPED DIRECT)</p> <p>RAINWATER</p> <p>WATER TANK</p> <p>TANKER TRUCK</p> <p>RIVER OR STREAM</p> <p>PUDDLE OR SHALLOW HOLE</p> <p>OTHER (SPECIFY) _____</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>99</p>	<p>→ W3</p> <p>→ W5</p> <p>→ W5</p> <p>→ W5</p> <p>→ W5</p> <p>→ W5</p> <p>→ W5</p>
W2	<p>Look at tube well and select all that apply.</p> <p>တုံ့ကင်ကိုကြည့်၍ ရွေးချယ်ပါ။</p>	<p>PLAQUE CONTAINING APPROVED AGENCY NAME</p> <p>CONCRETE APRON</p> <p>GREATER THAN 15 STEPS FROM LATRINE</p>	<p>1</p> <p>2</p> <p>3</p>	<p>All skip to W4</p>
W3	<p>Turn Tap on and off and select all that apply</p> <p>ဘုံဘိုင်းခေါင်းကို ဖွင့်၍ ပိတ်၍ ရွေးချယ်ပါ။</p>	<p>Can turn on and off</p> <p>Water flows when tap on</p> <p>Tap not leaking when off</p>	<p>1</p> <p>2</p> <p>3</p>	
W4	<p>In last week, any day no water from this place?</p> <p>ကွန်ခဲရွာအပတ်တွင် နေရာမှ ရေမရရှိသောနေ့ရက်ရှိသလား။</p>	<p>YES</p> <p>NO</p>	<p>1</p> <p>2</p>	
W5	<p>Is the taste of water okay FROM TAPSTAND OR TUBEWELL?</p> <p>ရေအရသာ ဖြစ်သလား။</p>	<p>YES</p> <p>NO</p> <p>NEVER USED THIS SOURCE</p>	<p>1</p> <p>2</p> <p>99</p>	
W6	<p>Where do you get water for cooking?</p> <p>ချက်ဖြုတ်ရန်အတွက် ရေကို ဘယ်ကရသလဲ။</p>	<p>TUBE WELL</p> <p>TAP STAND (PIPED DIRECT)</p> <p>RAINWATER</p> <p>WATER TANK</p> <p>TANKER TRUCK</p> <p>RIVER OR STREAM</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p>	<p>→ W7</p> <p>→ W7</p> <p>→ W7</p> <p>→ W7</p>

		PUDDLE OR SHALLOW HOLE	7	→ W7
		OTHER (SPECIFY)	99	→ W7
W7	<p>Where do you get water for washing dishes?</p> 	<p>TUBE WELL</p> <p>TAP STAND (PIPED DIRECT)</p> <p>RAINWATER</p> <p>WATER TANK</p> <p>TANKER TRUCK</p> <p>RIVER OR STREAM</p> <p>PUDDLE OR SHALLOW HOLE</p> <p>OTHER (SPECIFY)</p> <p>_____</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>99</p>	<p>→ W8</p> <p>→ W8</p> <p>→ W8</p> <p>→ W8</p> <p>→ W8</p> <p>→ W8</p> <p>→ W8</p>
W8	<p>Where do you get water for washing hands?</p> 	<p>TUBE WELL</p> <p>TAP STAND (PIPED DIRECT)</p> <p>RAINWATER</p> <p>WATER TANK</p> <p>TANKER TRUCK</p> <p>RIVER OR STREAM</p> <p>PUDDLE OR SHALLOW HOLE</p> <p>OTHER (SPECIFY)</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>99</p>	<p>→ W9</p> <p>→ W9</p> <p>→ W9</p> <p>→ W9</p> <p>→ W9</p> <p>→ W9</p>
W9	<p>Where do you get water for washing clothes?</p> 	<p>TUBE WELL</p> <p>TAP STAND (PIPED DIRECT)</p> <p>RAINWATER</p> <p>WATER TANK</p> <p>TANKER TRUCK</p> <p>RIVER OR STREAM</p> <p>PUDDLE OR SHALLOW HOLE</p> <p>OTHER (SPECIFY)</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>99</p>	<p>→ W10</p> <p>→ W10</p> <p>→ W10</p> <p>→ W10</p> <p>→ W10</p> <p>→ W10</p>
W10	<p>Do you ever take water from river, stream, puddle, hand dug well, or shallow hole?</p>	<p>YES</p> <p>NO</p>	<p>1</p> <p>2</p>	<p>→ SS1</p>

W11	Which one do you use? SELECT ALL THAT APPLY သင့်ထည့်သွင်းထားတဲ့ ဟာကို အသုံးပြုသနည်း။	RIVER (moving water)	1	
		PUDDLE (after rain)	2	
		SHALLOW HOLE (dug by community)	3	
		OTHER (SPECIFY)	99	
W12	How do you use water from that place (answer to question W12)? SELECT ALL THAT APPLY သင့်ထည့်သွင်းတဲ့နေရာမှာ ရေကို ဘယ်လိုအသုံးပြုသလဲ။	DRINKING	1	
		COOKING	2	
		WASHING DISHES	3	
		WASHING HANDS	4	
		BATHING (MALES)	5	
		BATHING (FEMALES)	6	
		WASHING CLOTHES	7	
		OTHER (SPECIFY)	99	

Section 2: Water Storage and Safety

No.	Questions	Answers	Coding	Skips
SS1	Do you keep water here? သင့်ထည့်သွင်းတဲ့နေရာမှာ ရေကို ထားရှိသလား။	YES	1	→ SS12
		NO	2	
SS2	Can we see how you keep water? သင့်ရဲ့ ရေထည့်သွင်းတဲ့နေရာကို ကျနော်တို့ မြင်နိုင်သလား။	YES	1	→ SS12
		NO	2	
SS3	Look at the water containers. Which ones do they have? SELECT ALL THAT APPLY ရေထည့်သွင်းတဲ့အိုး/ခွက်များကို ကြည့်ပါ။ ဘယ်အိုး/ခွက်မှာရှိသလဲ။	METAL POT	1	
		PLASTIC JUG / BUCKET	2	
		CLAY POT	3	
		JERRY CAN	4	
		DRUM / BARREL	5	
		OTHER (SPECIFY)	99	

SS4	Look and count how many water containers are in household. <i>မိသားစုထဲတွင် ရေထည့်စရာများ ကုန်ရေတွက်ကြည့်ပါ။</i>	(Enter whole number)		
SS5	Look and select all sizes of containers. <i>ရေထည့်စရာများ၏ အရွယ်အစားများကို ရွေးချယ်ကြည့်ပါ။</i>	(Enter whole number)		
SS6a, b, c, d	HOW MANY CONTAINERS OF 8L, 10L, 12L, 20L?	Count for each size		
SS7	How many containers have drinking water? <i>သောက်ရေထည့် / ခွက်သယ်လောက်ရှိသည့် ရေထည့်စရာများကို ရွေးချယ်ကြည့်ပါ။</i>	(Enter whole number)		
SS8	CAN WE SEE YOUR DRINKING WATER CONTAINERS?			
SS9	Look and select all that describe what drinking water container looks like. SELECT ALL THAT APPLY <i>သောက်ရေထည့်စရာများသည် လိုပုံပေါ်သည်ကို ရွေးချယ်ကြည့်ပါ။</i>	LID OR SECURE FITTING COVER A NARROW MOUTH (UNDER 10 CM) CLEAN (NO VISIBLE DIRT INSIDE) NONE OF THE ABOVE	1 2 3 4	
SS10	When do you clean inside of container? <i>ရေထည့်စရာကို သယ်ဆောင်ရာတွင် သန့်ရှင်းသည့် ရက်စွဲကို ရွေးချယ်ကြည့်ပါ။</i>	TWO OR MORE TIMES A DAY ONE TIME A DAY TWO TIMES A WEEK ONE TIME A WEEK ONE TIME A MONTH NEVER	1 2 3 4 5 6	
SS11	How long is water in container? <i>ရေထည့်စရာထဲတွင် ရေကို သယ်ဆောင်ကြာသော ရက်စွဲကို ရွေးချယ်ကြည့်ပါ။</i>	LESS THAN ONE DAY ONE DAY TWO DAYS THREE DAYS MORE THAN THREE DAYS	1 2 3 4 5	
SS12	Do you have chlorine tablets? <i>ကလိုရင်း ဆေးပြားရှိသလား။</i>	YES NO	1 2	

SS13	Did you use chlorine tablets the last time you collected water for drinking? သင့်သည်နောက် ဆုံး ယူဆောင် ဤခုဆောင်၊ ဒို့သော ဆောက်ရေ တွင် ကလိုရင်း ဆေးပြား၊ ဆုံး ယူ၊ သလား။	YES	1	
		NO	2	
SS14	The last time you collected water for drinking, did it have chlorine in it? ဆောက်ရေတွင်ကလိုရင်း ရှိခဲ့သလား။	YES	1	
		NO	2	
SS15	Is the taste of chlorine water okay? ကလိုရင်းရေ အရသာရှိသလား။	YES	1	
		NO	2	
		NOT SURE/ NEVER DRANK CHLORINE	99	

Section 3: Hygiene including menstrual hygiene

H1	Do you have soap? ဆပ်ပြာရှိသလား။	YES	1	→ H4
		NO	2	
H2	Can we see your soap? ဆပ်ပြာ ကြည့်နိုင်ပါသလား။	YES	1	→ H4
		NO	2	
H3	Look and count how many pieces of soap in household. မိသားစုတွင် ဆပ်ပြာမည်မျှရှိ ဖောင်း ရေတွက်ကြည့်ပါ။	(Enter whole number)		
H4	Look and see if there is there water for washing in household.	YES	1	
		NO	2	
H5	Has anyone come here to talk about hygiene? သန့်ရှင်း စွာ ရေထိုင်ရေး နှင့် မိမိ သက်ရှိ ပြောပြ ရန် တစ်ဦး ဦး ဟာ သလား။	YES	1	
		NO	2	
H6	Are there any women or girls who menstruate? မိမိသားစုတွင် ဆေးပြား၊ ဆုံး ယူ၊ သလား။	YES	1	→ SA1
		NO	2	
		DON'T KNOW	99	

H7	What do women or girls use for menstruation?	DISPOSABLE CLOTH/PAD REUSABLE CLOTH/PAD DON'T KNOW OTHER (SPECIFY)	1 2 96 99	→ H8 → H8 → H8
H8	Where do women or girls get menstruation clothes/pads? <i>ခမ္ဘာတစ်ဝှမ်းဆင်းသောစာမျိုးသမီးများစာတွက်လျှင်အိတ်အဝတ်အစား၊ ဖေါ့၊ များကိုဘယ်ကရရှိကြသနည်း။</i>	DISTRIBUTION MARKET HOSPITAL/CLINIC HEALTH OR HYGIENE PROMOTER SELF MADE DON'T KNOW OTHER (SPECIFY)	1 2 3 4 5 96 99	
H9	Where do female members of the household dispose of "single-use" menstrual hygiene products?	HOUSEHOLD LATRINE COMMUNAL LATRINE BURNED COMMUNAL WASTE COLLECTION CESS PIT FLUSH LATRINE SEPTIC TANK	1 2 3 4 5 6 7	

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Section 4: Latrines and Sanitation

