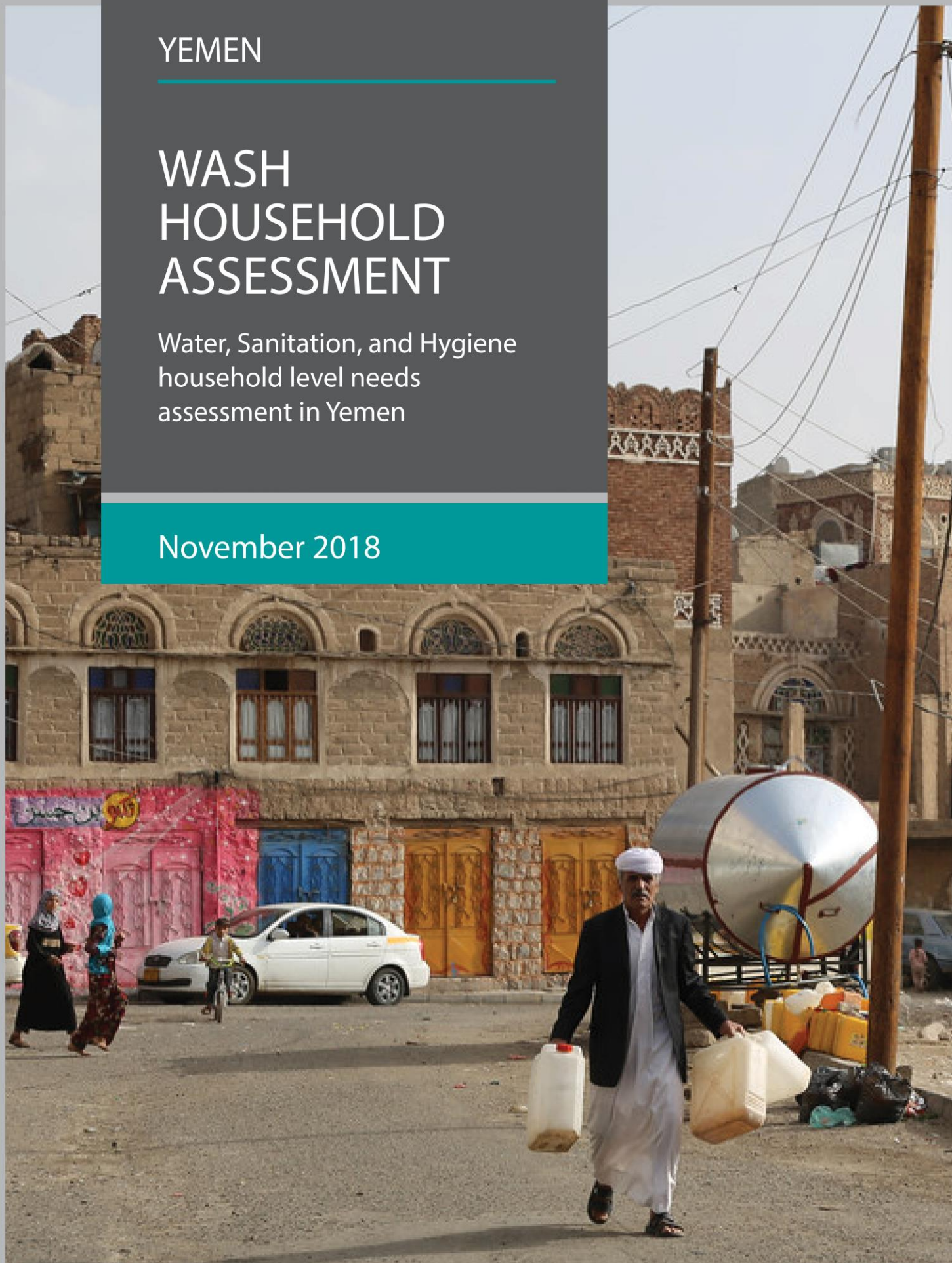


YEMEN

WASH HOUSEHOLD ASSESSMENT

Water, Sanitation, and Hygiene
household level needs
assessment in Yemen

November 2018



Assessment conducted with the support of:



SUMMARY

The conflict in Yemen strongly intensified after 2015 and deeply affected the humanitarian situation in the country, pushing millions of people to rely on humanitarian assistance. There were over 1 million suspected cholera cases and large areas in state of emergency due to the risk of famine.¹ Cholera remains of great concern for Yemen, with the first quarter of 2019 seeing a sharp rise in the number of suspected cases - increasing from 371,323 over the year of 2018 to 214,798 in the first quarter of 2019.² These outbreaks are further aggravated by widespread food insecurity, with around 360,000 children under five estimated to suffer from severe acute malnutrition.^{3,4,5} The outbreaks of disease are in part linked to the breakdown of Yemen's public water and sanitation systems, as well as the failure of the public waste management system.

To improve the humanitarian situation and implement efficient programming, the WASH Cluster worked with partners and technical support from REACH to conduct assessments in 38 districts. Districts prioritized for either cholera, famine, or for both cholera and famine (hereafter referred to as "cholera prioritized districts"; "famine prioritized districts"; or "districts prioritized for both") that also had a high concentration of Internally Displaced Persons (IDPs)⁶ (8% or more) were included for survey. The objective of the survey was to understand the WASH-related needs, coping mechanisms, and hygiene-awareness in the assessed district, disaggregated by IDP or host community (HC). From 4 September to 28 November 2018, 7,609 randomly selected households and 76 Key Informant (KI) interviews were conducted in the 38 districts. This report outlines differences between districts that have been prioritized for famine and/or cholera intervention(s), and with a high concentration of IDPs.

Key Findings

Water

Results show that nearly half of respondents (48%) rely on unimproved sources for drinking water, a dramatic increase compared to 34% in 2006.^{7,8} The majority of respondents (56%) report to spend over 30 minutes fetching water, which indicates limited drinking water services, as defined through the Joint Monitoring Programme of UNICEF and the World Health Organization.⁹ Distances travelled to fetch water were reported to

¹ Oxfam, *OXFAM MEDIA BRIEFING Yemen Pushed towards Man-Made Famine*, 2015

<<https://oxfamlibrary.openrepository.com/bitstream/handle/10546/620233/mb-yemen-two-year-conflict-famine-230317-en.pdf;jsessionid=1DA0980EF58B608C1E3B9B6BA008EE8A?sequence=1>> [accessed 18 April 2019].