SA1	Where do male members of the household usually go to defecate? SELECT ONLY ONE RESPONSE <i>ဒီသား နှစ် ဝေသာကျားများသည် - များသောအားဖြင့် မည်သည့်နေရာတွင် မစင်စွန့်သန့်နည်း။</i>	HOUSEHOLD LATRINE COMMUNAL LATRINE BESIDE THE LATRINE NEAR THE HOUSE ANY OPEN SPACE OTHER (SPECIFY)	1 2 3 4 5 99	→ SA9 → SA9 → SA9 → SA9
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SA2	WHERE IS THE NEAREST LATRINE?			
SA3	Can all men and boys use the latrine?	YES	1	
		NO	2	
SA4	Do men and boys all think this latrine is safe?	YES	1	
	ဒီဒီလော့ဆွဲခြံကြေးကို မူတီးနဲ့ကလေးများကထင်ကြသလား။	NO	2	
SA5	Look and select all that describe how men's latrine is. SELECT ALL THAT APPLY ဖော်ပြထားသော လူတို့အသုံးပြုထား ဖြစ်သော ကို ကြည့်၍ ရွေးချယ်ပါ။	FUNCTIONAL, LOCKABLE DOOR	1	
		PLASTIC SHEETING OR NON-LOCKABLE DOOR	2	
		NO VISIBLE FAECES	3	
		COVER OVER OPENING	4	
		NOT OVERFLOWING	5	
		WITHIN 50 STEPS OF HOUSEHOLD	6	
		NONE OF THE ABOVE	7	
SA6	Look to see if there handwashing place at latrine. ဒီဒီလော့ထဲတွင် လက်ဆေးသောနေရာ ရှိသလား။	YES	1	
		NO	2	→ SA9
SA7	Look to see if there is soap in handwashing area. လက်ဆေးသောနေရာတွင် ဆပ်ပြာ ရှိသလား။	YES	1	
		NO	2	
SA8	Look to see if there is water in handwashing area. လက်ဆေးသောနေရာတွင် ရေ ရှိသလား။	YES	1	
		NO	2	
SA9	Where do female members of the household usually go to defecate? SELECT ONLY ONE RESPONSE မိသားစုဝင်အမျိုးသမီးများသည် အများအားဖြင့် မည်သည့် နေရာတွင် မစင်စွန့်သန့်သန့်။	HOUSEHOLD LATRINE	1	
		COMMUNAL LATRINE	2	
		BESIDE THE LATRINE	3	→ SA18
		NEAR THE HOUSE	4	→ SA18
		ANY OPEN SPACE	5	→ SA18
		OTHER (SPECIFY)	99	→ SA18
SA10	WHERE IS THE NEAREST LATRINE FOR WOMEN OR GIRLS?			

SA11	Can all women and girls use the latrine? အမျိုးသမီးများနှင့် မိန်းကလေးများ အားလုံးတို့သည်အိမ်သာကိုအသုံးပြုနိုင်ကြ- သလား။	YES	1	
		NO	2	
SA12	Is that latrine safe for all women and girls? အိမ်သာသည်အမျိုးသမီးများနှင့် မိန်းကလေးများအတွက်လုံခြုံသလား။	YES	1	
		NO	2	
SA13	Is that latrine also used by men or boys? အိမ်သာကိုလူကြီးများ (မိ)ကလေး များကလည်းအသုံးပြုသလား။	YES	1	→ SA18
		NO	2	
SA14	Look and select all that describe how is women's latrine. အမျိုးသမီးများတွင် သည့်အိမ်သာ သည် အိမ်သာမျိုးဖြစ်သည်ကို ဖော်ပြပါ။	FUNCTIONAL, LOCKABLE DOOR	1	
	PLASTIC SHEETING OR NON- LOCKABLE DOOR	2		
	NO VISIBLE FAECES	3		
	COVER OVER OPENING	4		
	NOT OVERFLOWING	5		
	WITHIN 50 STEPS OF HOUSEHOLD	6		
	NONE OF THE ABOVE	7		
SA15	Look to see if there is handwashing place at latrine. အိမ်သာထဲတွင်လက်ဆေးသော နေရာရှိသလား။	YES	1	→ SA16
		NO	2	
SA16	Look to see if there is soap at handwashing area. လက်ဆေးသောနေရာတွင် - ဆပ်ပြာရှိသလား။	YES	1	
		NO	2	
SA17	Look to see if there is water at handwashing area. လက်ဆေးသောနေရာတွင် - ရေရှိသလား။	YES	1	
		NO	2	
SA18	Where do you throw away baby's or children's feces? ကလေးသူငယ်များ၏အစွပ်ကိုမည်- သည့်နေရာတွင်လွှင့်ပစ်သနည်း။	HOUSEHOLD LATRINE	1	
		COMMUNAL LATRINE	2	
		BESIDE THE LATRINE	3	
		NEAR THE HOUSE	4	
		ANY OPEN SPACE	5	
		NO CHILDREN	96	
		OTHER (SPECIFY)	99	

Section 5: Solid waste management

SWM1	How do you dispose of your household waste?	Communal waste collection system	1	→SWM2
		Burn	2	
		Bury	3	
		Other	4	
SWM2	Are you satisfied with the frequency of the communal household waste collection system?	Yes	1	
		No	2	
SWM3	Which of the following do you collect for reuse, recycling?	Cans	1	
		Paper	2	
		Plastics	3	
		Others	4	
		None of the above	5	
SWM4	Look to see if there is at least one 20l bucket/bin with a lid available for solid waste storage in the household	Yes	1	
		No	2	

Section 6: WASH related Disease for CHILDREN UNDER 5 YEARS

D1	DO YOU HAVE ANY CHILDREN LESS THAN 5 YEARS OLD?	YES		
		NO		→End
D2	Has child been sick in last two weeks?	YES	1	
		NO	2	
D3	What kind of sickness?	USE D2 – D5 TO RECORD RESPONSES		
D4	MARK (DO NOT ASK): Mark if parent/guardian says diarrhea	YES	1	
		NO	2	
D5	MARK (DO NOT ASK): Mark if parent/guardian says eye problems	YES	1	
		NO	2	
D6	MARK (DO NOT ASK): Mark if parent/guardian says skin problems	YES	1	
		NO	2	
D7	MARK (DO NOT ASK):	YES	1	

	Mark if parent/guardian says yellowish skin or eyes	NO	2	
--	---	----	---	--

7.4 Consent form

Title: Access to water, sanitation and hygiene services among the populations of the mega camp and camps 14, 15, 16 and 21, Cox's Bazar, Bangladesh Please:

- *Administer the information sheet before seeking consent*

I have read and understood the above information and my questions have been answered to my satisfaction. I give voluntary consent for the participation in this study.

I understand that I am free to refuse to answer any or all questions and that this will not prejudice my household's care or their rights to receive treatment at any MSF health centre.

I hereby declare that I consent to the above.

		/			/	2	0	2	1
--	--	---	--	--	---	---	---	---	---

Date:

Head of household/respondent/parent's signature/fingerprint:

Interviewer's name:

Interviewer's signature:

7.5 Information sheet

Access to water, sanitation and hygiene services among the population of Mega Camp and camps 14, 15, 16 and 21, Cox Bazar District, Bangladesh

Thank you for taking the time to listen to our information about this survey.

As you might already know, Médecins sans Frontières (MSF) is helping in this camp by providing health care in two inpatient health facilities, five clinics and by improving long-term infrastructure for water supply throughout the camp.

Community leaders in your area have been consulted on this survey and have given their permission for the survey to be carried out in your area of residence.

We would like to ask you some questions about the water, sanitation, and hygiene facilities you have access to in your home. This survey will take about 20 minutes to complete. We may also ask questions about recent illness in your home. These answers will be collected to understand what is happening in the whole camp.

With this survey we hope to improve the water, sanitation, and hygiene situation in the camp as we will gain a better knowledge of this subject.

You have been chosen by chance from all the households in the camp. Your participation in this survey is voluntary and you are free to refuse to answer any or all survey questions. Refusing to answer any or all survey questions will not affect you or your child's care, or your rights to receive treatment at any MSF health centre. There are no obvious risks involved in participating in this study as we only ask you to answer some questions. However, due to COVID-19, we will be maintaining a two-metre distance throughout the interview and would ask you to wear a mask throughout the duration of the interview.

Neither you nor your family will receive any direct benefit such as food or payment as a reward for participating in this study. However, if we find somebody sick in your household, they will be referred to the nearest health facility. Information collected will be kept confidential by removing personal identifiers (such as names) after data collection and will be primarily used for the purpose of the survey. However, if someone in the home is sick with an illness that must be immediately reported to the Ministry of Health, then we will be obliged to inform them, and this will include sharing the name of the sick person.

Do you have any questions? Please feel free to ask anybody in the survey team. If you have questions or concerns after our visit, please contact the principal investigator with the below details. Thank you for your time and participation.

7.6 Breakdown of the criteria for some key indicators of water supply & water storage, menstrual hygiene, sanitation facility and solid waste management

Table 20: Proportion of households that use an improved water source for drinking with the following characteristics

	2018		2022	
	N=396		N=361	
Indicator criteria	Frequency	%	Frequency	%
Tube-well with plaque, concrete apron,>15 steps away from the latrine	384	98	183	51
Tap stand with functional tap (Can turn on and off, Water flows when tap on, Tap not leaking when off)	7	2	176	49
Tanker truck	0	0	1	0.2
Other source	0	0	1	0.2

Table 21: Distribution of criteria for the proportion of households that keep water in containers for less than one day

	2018		2022	
	N=396		N=361	
Indicator criteria	Frequency	%	Frequency	%
<1 day	385	97	97	27
1 day	0	0	229	63
2 days	8	2	23	6
3 days	0	0	2	0.5
>3 days	1	0.2	2	0.5

Table 22: Breakdown for the proportion of households that dispose of single use menstrual hygiene products appropriately

Indicator breakdown	2022	
	N=173	
	Frequency	%
Household latrine	10	6
Communal latrine	76	44
Burned	19	9
Communal waste collection	21	11
Cess pit	19	9
Flush latrine	10	6
Septic tank	4	2

Table 23: Proportion of household members, by sex, who use an improved sanitation facility with the following characteristics (denominator: household members)

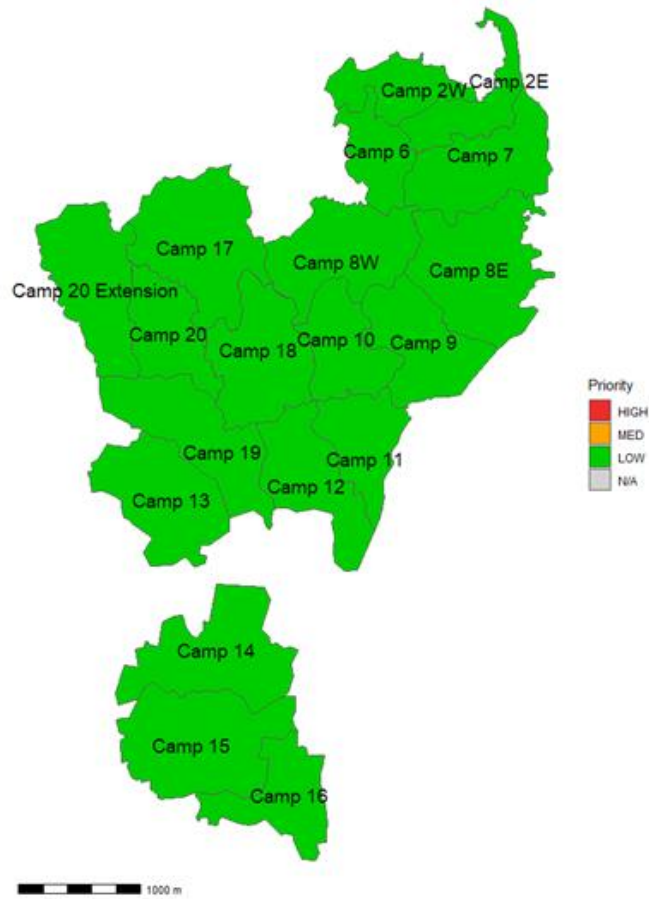
Characteristics	2018				2022			
	N=399		N=399		N=361		N=361	
	Male	%	Female	%	Male	%	Female	
Functional, lockable door	293	73	290	73	326	90	327	
No visible feces	278	70	278	70	150	42	153	
Cover over opening	5	1	7	2	96	27	95	
Not overflowing	264	66	261	65	88	24	88	
Within 50 steps of the household	289	72	286	72	154	43	151	