² World Health Organization & Ministry of Public Health and Population, 'Electronic Integrated Disease Early Warning and Response System, Yemen', 07 (2019), 1–9.

³ Severe acute malnutrition is defined by a very low weight for height, by visible severe wasting, or by the presence of nutritional oedema.

⁴ Unicef, *Yemen Humanitarian Situation Report*, 2019

<https://www.unicef.org/appeals/files/UNICEF_Yemen_Humanitarian_Situation_Report_Jan_2019.pdf> [accessed 18 April 2019].

⁵ Annette Prüss-Üstün and others, *Safer Water, Better Health*, 2008

<https://apps.who.int/iris/bitstream/handle/10665/43840/9789241596435_eng.pdf?sequence=1> [accessed 18 April 2019].

⁶ IDP: Persons or groups of persons who have been forced or obliged to flee or to leave from their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border (this includes individuals who moved within their locations, across locations, within their districts, across districts, within governorates, and across governorates). During this survey, those who have been displaced and have returned to their place of habitual residence as of the day of data collection were also considered to be "IDP". For the purposes of this assessment, individuals have been considered as IDPs or former IDPs (returnees) **only if the reason for their initial displacement was related to the conflict starting in 2015**. Returnees are defined, from IOM DTM, as "IDP who has now returned to their place of habitual residence where they used to live prior to being displaced, irrespective of whether they have returned to their former residence or to another one"

⁷ WHO/UNICEF, 'Progress on Sanitation and Drinking Water.Methodology 2015 Update & Sdg Baselines', 2018, 1–23.

⁸ UNICEF and WHO, *Progress on Drinking Water and Sanitation: Special Focus on Sanitation*, 2008

<http://www.wssinfo.org/fileadmin/user_upload/resources/1251794333-JMP_08_en.pdf> [accessed 21 May 2019].

⁹ WHO/UNICEF.

be abnormally long, as previous functioning water collection points were closed or non-functional.¹⁰ In addition, 9% of respondents access less than 15 litres of water per day, the minimum amount of water for basic needs according to the SPHERE Handbook for Humanitarian Standards.¹¹ Compared to respondents from famine prioritized districts and districts prioritized for both, respondents from cholera prioritized districts are more likely to rely on unimproved sources for their water; experience issues related to fetching water (89% in cholera prioritized districts, 72% in famine prioritized districts, and 84% in districts prioritized for both); and were less likely to have their water sources located at their properties. Respondents from cholera prioritized districts had access to the least amount of water per person per day (i.e. 26.7 litres) as compared to respondents from famine prioritized districts (34.2 litres) or respondents from districts prioritized for both (35.4 litres). Clearly, access to clean water remains a major issue for many people in Yemen, but especially in cholera prioritized districts. The poor access to water observed is likely to be contributing to the spread of cholera, as access to water was more constraint in cholera prioritized districts.

In addition, reliance on unimproved water sources was reported to be especially high in rural areas, due to the failure of the public water system and increased costs involved in accessing improved sources¹², as fuel became more expensive. Fuel is needed for obtaining water from trucks, bottles or piped networks. The use of unimproved sources is problematic as it can exacerbate the spread of water related, and especially water-borne diseases, including Acute Watery Diarrhoea (ADW)/cholera. Fetching water was particularly problematic for women and children, who are traditionally those collecting water. Problems women faced included having less time to spend on other tasks, and being exposed to harassment. For children, problems included dropping out-of-school as they spent time fetching water instead, as reported by KIs.

Sanitation

The sanitation situation seems to have been impacted by the conflict as well. Access to improved latrines decreased from 71% in 2006 to 53% in 2012 and 48%, as observed in this assessment.^{13,14} Also open defecation was widely reported by KIs and 24% of respondents said that none of their household members had access to latrines. Comparing the different types of districts assessed, it seems that the sanitation situation was worse for people living in districts that were prioritized for both. Respondents from those districts least often had access to improved latrines¹⁵ (33% versus 34% in cholera prioritized districts and 58% in famine prioritized districts) and likewise were least likely to report that all members had access to latrines (49% versus 59% in cholera prioritized districts and 73% in famine prioritized districts).

Furthermore, the use of unimproved latrines was found to be higher among female respondents and IDPs. Access to latrines was said to be particularly challenging for women and girls in famine prioritized districts and cholera prioritized districts as latrines in these districts less often were gender segregated. Their access was found to be particularly challenging in the districts prioritized for both, as doors and locks were less often in place. Open defecation and the use of unimproved latrines are considered to be problematic as they increase the transmission of faecal-oral diseases through faecal contamination of the environment.

Also waste management seems to have been affected by the conflict in Yemen, as the number of households seeing their waste systematically collected decreased between 2014 and 2018 from 65% to 43% in urban areas and from 5% to 4% in rural areas.¹⁶ Most respondents indicated that they burned/buried their garbage (37%), or left it in the street without being picked up (53%). Furthermore, the presence of wastewater in the vicinity of households seems to be a problem across the different types of districts with nearly half of all respondents (45%) reporting to see this near their households. Both the household garbage and wastewater management seem to

¹⁰ Findings derived from Key Informant interviews.

¹¹ IFRC, *The Sphere Handbook, The Sphere Project Humanitarian Charter and Minimum Standards in Humanitarian Response*, 2018, 1 <[https://doi.org/ISBN 978-1-908176-00-4](https://doi.org/ISBN%20978-1-908176-00-4)>.

¹² As reported by Key Informants.

¹³ UNICEF and WHO.

¹⁴ World Health Organization, *Country Highlights Yemen*, 2015 <www.who.int> [accessed 21 May 2019].

¹⁵ Unimproved latrines are: flush latrines to the open; open pit-latrines; and pit-latrines without slab (WHO/UNICEF).

¹⁶ Hani Abu Qdais, *Country Report on the Solid Waste Management in Jordan*, 2014 <https://www.retech-germany.net/fileadmin/retech/05_mediathek/laenderinformationen/Jemen_RA_ANG_WEB_Laenderprofile_sweep_net.pdf> [accessed 22 May 2019].

be worst for people living the famine prioritized districts. Wastewater in the vicinity of households was much more likely in famine prioritized districts (21% versus 3% in cholera prioritized districts and 2% in districts prioritized for both). Also household garbage was least reported to be collected systematically in these districts (46% versus 59% in districts prioritized for both and 67% in cholera districts).

Poor sewage and solid waste management are considered to be problematic as they can pose health hazards to those living in the vicinity. Poor sewage management is related to increased childhood diarrhoea and certain neglected tropical diseases, whereas poor solid waste management can contaminate the surrounding soil as well as the groundwater and surface water.^{17,18,19} KIs reported that the breakdown of the sewage and solid waste management systems are linked to the lack of payment of civil servants.

Hygiene

Only a minority of respondents said to wash their hands at all five critical times (i.e. before preparing food; after defecating; before eating; before feeding baby; after disposing of baby's faeces) and half of the respondents reported that in the 30 days prior to the survey, they were not able to afford hygiene items such as soap or washing basins. In addition, few respondents reported seeing awareness campaigns on hygiene behaviour regularly. Interestingly, the situation seemed more positive for respondents living in famine prioritized districts, respondents reported better handwashing practices and seeing hygiene awareness campaigns more regularly. Respondents living in cholera prioritized districts again seemed in a worse position, they more frequently reported not being able to afford soap.

In general, a small majority of respondents reported not to have received any WASH support during the six months prior to the survey.

Conclusion

Overall, water, sanitation and waste management systems seem to be greatly impacted by the crisis in Yemen. Water systems and sanitation systems were largely inaccessible, especially in rural areas, with a high reliance on unimproved sources – increasing the chances of spreading water-related diseases. Those in rural areas, but also people who identify as IDPs need better access to clean water, sanitation, and hygiene items. Findings showed that access to safe water remained a serious challenge, and distance to water sources – and the waiting time at those water sources – served as a barrier to accessing sufficient quantities of water. Improved latrines were highlighted as a particularly urgent need both to prevent faecal contamination of the environment and to guarantee adequate and dignified access to latrines, especially for women and children. The rehabilitation of solid waste management systems was also reported as an urgent need, to prevent further spreading of infectious diseases.

¹⁷ Mauricio L. Barreto and others, 'Effect of City-Wide Sanitation Programme on Reduction in Rate of Childhood Diarrhoea in Northeast Brazil: Assessment by Two Cohort Studies', *Lancet*, 370.9599 (2007), 1622–28 <[https://doi.org/10.1016/S0140-6736\(07\)61638-9](https://doi.org/10.1016/S0140-6736(07)61638-9)>.

¹⁸ Matthew C. Freeman and others, 'The Impact of Sanitation on Infectious Disease and Nutritional Status: A Systematic Review and Meta-Analysis', *International Journal of Hygiene and Environmental Health*, 220.6 (2017), 928–49 <<https://doi.org/10.1016/j.ijheh.2017.05.007>>.

¹⁹ Shaoli De and Biswajit Debnath, 'Prevalence of Health Hazards Associated with Solid Waste Disposal- A Case Study of Kolkata, India', *Procedia Environmental Sciences*, 35 (2016), 201–8 <<https://doi.org/10.1016/j.proenv.2016.07.081>>.

CONTENTS

SUMMARY	1
List of Acronyms	5
Geographical Classifications.....	5
List of Figures, Tables and Maps	5
INTRODUCTION	6
METHODOLOGY	7
FINDINGS	11
Demographics.....	11
Water	12
Water sources	12
Water treatment.....	14
Water collection.....	15
Amount and storage of water	17
Conclusion.....	18
Sanitation.....	19
Access to latrines	19
Waste management	21
Conclusion.....	22
Hygiene.....	22
Hygiene practices and items	22
Hygiene awareness and assistance	24
Conclusion.....	25
CONCLUSION	26
ANNEXES	27
Annex 1: Table of main indicators.....	27
Annex 2: Sample frame	28
Annex 3: WASH HH assessment questionnaire	29
Annex 4: Location coverage per district assessed	37

List of Acronyms

ADW	Acute Watery Diarrhoea
HC	Host Community
HNO	Humanitarian Needs Overview
IDP	Internally Displaced Person
KI	Key Informant
IOM	International Organization for Migration
WASH	Water, Hygiene and Sanitation

Geographical Classifications

Governorate	Highest administrative division in Yemen, with a total of 22
District	Second administrative division in Yemen; each governorate in Yemen is split into a number of districts with a total of 333 districts
Location	The smallest geographical division (neighbourhood in an urban area or a village in a rural area)

List of Figures, Tables and Maps

Table 1: Districts assessed – by priority status.....	8
Figure 1: Map of surveyed districts.....	9
Figure 2: Primary sources for drinking, disaggregated by population groups.....	12
Figure 3: Primary sources for drinking, disaggregated by district type.....	13
Figure 4: Time spent fetching water from main source, disaggregated by head of household, gender and population group.....	16
Figure 5: Problems faced in water collection, disaggregated by population.....	17
Figure 6: Litres of drinking and household water per person per day, disaggregated by population groups and district type.....	18
Figure 7: Groups reporting to experience issue with accessing latrines, disaggregated by population groups and district type.....	19
Figure 8: No access to latrines, disaggregated by population groups and district type.....	20
Figure 9: Household garbage disposal, disaggregated by population groups and district-type.....	21
Figure 10: Handwashing practices, disaggregated by district-type.....	24
Figure 11: Hygiene item unaffordability, disaggregated by district-type.....	23