Table 24: Distribution for the proportion of households that rely on communal waste collection and other methods to get rid of their waste

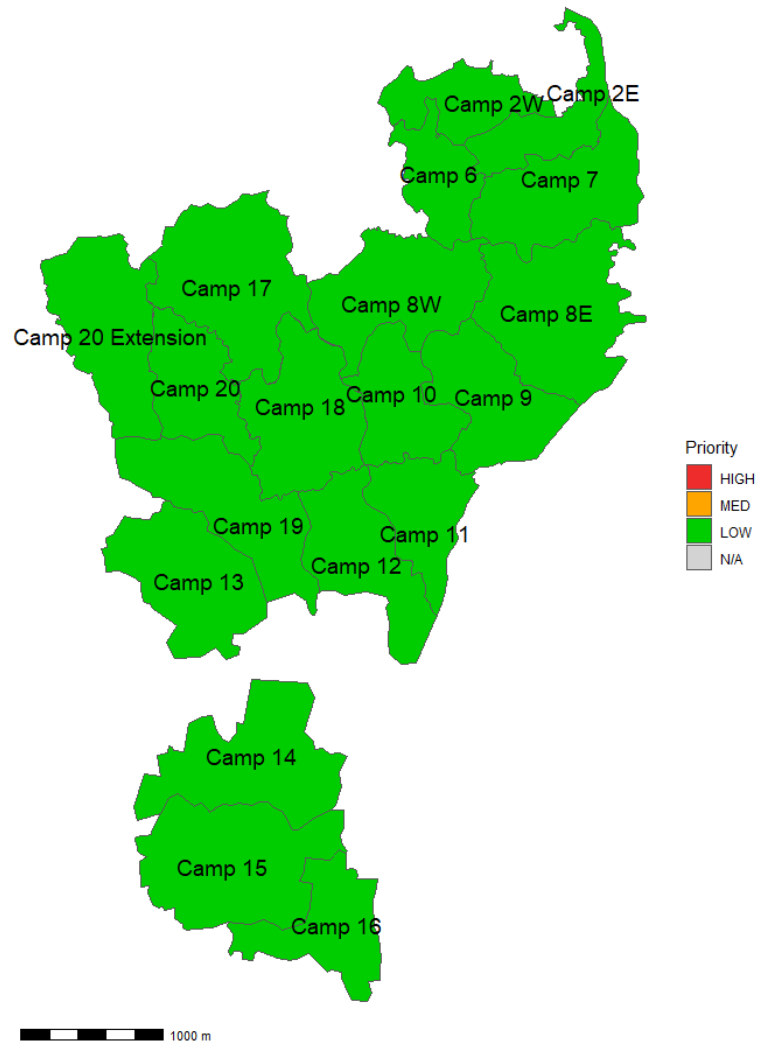
Indicator breakdown	2022	
	N=361	
	#	%
Communal waste collection	313	86
Burn	15	4
Bury	14	4
Other	35	9

7.7 Maps of each indicator

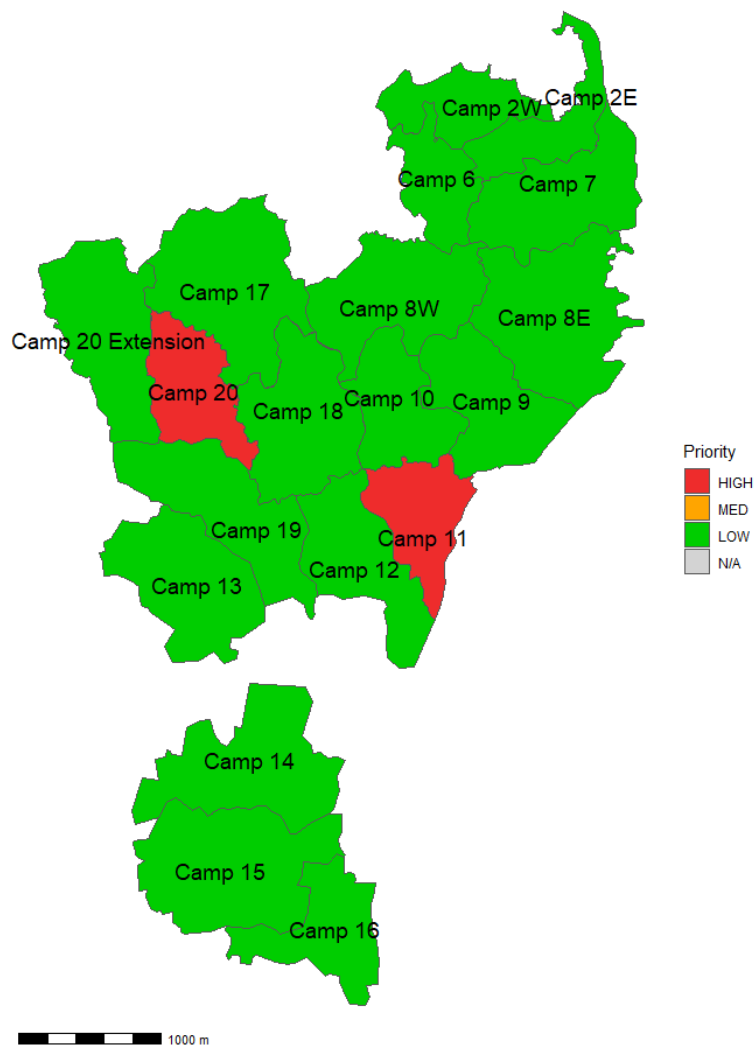
1. Proportion of households that use an improved water source for drinking



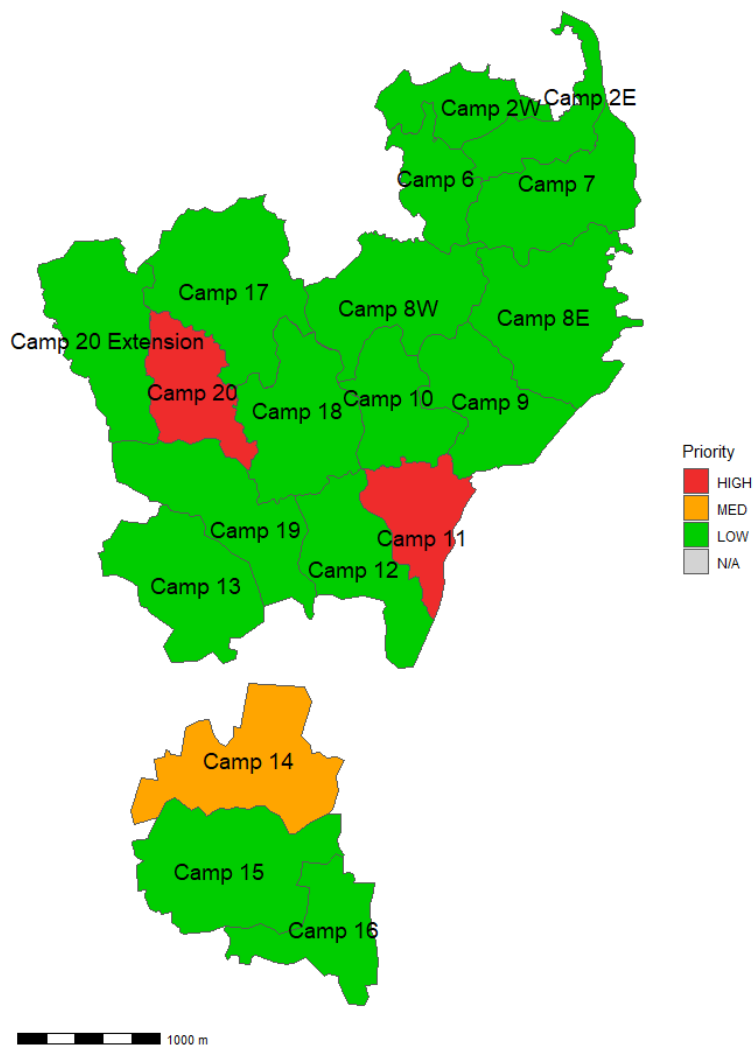
2. Proportion of households that report the taste of the water from the nearest improved water source is acceptable



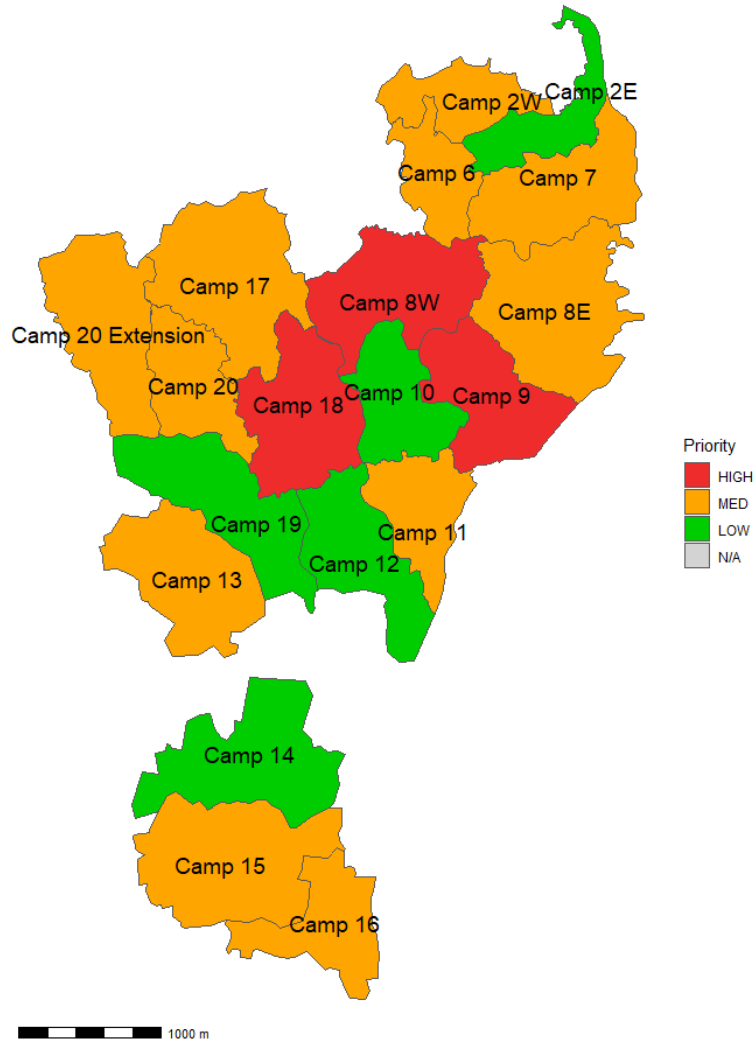
3. Proportion of households that use the same improved water source for all activities