INTRODUCTION

The war in Yemen escalated in March 2015 and turned the poorest country in the region into an unrelenting crisis. According to the 2019 Humanitarian Needs Overview (HNO) 80% of the population – 24.4 million people - require humanitarian or protection assistance.²⁰ Yemen is facing one of the world's worst cholera outbreaks which was first declared in October 2016, and is still ongoing at the time of publication. Since late 2016, the country has seen more than 1.3 million suspected cholera cases, spread over 306 out of 333 districts, in 21 governorates.²¹ This cholera outbreak is attributed to both the disruption of public services – including water and sanitation, health, and education, - and widespread displacement.²² Basic water, sanitation, and hygiene (WASH) infrastructure is on the verge of collapse, making it harder for populations to access safe water and functioning sanitation, and garbage collection systems are absent in many parts of the country. By the end of 2018, 3.3 million people in Yemen remained displaced, and many are at a particularly high risk due to overcrowded shelters and settlements with inadequate water and sanitation facilities.^{23,24} Growing food insecurity and malnutrition have served to exacerbate vulnerability to outbreaks of diseases such as cholera. More than half of under-nutrition cases worldwide are due to WASH-related illnesses such as repeated diarrhoea or intestinal worm infections.²⁵ Indeed, around 360,000 children under five in Yemen suffer from severe acute malnutrition.^{26,27,28} The disruption of the health care system continues to be the biggest challenge in delivery of health care and complicates the control of cholera. According to the 2019 HNO, only 50% of health facilities are fully operational, and many health personnel have not received regular salaries for two years. While the WASH cluster is working closely with other clusters to promote the integration of WASH in key humanitarian response activities – including famine risk reduction, Internally Displaced People (IDP) response, and cholera preparedness - piecing together quality information to properly inform programmatic interventions remains challenging due to a difficult and evolving environment on the ground, as well as the limited availability of data to inform planning and prioritization. Against this backdrop, and in support of the Yemen WASH Cluster, REACH coordinated an assessment understand the WASH situation in 38 districts prioritized for famine and/or cholera interventions, which also host a high concentration of IDPs (8% or more of the total district population). The objective of the survey was to provide insights on WASH-related needs, coping mechanisms, and hygiene-awareness and thereby inform the 2019 HNO, Humanitarian Response Plan and planning of the WASH-cluster partners. This assessment is based on quantitative and qualitative data collection, conducted between 4 September to 28 November 2018. A total of 7,609 household interviews and 76 Key Informant (KI) interviews were conducted in 38 selected districts. This report serves to outline the different WASH-related needs of IDPs and Host Communities (HCs) in districts that were prioritized for famine and/or cholera due to prevalence of these conditions in these districts. It provides a methodology and limitations and outlines key findings. The key findings begin with household demographics before moving on to cover water and sanitation related indicators, and finishes with data on WASH assistance including hygiene promotion. Finally, the conclusion synthesises key issues and outlines suggestions for further assessments. Along with this report, district-level findings have been published in factsheets (available on the [REACH Resource Centre](#)) and an online [dashboard](#) allowing the viewing of findings by district priority type, disaggregated by gender and population groups (IDPs/Host Community (HC)). Data can be accessed [here](#).

²⁰ UN OCHA, [Humanitarian Needs Overview \(HNO\)](#), 2019

²¹ According to World Health Organisation (WHO) Standard case definition, a case of cholera should be suspected when:

- In an area where the disease is not known to be present, a patient aged 5 years or more develops severe dehydration or dies from acute watery diarrhoea;
- In an area where there is a cholera epidemic, a patient aged 5 years or more develops acute watery diarrhoea, with or without vomiting.

²² OCHA, 'Humanitarian Needs Overview Yemen 2019', 2019.

²³ IOM, [Yemen: Most Dire Humanitarian Crisis in the World Requires Scaled Up Response in 2019](#), February 2019

²⁴ The World Bank, [A WASH response to Yemen's cholera outbreak](#), December 2018

²⁵ WaterAid, 'WASH and Nutrition | WASH Advocates', *Post-2015 Toolkit*, 2015, 1–10
<<http://www.washadvocates.org/learn/wash-facts/wash-and-nutrition/>>.

²⁶ Severe acute malnutrition is defined by a very low weight for height, by visible severe wasting, or by the presence of nutritional oedema.

²⁷ UNICEF, [Yemen Humanitarian Situation Report](#), January 2019

²⁸ WHO, [Safer water, better health: Costs, benefits and sustainability of interventions to protect and promote health](#), 2008

METHODOLOGY

Districts Selection

In close consultation with the Yemen WASH Cluster, districts were selected based on the criteria that they host a significant proportion of IDPs (8% or more of the total district population) and were given priority for famine and/or cholera intervention(s) in the 2018 Yemen Cholera Contingency Plan.²⁹ These two requirements mirrored the Yemen WASH Cluster's Strategic Operation Framework prioritization criterion.³⁰

As this assessment aims to outline WASH needs, in particular of IDPs, two different population groups have been included in this survey: HC members and IDPs.³¹ For each district in Yemen, the ratio between IDPs and HCs was calculated using IOM Displacement Tracking Matrix data from April and May 2018. Of the districts with large IDP populations (8% or higher), only those prioritized for famine and/or cholera response(s) were selected for assessment. Districts were prioritized for famine interventions in March 2017 jointly by the Yemen Nutrition Cluster and the Yemen Food Security and Agriculture Cluster if the global acute malnutrition rate was over 15% and if 20% of the population was severely food insecure.³² Districts were prioritized for cholera if there was at least one cholera case in the district confirmed through either positive culture or positive rapid diagnostic test. Districts were also prioritized for cholera if there was an attack rate of over 0.5 per 10,000 cholera cases.

Taking account of these criteria, 41 districts should be assessed. However, due to security and operational constraints, three districts from the initial sample list of areas to be assessed had to be dropped (namely Al Ma'afer, Saqayn and Hayran districts), bringing the total number of assessed districts to 38 (see [Annex 3](#) for the list of assessed districts). Districts included for this survey and given priority for cholera intervention(s) in the 2018 Yemen Cholera Contingency Plan are hereafter referred to as "cholera prioritized districts". Districts included for this survey and given priority for famine intervention(s) in the 2018 Yemen Cholera Contingency Plan are hereafter referred to as "famine prioritized districts". Districts included for this survey and given priority for both cholera and famine intervention(s) in the 2018 Yemen Cholera Contingency Plan are hereafter referred to as "districts prioritized for both". See Figure 1 for a map with the different types of districts that were surveyed for this assessment.

Quantitative Data Collection

Sampling and methodology

Quantitative data was gathered through household surveys by WASH Cluster partner organizations. HC and IDP population sample sizes were determined based on the Office for the Coordination of Humanitarian Affairs' Humanitarian Data Exchange 2018 Population Projections and the IOM DTM IDP statistics produced in April and

²⁹ The 8% threshold was determined by IOM and REACH, and is based on the fact that an 8% IDP population proportion is the minimum value for a severity score of 3 regarding IDP prevalence, as defined as an indicator for the WASH section of the HNO.

³⁰ Yemen's WASH Cluster Strategic Operational Framework 2018 outlines that programmatic interventions "must be based on assessments which identify the most vulnerable population and needs". For this reason, the WASH Cluster identified three priority district lists, in addition to the WASH Severity Score, to complement response approaches: WASH response for IDPs and returnees, WASH cholera preparedness and prevention, and WASH response as part of integrated famine risk reduction.

³¹ IDP: Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border (this includes individuals who moved within their locations, across locations, within their districts, across districts, within governorates, and across governorates). During this survey, those who have been displaced and have returned to their place of habitual residence as of the day of data collection were also considered to be "IDP". For the purposes of this assessment, individuals have been considered as IDPs or former IDPs (returnees) **only if the reason for their initial displacement was related to the conflict starting in 2015**. Returnees are defined, according to IOM DTM, as "IDP who has now returned to their place of habitual residence where they used to live prior to being displaced, irrespective of whether they have returned to their former residence or to another one."

³² [Yemen: Standard integrated programming response package for famine risk reduction-Report of the workshop](#), October 2017

May 2018, respectively. Household-level figures for HC were calculated by dividing the populations' numbers by 6.7, the most recent (2017) UN average Yemeni household size estimate.³³

Table 1: Districts assessed – by priority status

Priority group	Total # of districts	% of districts
Districts with 8%+ IDP population proportions and classified as priority districts for cholera response	14	37%
Districts with 8%+ IDP population proportions and classified as priority districts for famine response	19	50%
Districts with 8%+ IDP population proportions and classified as priority districts for both cholera <i>and</i> famine responses	5	13%
Total	38	100%

Following a two-stage random sampling approach, representative samples of HC and IDP populations were collected in randomly-selected locations in each of the districts assessed. Samples sizes were calculated to provide generalizable findings with a 95% level of confidence and a 10% margin of error, at the district level and for each target population group. In total, 7,609 surveys (including 4,025 HC and 3,584 IDP households) were conducted across the districts assessed (see sample frame in [Annex 1](#)). Surveyed households were identified through “spin the pen” method until the target was met.

Data collection and data cleaning

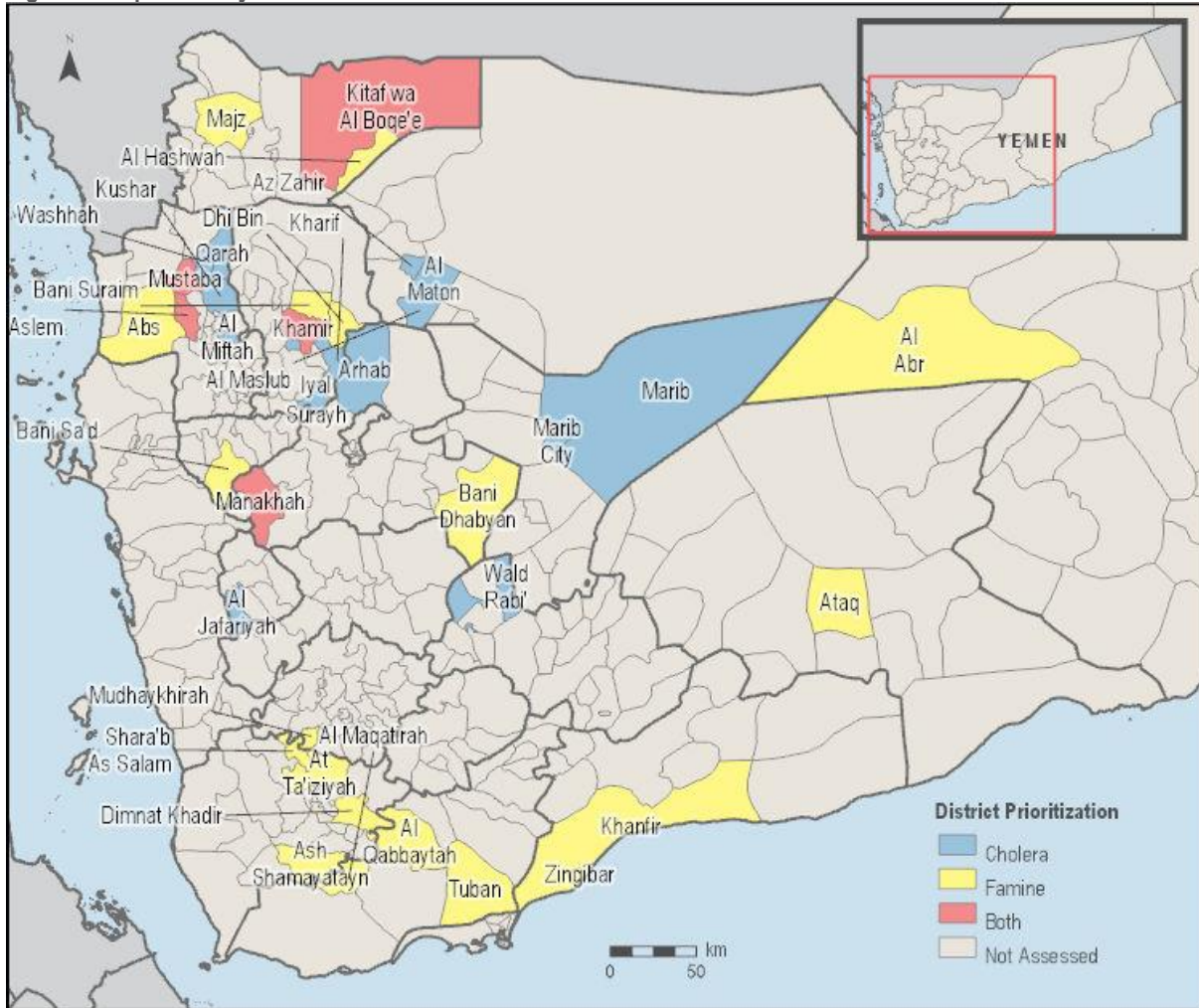
The questionnaire used for quantitative data collection was a slightly revised version of the standardised Yemen WASH Cluster (YWC) household assessment tool (See Questionnaire in [Annex 2](#)). Data collection was first conducted by 16 partners using paper forms, which were then uploaded to a Kobo server. Data cleaning was conducted daily by REACH, to identify outliers and inconsistencies. Given the difficulties faced in collecting follow-up data, as soon as a survey presented a logical inconsistency the entire entry was deleted from the dataset so as to ensure data quality. Partners were then encouraged to collect additional surveys to fill this gap.

Data processing and analysis

Once the whole dataset had been cleaned, findings were aggregated to district priority type (i.e. cholera prioritized districts; famine prioritized districts; and districts prioritized for both), using the statistical software R. Chi-square tests and T-tests were run to make comparisons between the different types of district, comparing two different types of districts with each other. Comparisons were also made between population groups (IDPs versus HC) in general, and also within each district between the two population groups (IDPs versus HC). Significance was calculated and reported whenever equal to or lower than 0.05. If differences were not significant (i.e. the p -value was higher than 0.05), they were reported as differences, without mentioning the p -value or that they are significant. Furthermore, the different priority districts were compared with other (i.e. cholera prioritized districts compared with famine prioritized districts; cholera prioritized districts compared with districts prioritized for both; and famine prioritized districts compared with districts prioritized for both). Whenever all three of these comparisons had a p -value below 0.06, a significant difference among districts is reported. However, findings were not analysed comparing all three districts together at the same time, therefore no p -value was calculated or reported for this type of comparison.