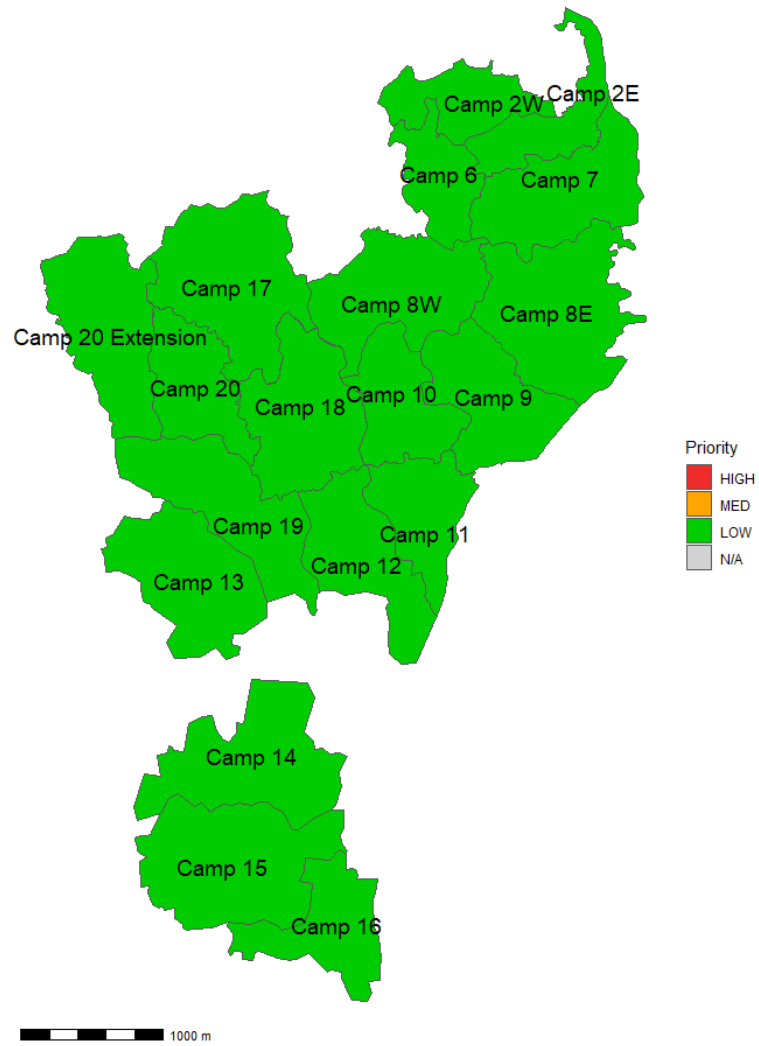
4. Proportion of households that DO NOT report using surface water for drinking or cooking



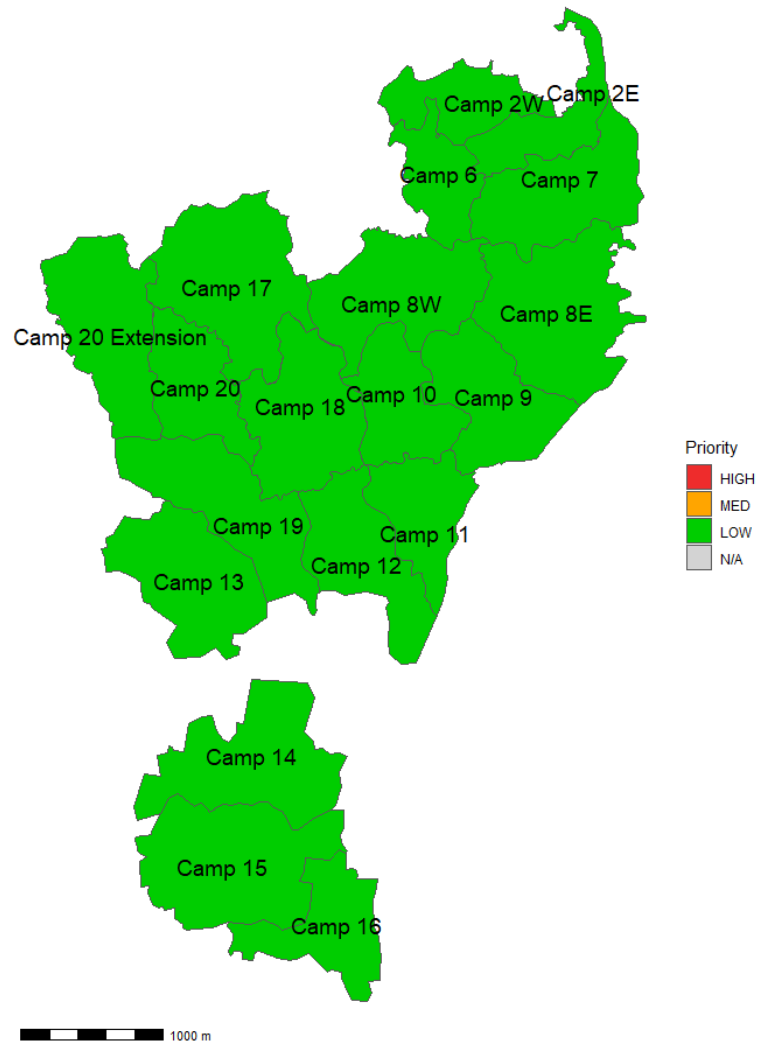
5. Proportion of households who report that water was continuously available from their habitual water source for the last 12 months



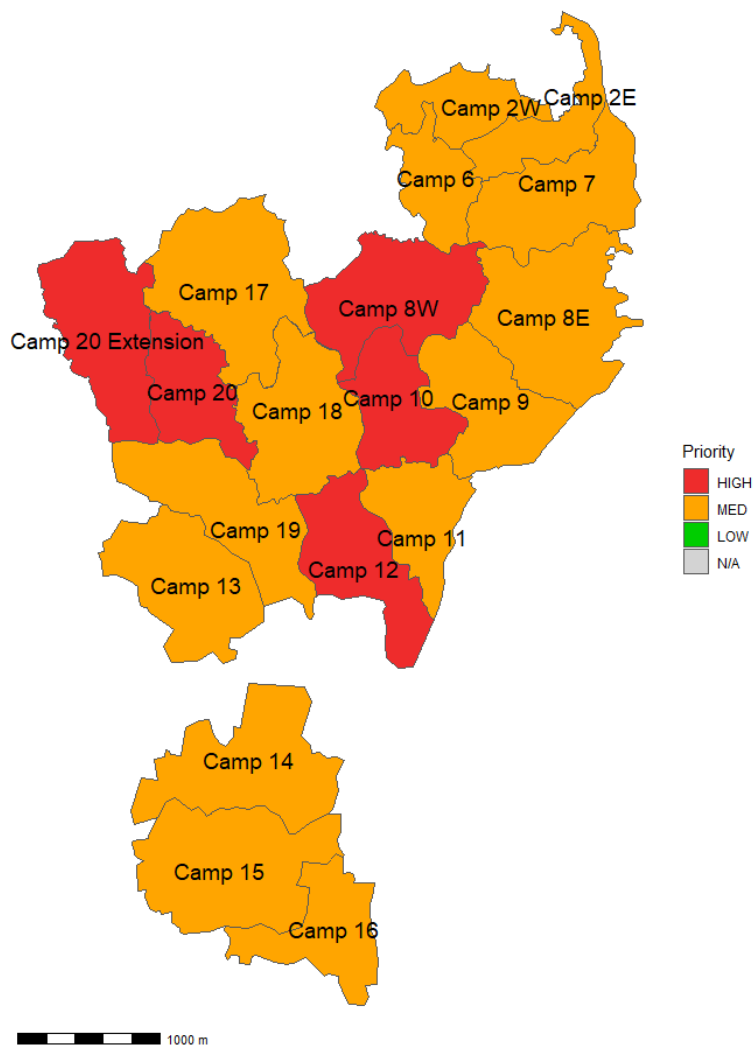
6. Proportion of households that have water containers of at least 10 litres total capacity



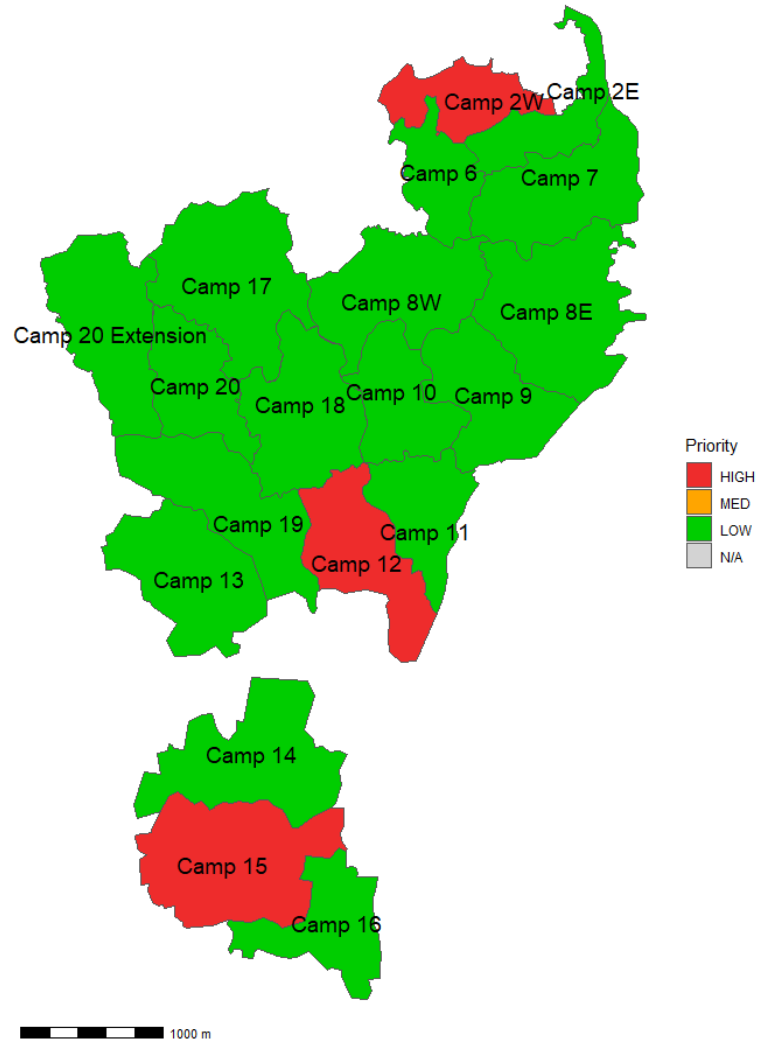
7. Proportion of households that clean the inside of water containers at least once a week