³³ Household Size and Composition Around the World 2017, [United Nations Data Booklet](#), 2017

Figure 1: Map of surveyed districts



Qualitative Data Collection

Key Informant (KI) interviews were conducted to contextualize household-level data by analysing differences in WASH needs, if any, from a gender perspective and comparing rural and urban areas. Two KI interviews (one male and one female) were carried out in each of the assessed districts, yielding a total of 76 KI interviews. KIs were selected based on their knowledge of the WASH-related practices of community members (for instance, they could be community leaders, NGO workers, doctors, nurses, or government workers working in water and/or sanitation sectors), and were interviewed either over the phone or in-person. Completed forms were then sent to REACH and translated from Arabic to English. Qualitative data were analysed using Microsoft Excel, identifying themes and patterns.

Limitations of the assessment:

- Findings were initially meant to be representative and generalizable with a 95% level of confidence and a 10% margin of error, in all districts and for each population group. However, IDP target sample sizes in Iyal Surayh, Kharif, and Dhi Bin districts were not met as the data collection partners in these areas reported facing difficulties in identifying IDP households to interview (due to a significant number of IDP departures).³⁴ Additionally, the IDP target sample size in Bani Dhabyan district and the HC target sample size in Khamir district were not met after the deletion of some entries during data cleaning.³⁵

³⁴ Findings for IDPs in Kharif district are representative with a 90% confidence level and a 10% margin of error, while findings for IDPs in Dhi Bin and Iyal Surayh districts should only be considered as indicative.

³⁵ Findings for HC in Khamir district and for IDPs in Bani Dhabyan districts are representative with a 90% confidence level and a 10% margin of error.

- Initially, data collection was planned to take place in 41 districts. However, data collection in Saqayn, Hayran, and Ma'afar districts could not be conducted due to security concerns and conflict. As these three districts were not included for assessment, findings might be biased for representation at the level priority that the districts were assigned. As such, findings at the aggregated level of priority districts (i.e. either cholera, famine, or both) might not be representative as the ratio of each type of district changed due to the exclusion of three districts.
- As some locations were in hard-to-reach areas, implementing partners could adjust the set of locations within a district depending on conditions on the ground. Consequently, the probability of some households being selected for interview relative to others has been skewed in certain districts, leading to a potential bias in findings (See [Annex 3](#), location coverage per district assessed).
- Biases due to self-reporting of household-level indicators may exist and should be taken into consideration when interpreting findings.
- As the findings presented in this report are not the result of an experimental design, group-level results are not causal. It is therefore not possible to determine whether differences between district-type results, are specifically the product of the presence/prevalence of cholera and/or malnutrition. Also, as the sample sizes were selected from 38 purposively selected districts, findings should be treated as a case study.
- No protocol was put in place for ensuring that only female enumerators interviewed women, which may have resulted in a slight bias from women's responses.
- The gender balance among respondents was strongly skewed towards men. This is likely reflective of the role that male household members traditionally have in Yemen as the head of household. As such, the high rate of male respondents is likely related to them being preferred member to represent the household during a survey.³⁶ Nonetheless, this should be taken into account when interpreting findings.

³⁶ Wolfgang Gressmann, *FROM THE GROUND UP: GENDER AND CONFLICT ANALYSIS IN YEMEN*, 2015
<https://www.acaps.org/sites/acaps/files/key-documents/files/yemen_gender_report.pdf> [accessed 26 March 2019].

FINDINGS

Demographics

Of the 7,609 survey respondents, 53% identified as HC and 47% as IDP. Disaggregated by type of district (i.e. cholera prioritized district; famine prioritized district; districts prioritized for both), this trend remained consistent.³⁷ The gender balance among respondents was strongly skewed towards men, remaining the same across respondent and district type.

The average household size among HC and IDP respondents in the assessed districts was considerably higher than the national average. Overall, HCs reported an average of 8.8 household members, and IDPs an average of 8.1, as compared to a national average of 6.7.³⁸ The relatively large household sizes are probably due to two different conflict-related factors identified by respondents. Firstly, some households reported hosting at least one person who was not a usual member of their household, increasing the average. Among the HC, this was reported among 36% of respondents, and among 21% of IDP respondents. HCs who hosted additional persons reported hosting on average 4.7 people, with IDPs hosting an average of 4.2 people. Respondents from cholera prioritized districts most frequently reported hosting additional household members when compared to the other district types (i.e. 32% as compared to 30% for famine prioritized districts and 14% for districts prioritized for both). On average, those respondents reported hosting an average of 4.5 additional people in their households. For the famine prioritized districts the figure was 4.6 people, whereas for districts prioritized for both it was 5.4. A second reason for the high household sizes in this survey could be linked to the increased rate of pregnant women per household as compared to before the crisis (23% before the crisis compared to 44% in 2015).³⁹ Indeed, increased or fluctuating total-fertility rates during times of crises or conflict in Middle-Eastern countries have been reported.^{40,41,42} In addition, this overcrowding puts extra stress on existing sanitation facilities, possibly causing these facilities to be less or malfunctioning. A lack of functioning latrines increases the chances of open defecation, which increases the risk of diarrhoeal diseases. Also the lack of handwashing facilities is related to the spread of diarrhoeal diseases. In addition, in areas with high population density, WASH problems tend to have a greater impact and person-to-person contact is more frequent, also increasing the chances of spreading diseases. Also the space available for WASH facilities is confined, reducing people's chances of practicing personal hygiene safely and comfortably. Moreover, in areas with high presence of faecal-oral diseases and vector-borne diseases, the breakdown of sanitation facilities poses a greater threat for the population accessing these facilities. This means that WASH interventions in cholera-affected areas would be especially urgent.⁴³ Men are traditionally the head of household in Yemeni society, a trend which is reflected among respondents in this assessment. Overall, 91% of HC and 90% IDP respondents were male-headed households, a trend that was consistent across assessed districts.⁴⁴ Also, some respondents reported people with increased vulnerability to be part of their households, such as children below the age of five or people with disabilities. On average, HC households had 1.9 children aged below five in their households, whereas this was 1.8 in IDP households. The number of persons with disabilities per household was considerably lower, with on average 0.42 persons with disabilities in HC households and 0.39 in IDP households.