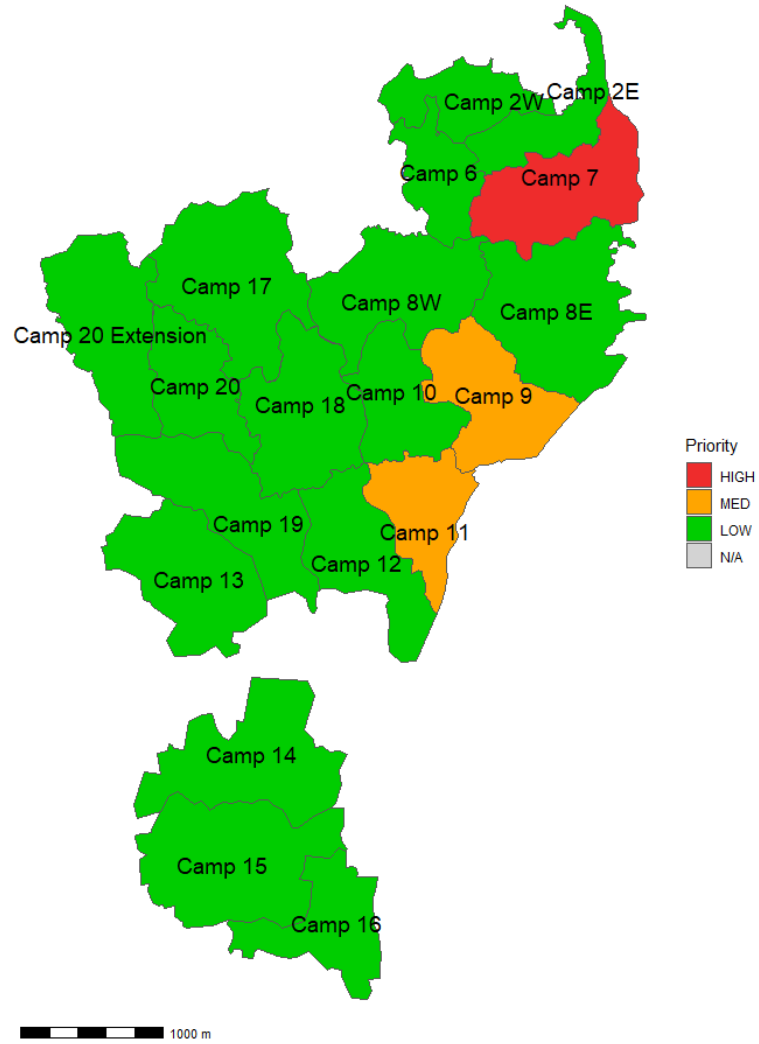
8. Proportion of households that keep water in household containers for less than one day



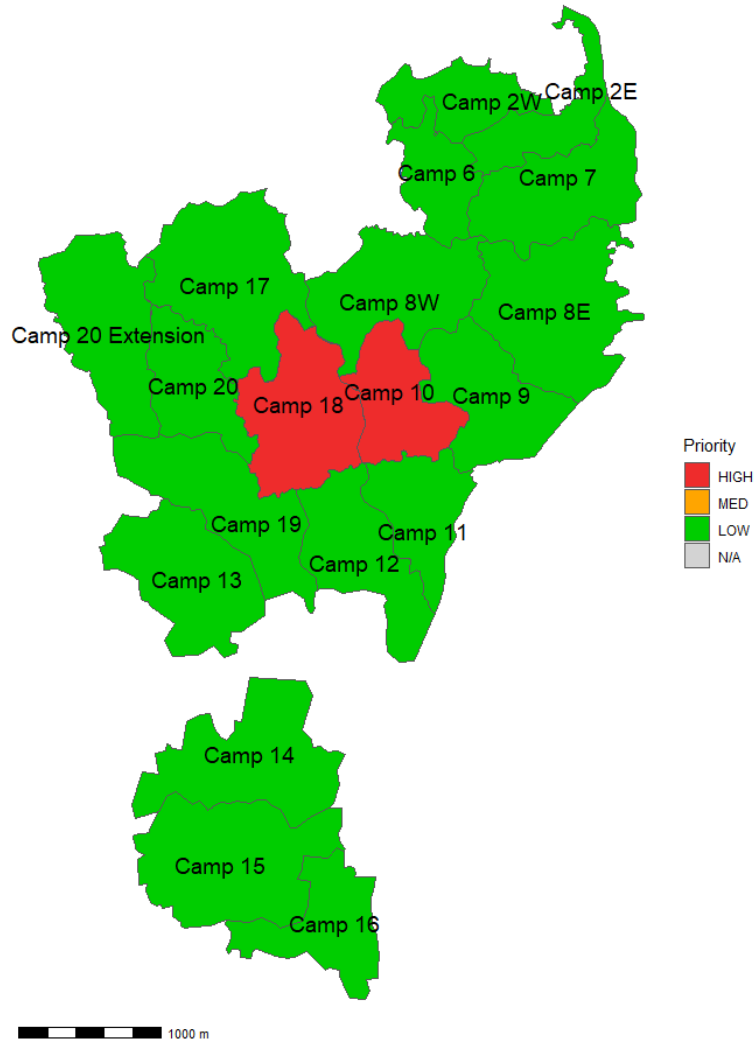
9. Proportion of households that find the taste of chlorinated water to be acceptable



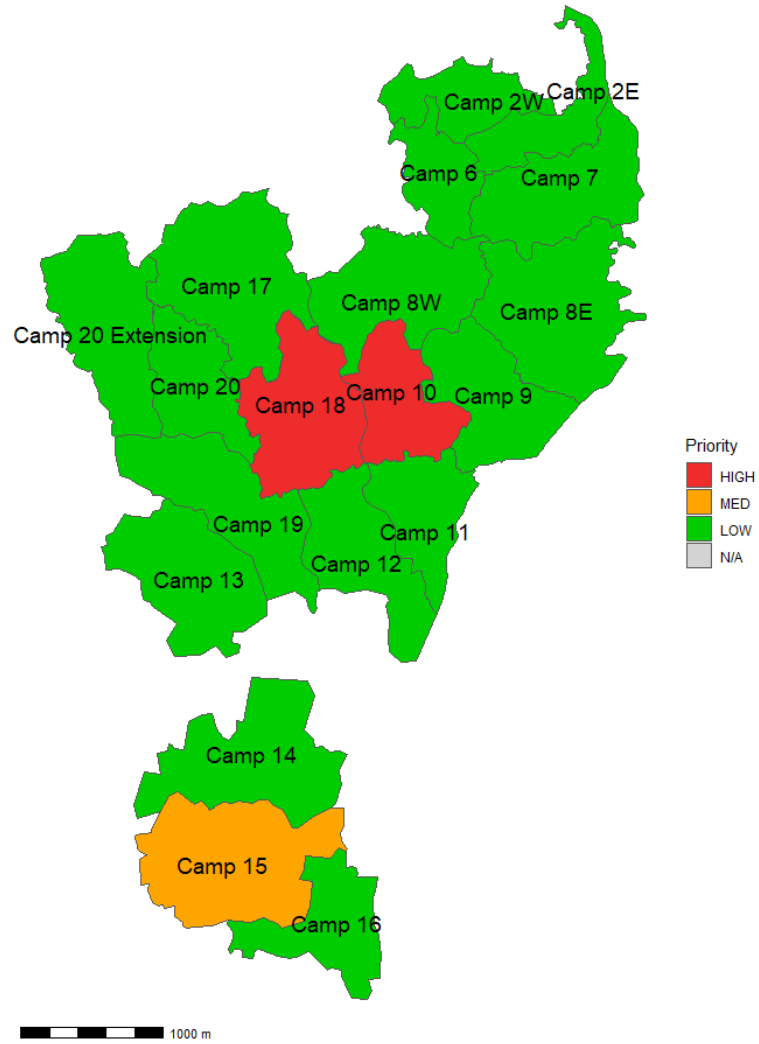
10. Proportion of households whose water was treated with chlorine, either tablet (Aquatabs) or at the point of collecti



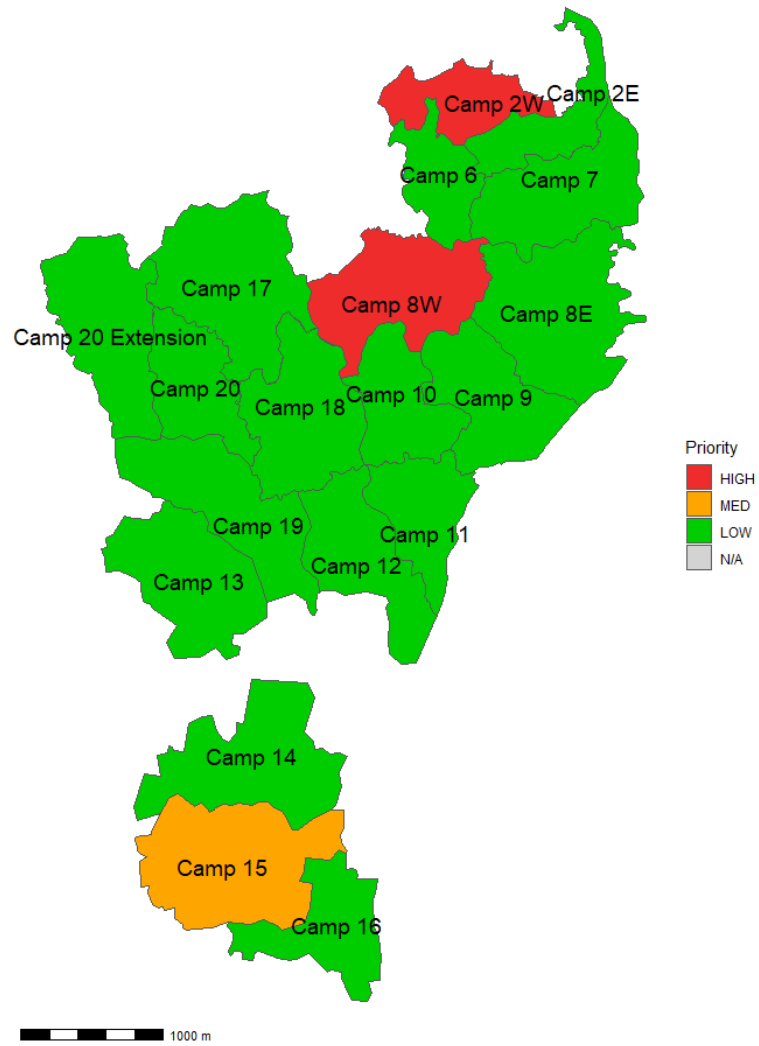
11. Proportion of households that can show at least one piece of soap



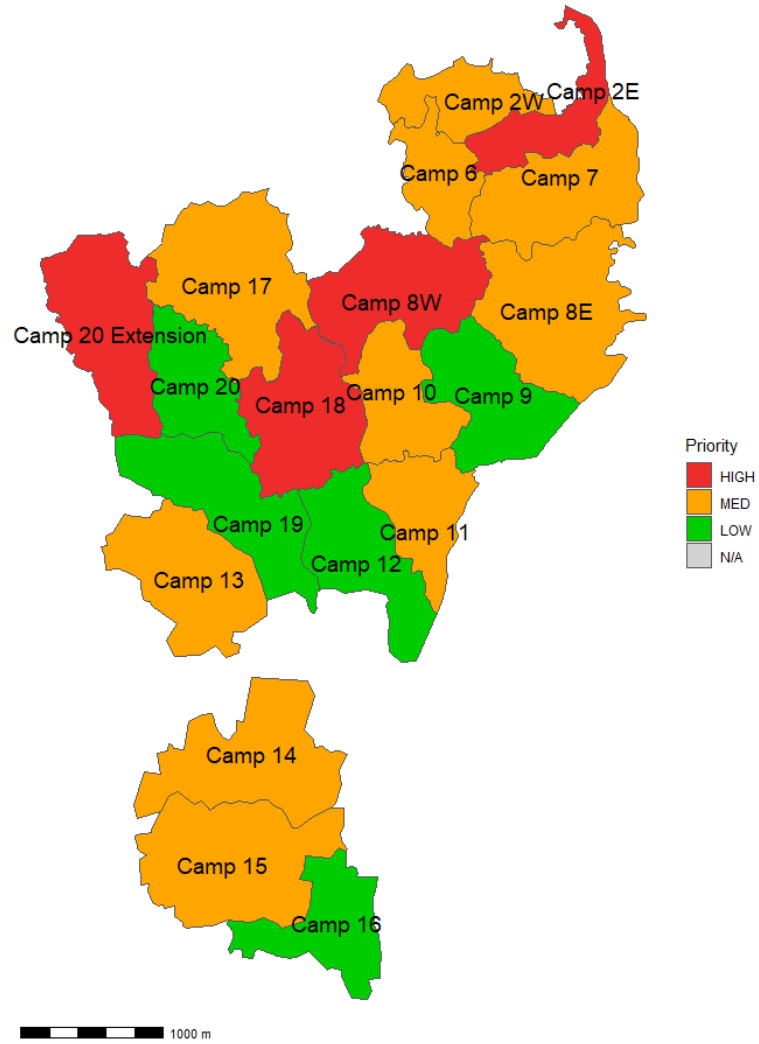
12. Proportion of households that currently have soap and water available for handwashing in the household



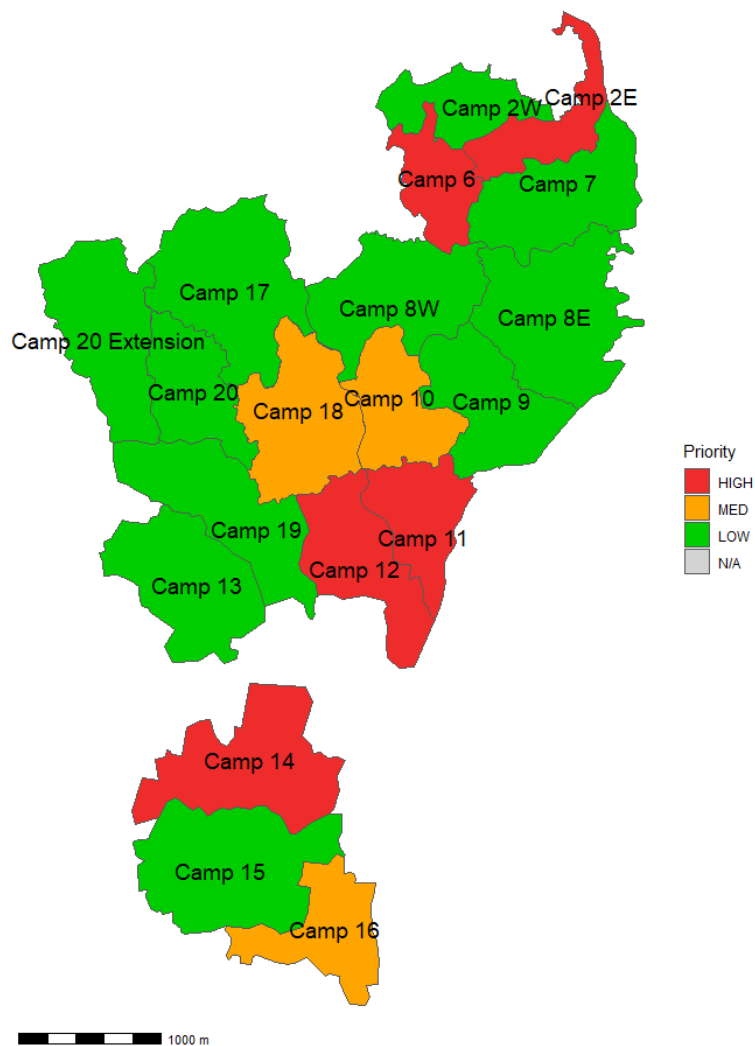
13. Proportion of households that have been visited by a hygiene promoter



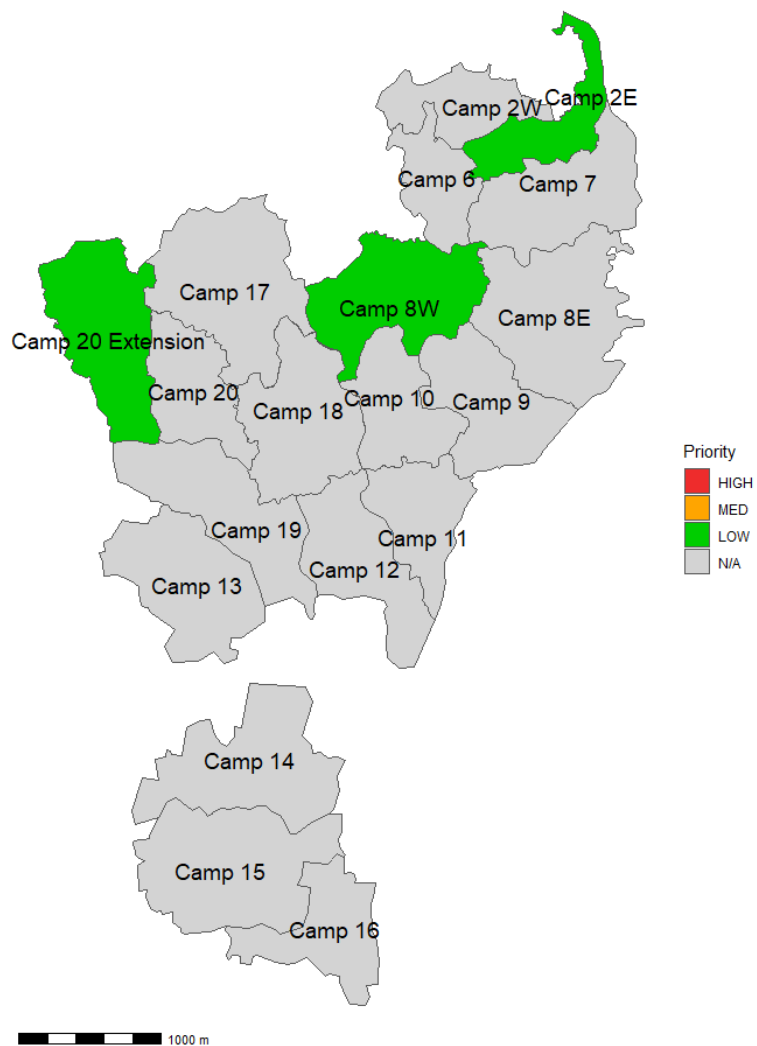
14. Proportion of households whose female members use acceptable materials for menstrual hygiene



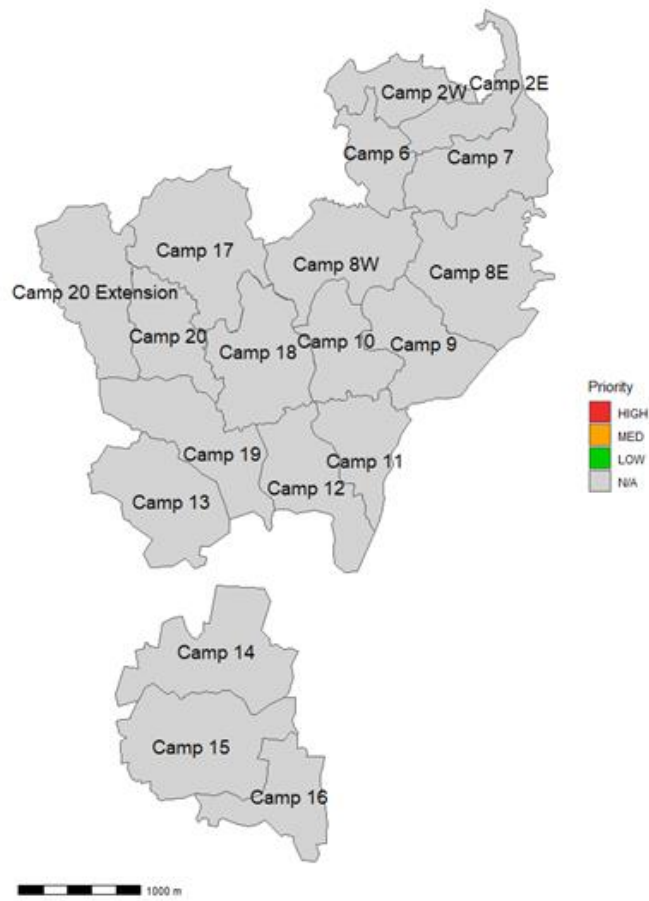
15. Proportion of households that has ever received menstrual hygiene products from a distribution



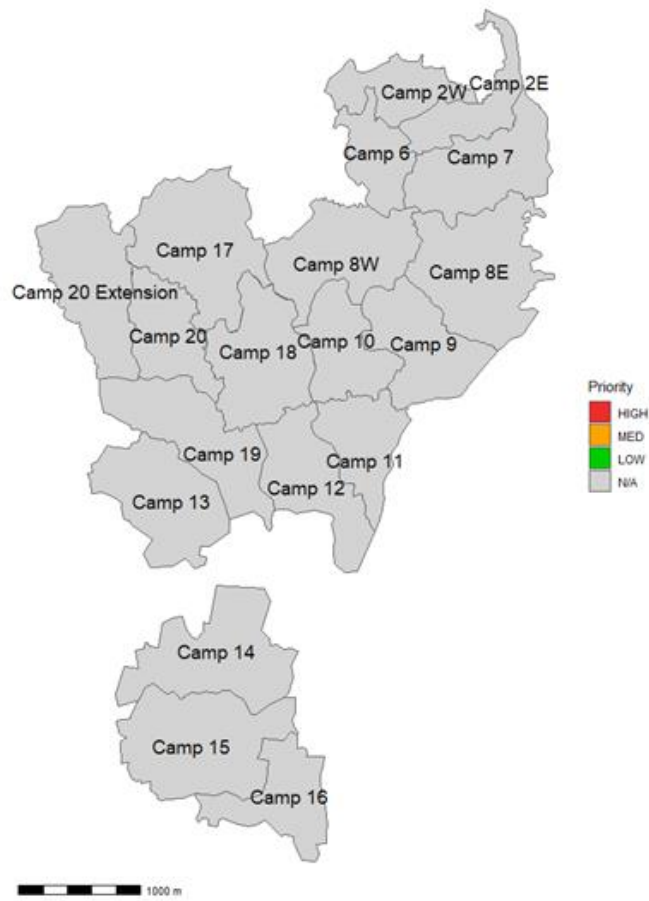
16. Proportion of households that dispose of single use menstrual hygiene products appropriately