³⁷ Cholera prioritized districts: 53.1% HC and 46.9% IDP; Famine prioritized districts: 53.0% HC and 47.0% IDP; Districts prioritized for both: 51.8% HC and 48.1% IDP (p -value: 0.754)

³⁸ Alison B Comfort and others, 'Providing Free Pregnancy Test Kits to Community Health Workers Increases Distribution of Contraceptives: Results from an Impact Evaluation in Madagascar.', *Contraception*, 2015 <<https://doi.org/10.1016/j.contraception.2015.09.011>>.

³⁹ Gressmann.

⁴⁰ Valeria Cetorelli, 'The Effect on Fertility of the 2003-2011 War in Iraq.', *Population and Development Review*, 40.4 (2014), 581–604 <<https://doi.org/10.1111/j.1728-4457.2014.00001.x>>.

⁴¹ M. Murat Yüceşahin and E. Murat Özgür, 'Regional Fertility Differences in Turkey: Persistent High Fertility in the Southeast', *Population, Space and Place*, 14.2 (2008), 135–58 <<https://doi.org/10.1002/psp.480>>.

⁴² Marwan Khawaja, 'The Recent Rise in Palestinian Fertility: Permanent or Transient?', *Population Studies* (Taylor & Francis, Ltd. Population Investigation Committee), 331–46 <<https://doi.org/10.2307/2584789>>.

⁴³ Global WASH Cluster, 'Global WASH Cluster Needs Assessment Indicators & Question Bank', 2019.

⁴⁴ Ratio of male headed households among assessed districts: cholera prioritized districts: 91.2%; famine prioritized districts: 90.0%; districts prioritized for both: 92.7%.

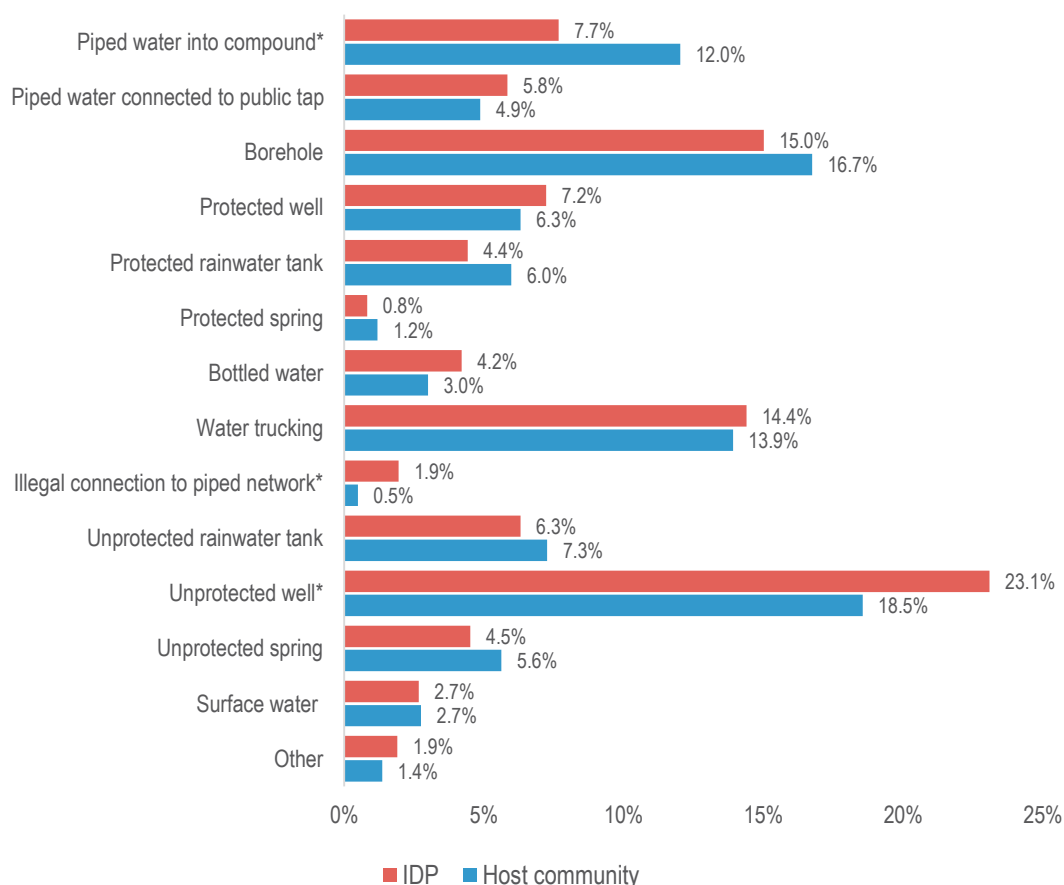
Water

The first part of this section details findings related to the household main sources of drinking and non-drinking water; water treatment, water collection (including gender of individuals collecting water and distances/wait-times involved), quantity of water used (including water storage practices) as well as reported challenges to water access.

Water sources

Respondents were asked to report their primary source for water use in general as well as their primary and secondary sources for drinking specifically. Respondents were then asked what source they mainly used for washing and cooking. Respondents could select one source per question. Nearly half of all respondents (48%) reported to make use of unimproved water sources for their drinking water. This is an increase compared to pre-crisis rates. In 2014, 45% of Yemenis was assessed to access unimproved sources for drinking water, whereas in 2006, this was still 34%.^{45,46} The use of unimproved sources for drinking water is associated with an increased burden of disease, especially in low- and middle-income countries.⁴⁷ Poor water source management affects diseases such as malaria and dengue fever and unsafe and insufficient drinking-water is related to an increased burden of morbidity and mortality. As such, the observed increase in the use of unimproved water sources is highly concerning and urges for immediate action to increase access to improved sources.

Figure 2: Primary sources for drinking, disaggregated by population groups⁴⁸



⁴⁵ World Health Organization, *Country Highlights Yemen*.

⁴⁶ UNICEF and WHO.

⁴⁷ World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE*, WHO Library Cataloguing-in-Publication Data, 2014 <http://apps.who.int/iris/bitstream/10665/150112/1/9789241564823_eng.pdf> [accessed 27 May 2019].

⁴⁸ An asterisk is placed on water sources for which differences between population groups were statistically significant.