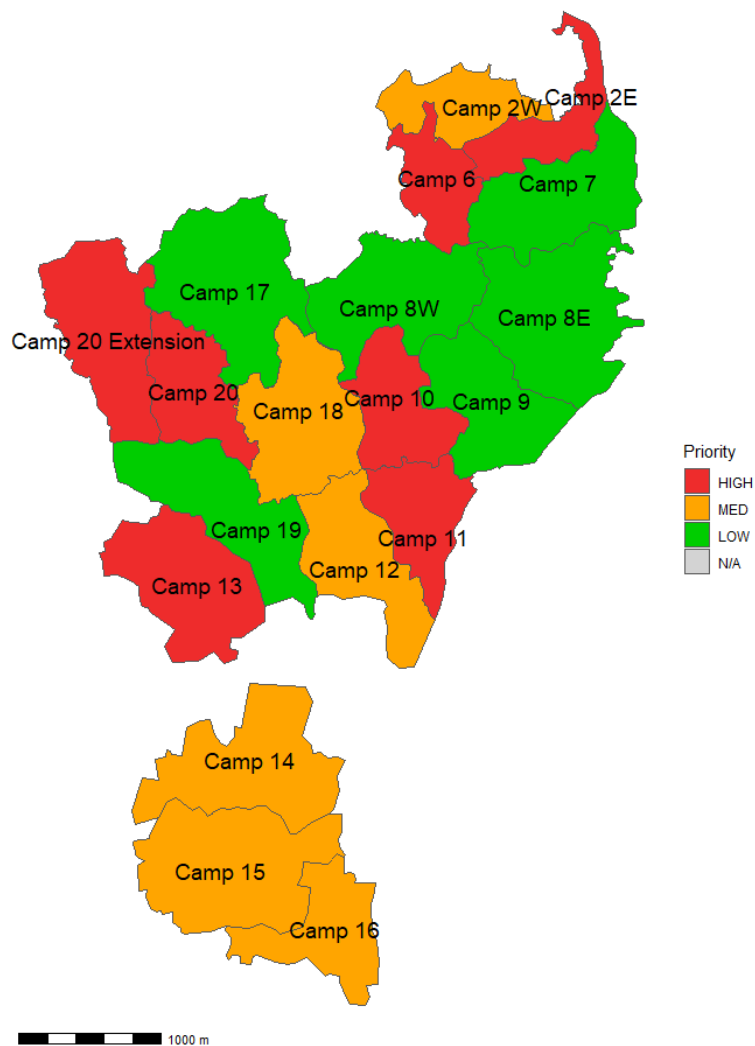
17. Proportion of households whose male members use an improved sanitation facility with an acceptable handwash



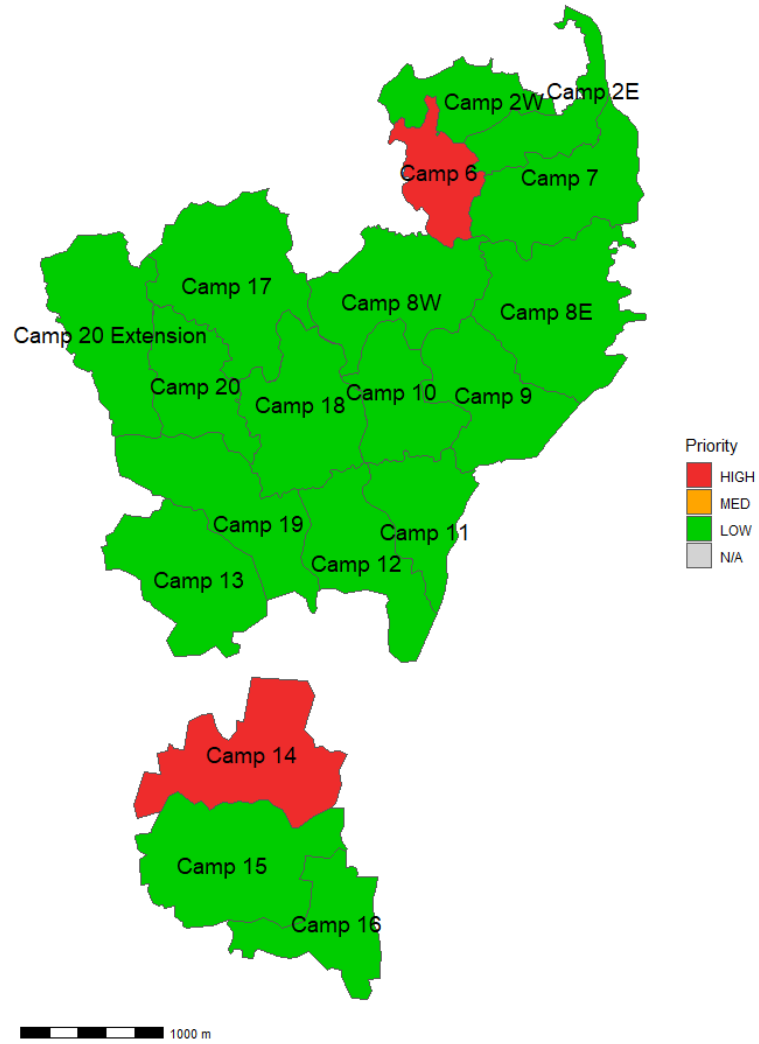
18. Proportion of households whose female members use an improved sanitation facility with an acceptable handwa:



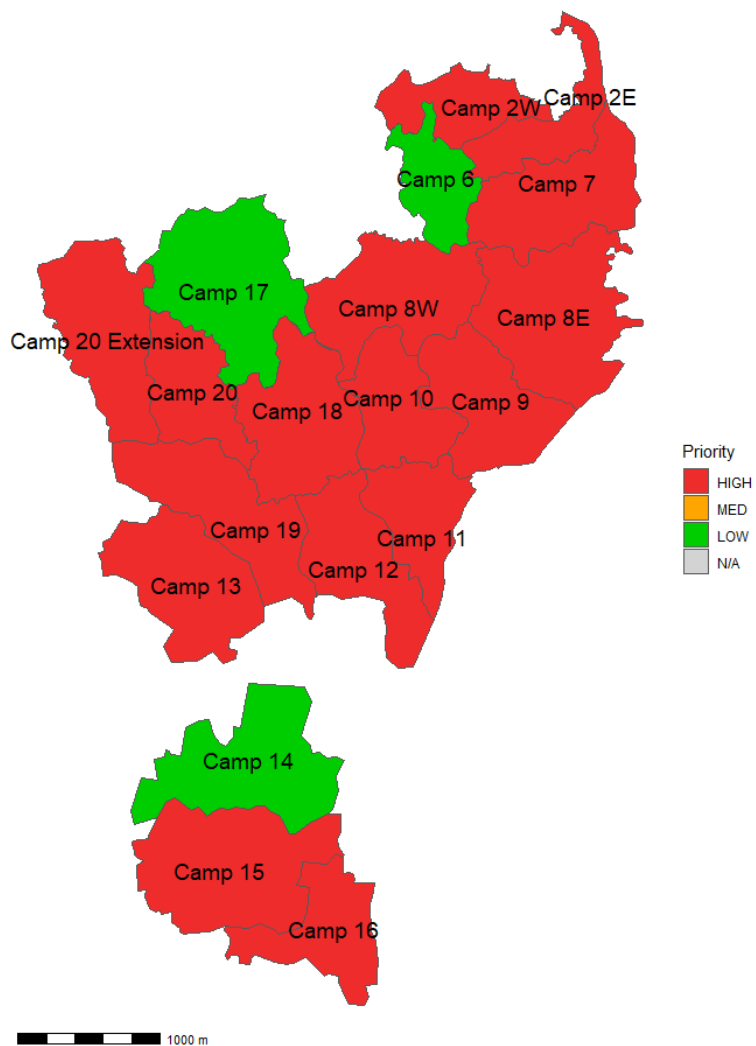
19. Proportion of households that dispose of children's and babies' faeces in an appropriate manner



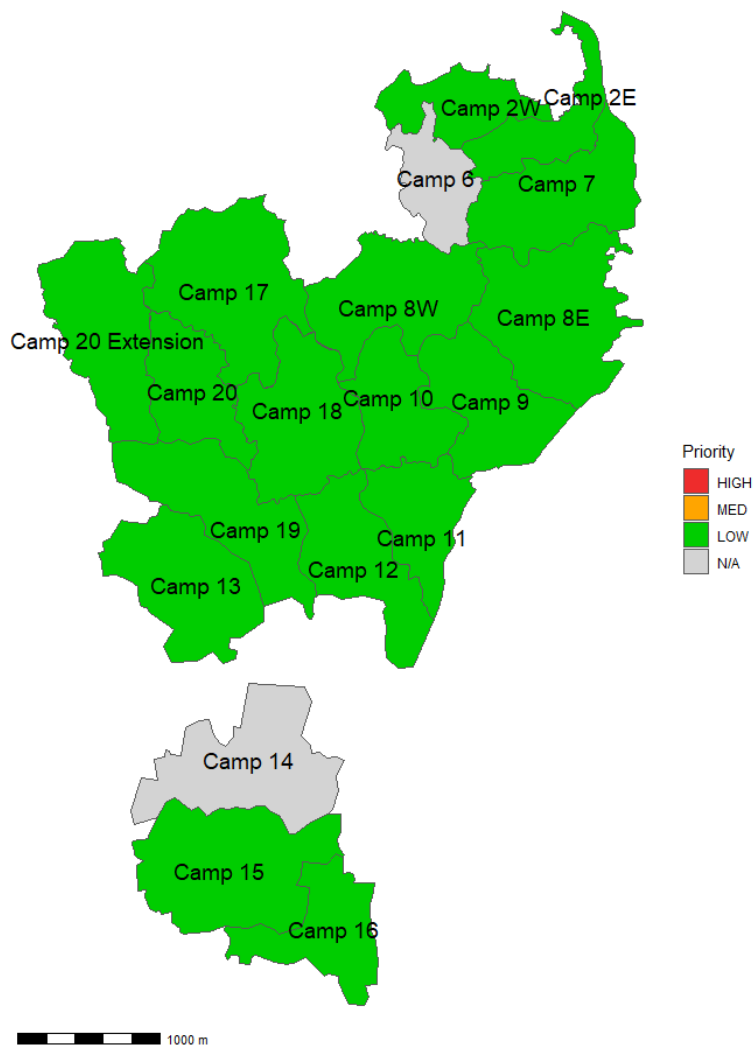
20. Proportion of households that dispose of their waste via communal waste collection



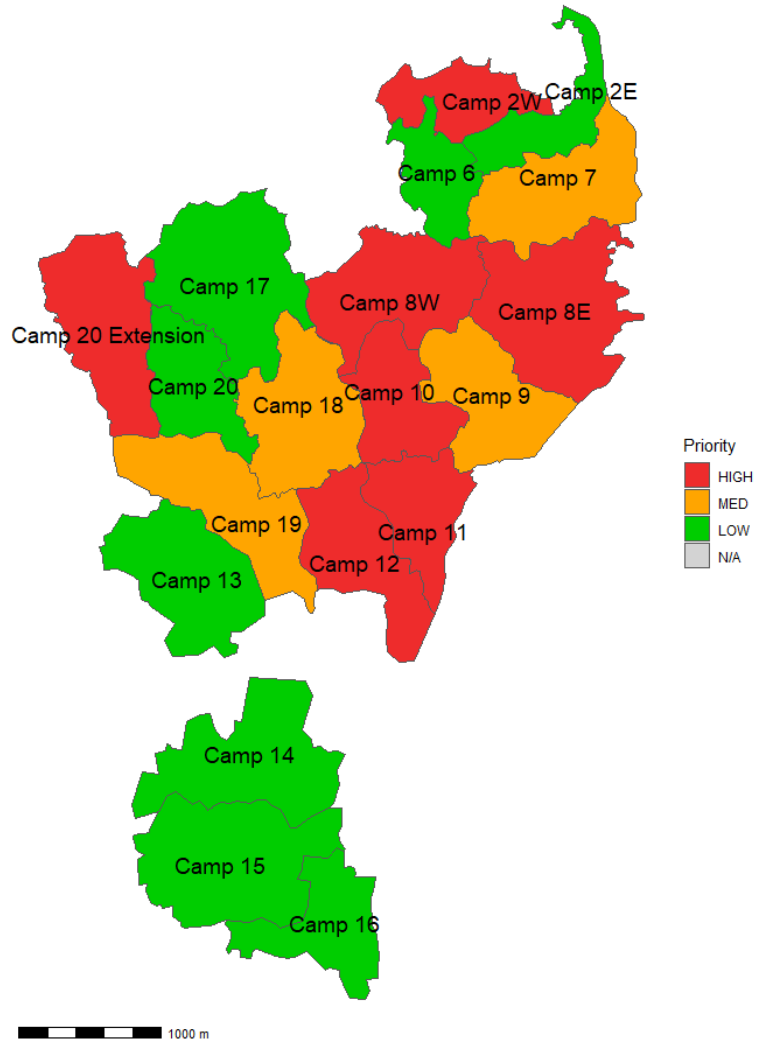
21. Proportion of households that rely on other methods to get rid of their waste



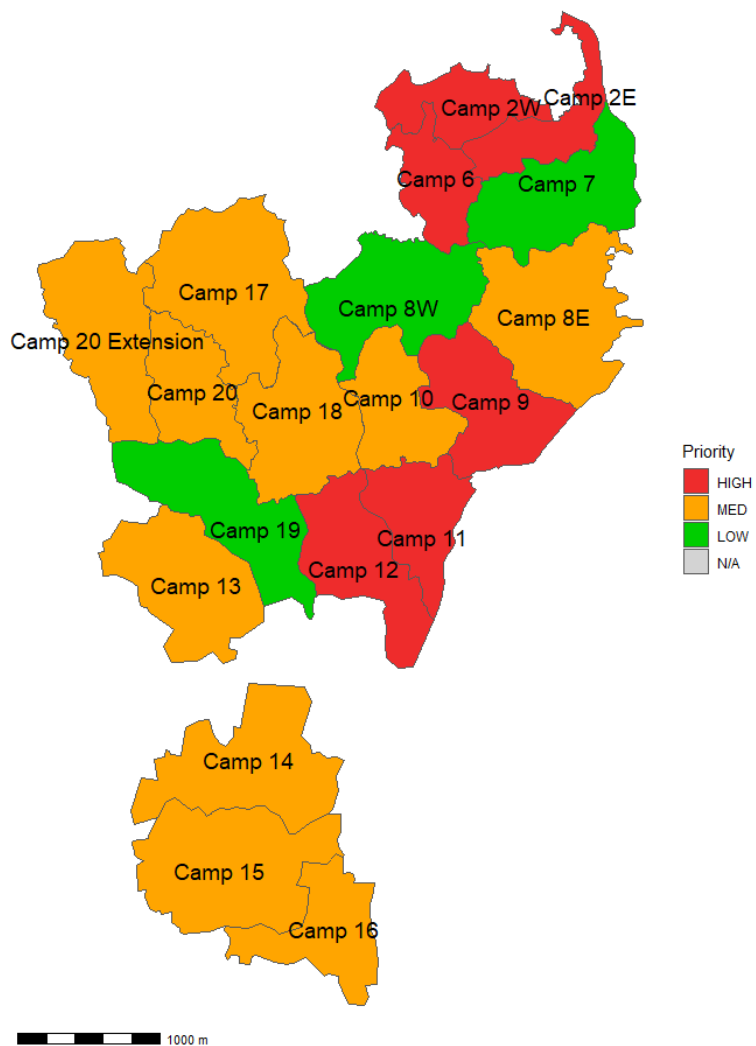
22. Proportion of household which are satisfied with the collection frequency of the waste by communal services



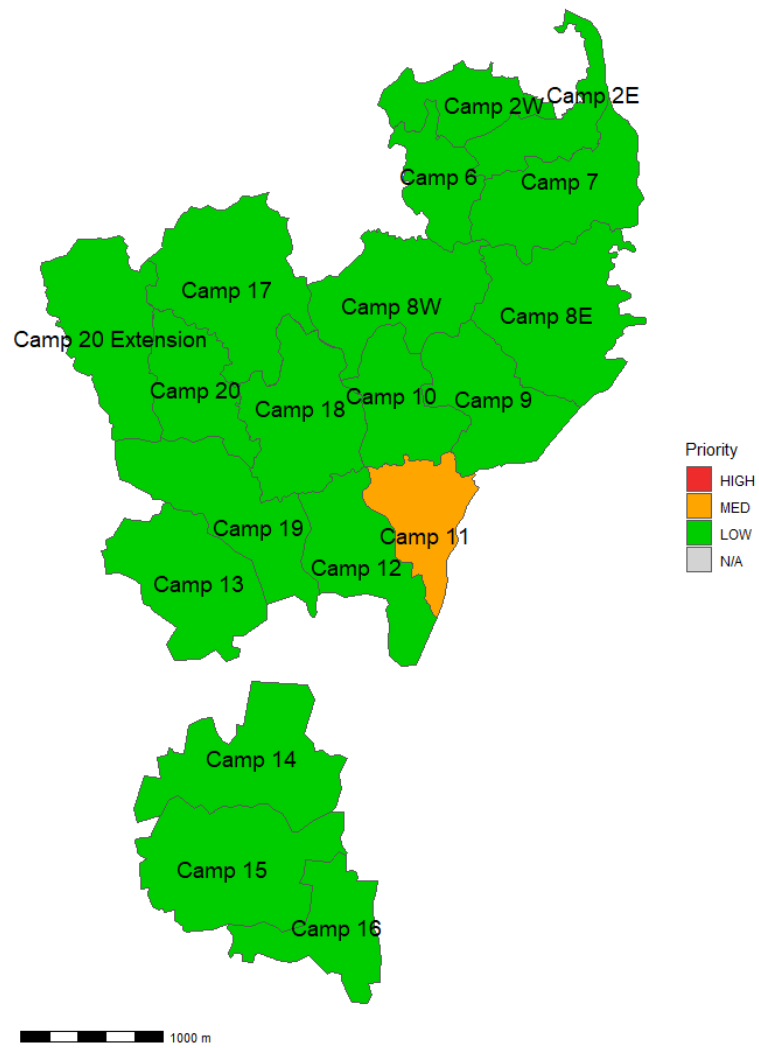
23. Proportion of households for which specific types of waste are collected for reuse, recycling



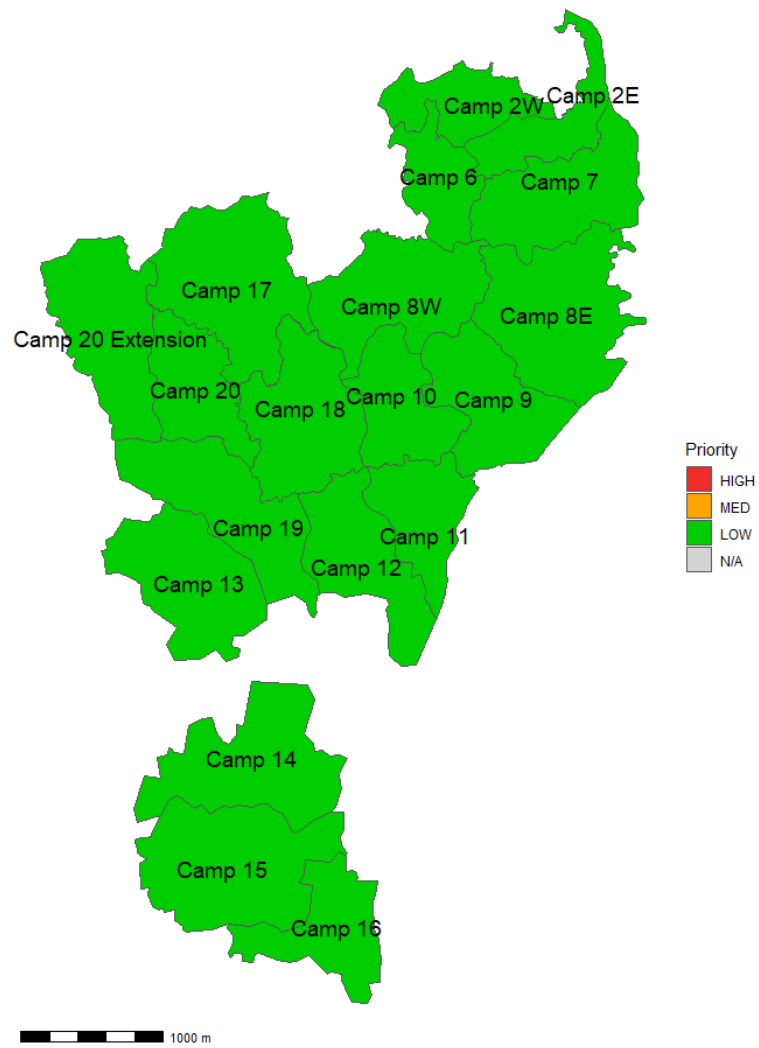
24. Proportion of households that has at least 1 bucket/garbage bin of 20l for solid waste storage



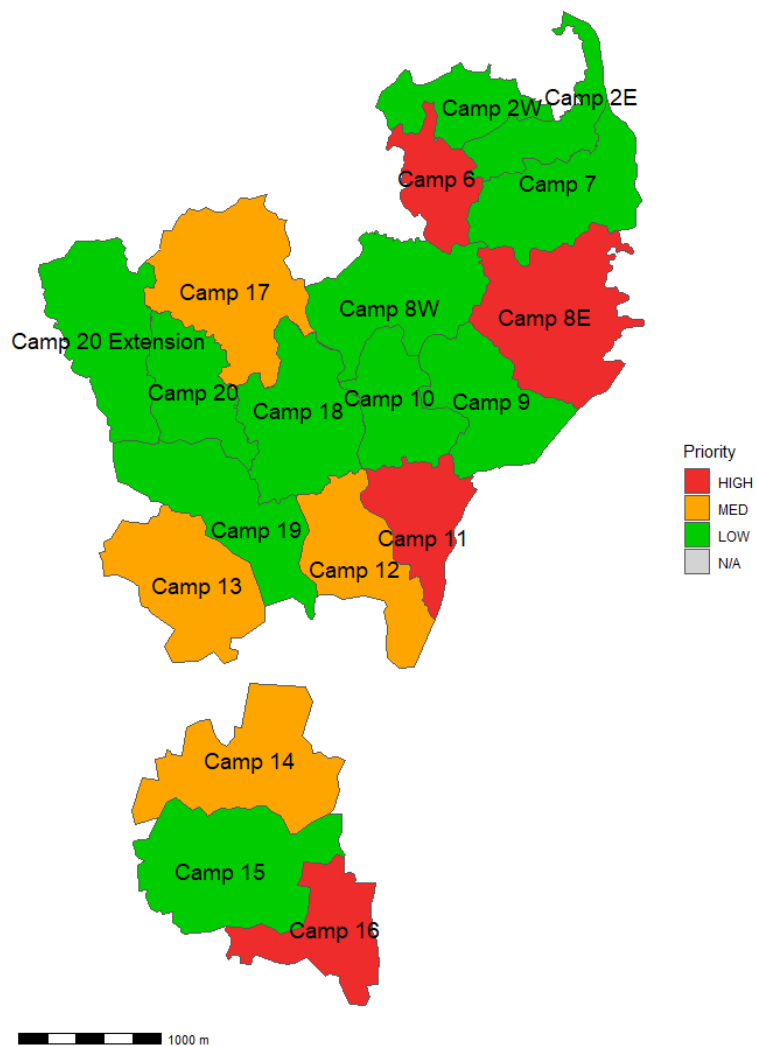
25. Proportion of households reporting NOT HAVING diarrhoea among children <5 years in the last two weeks



26. Proportion of households reporting NOT HAVING eye infections among children <5 years in the last two weeks



27. Proportion of households reporting NOT HAVING skin infections among children <5 years in the last two weeks



28. Proportion of households reporting NOT HAVING jaundice among children <5 years in last two weeks