When comparing the two population groups, there was no significant difference between the HC and IDP populations regarding their reliance on improved sources for both their primary and secondary source of drinking, with 50% of HCs and 45% of IDPs reported using improved sources as their primary source for drinking purposes.⁴⁹ The most frequently reported source for water use in general among both HC and IDP households was unprotected well (19% and 23% respectively), as shown in Figure 2. This was followed by boreholes (17% of the HC and 15% of the IDPs), water trucking (14% vs 14%), and piped water into the compound (12% vs 8%).

Figure 3: Primary sources for drinking, disaggregated by district type



Comparing district types, respondents from cholera prioritized districts were more likely to rely on unimproved sources for drinking as compared to the other types of districts, as can be seen in Figure 3 above. For both their primary source for drinking, the majority of respondents from famine prioritized districts and the majority of respondents from districts prioritized for both reported relying on improved sources (52% and 55% respectively). Even though the use of unimproved sources for drinking water was different in these two types of districts, the three most frequently mentioned primary sources for drinking in cholera prioritized districts were the same as those mentioned in famine prioritized districts (i.e. unprotected well; water trucking; and borehole). Nevertheless, the majority of respondents from all three types of districts reported using unimproved sources as their secondary source for drinking, whereas the primary drinking source was improved for respondents from famine prioritized districts and districts prioritized for both.⁵⁰

KIs added that especially in famine prioritized districts, people would knowingly and unknowingly drink unclean water due to the lack of access to improved sources. For secondary water sources for drinking, all three district types reported mostly using unimproved sources, the most common of which was said to be water trucking.⁵¹ The heavy reliance on unimproved sources was seen to be directly related to the current crisis in Yemen. Although this issue was not directly covered by the survey, KIs noted that fuel prices in Yemen increased substantially, impacting the price of water. These increases in fuel prices caused subsequent increases in water prices due to water having to be transported by trucks, or having to be pumped from underground sources. The increased price for accessing improved sources could force households with lower income to reach out to cheaper, less quality or unimproved sources. Furthermore, the heavy reliance on unimproved sources is likely related to the failure of

⁴⁹ HC(SD=0.5), IDP(SD=0.5), P value=0.052, thus no differences.

⁵⁰ Use of unimproved sources for secondary drinking source: cholera prioritized districts: 65.5% famine prioritized districts: 57.4%; districts prioritized for both: 65.0%.

⁵¹ Cholera prioritized districts: 31.9%; famine prioritized districts: 32.0%; districts prioritized for both: 25.1%.

improved and piped water systems. Indeed, the use of piped water into the dwelling or plot seems to have decreased as compared to pre-crisis use. In 2012, the use of piped water for drinking was 45%, whereas this assessment reveals a rate of only 15%.⁵² Parts of this piped water system were said to be failing as a result of civil servants only working part time, or not at all, due to postponed payments.

Furthermore, KIs highlighted unprotected water sources as a physical risk to children, as they could fall into wells or springs. This concern was particularly prevalent in rural areas; as such unprotected water sources were particularly common in these areas. No significant differences in improved or unimproved sources were reported for male and female-headed households.

When it comes to water sources used for washing, cooking and bathing, the use of unimproved sources increases from 48% for drinking water to 53% among the survey population. This is problematic as the use of containers for water storage from both unimproved and improved sources can create contamination of water that initially came from an improved source. As reported earlier, the use of unimproved water sources is related to an increased burden of disease.⁵³ Cholera prioritized districts and districts prioritized for both most frequently relied on unimproved sources (cholera prioritized districts: 63%; districts prioritized for both: 58%; famine prioritized districts: 48%). Furthermore, respondents from cholera prioritized districts and famine prioritized districts reported the same top-three sources for washing and cooking.⁵⁴ In those districts prioritized for both, the most frequently mentioned source for washing and cooking were boreholes (22%), unprotected rainwater tanks (13%), and unprotected wells (11%).

Overall, the heavy reliance on unimproved sources among the different districts and population groups indicates the urgent need for WASH interventions, such as water source rehabilitation or water treatment to reduce the risk of water-borne diseases such as cholera, typhoid, or dysentery. This need is particularly urgent in cholera prioritized districts, especially given recent cholera outbreaks of which nearly half of the cases were reportedly caused by contaminated water.⁵⁵ Indeed, as reported earlier, approximately half of the respondents indicated to use unimproved water sources.

Water treatment

Even though much of the sources people use might be unimproved or contaminated, some households might treat their water before consuming it. In order to obtain information related to water quality, respondents were asked whether they had any issues related to the taste, appearance, or smell of their water during the past 30 days. Respondents were also asked if they treated their drinking water to improve its quality. Furthermore, they were asked how they treated their water and, if they did not treat their water, why they did not do so.

The majority of respondents (52%) reported to experience issues with the taste, appearance or smell with their water during the 30 days prior to the data collection. However, only a small minority of respondents reported to treat their drinking (20%). Respondents who indicated not to be treating their water, said that they were doing so as they did not have any treatment materials (34%), didn't know of any treatment methods (34%), or felt that water treatment was not needed (25%). The combination of the majority of respondents reporting to use unimproved sources for drinking and experiencing bad smell, appearance or taste of their water, but only a minority reporting to treat their water might constitute an issue for public health and for the presence of diarrhoea particularly. Diarrhoea can be reduced by between 28% and 45% if household water is properly treated and stored. Indeed, storage and treatment of drinking water are crucial in the prevention of faecal-oral diseases such as cholera, as even water from improved water sources are not necessarily free from faecal pathogens.^{56,57}

⁵² World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE*.

⁵³ UNICEF and WHO.

⁵⁴ Washing and cooking sources: Cholera prioritized districts: unprotected well: 28.7%; borehole: 14.1%; water trucking: 13.3%. Famine prioritized districts: unprotected well: 19.2%; water trucking: 16.8%; borehole 15.3%.

⁵⁵ World Health Organization, *Highlights CHOLERA SITUATION IN YEMEN Distribution of Suspected Cholera Cases in Yemen, Cholera Cases and Case Fatality Rates by Governorate in Yemen Governorate Cases Deaths CFR (%)*, 2018 <http://applications.emro.who.int/docs/EMROPub_2018_EN_20790.pdf?ua=1> [accessed 3 April 2019].

⁵⁶ World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE*.

No significant differences were found between HC and IDP answers for questions on neither the appearance of water (smell, taste, colour), nor for water treatment, or motivations for treating water. The most commonly reported issue for both population groups was bad taste (65% and 68% for HC and IDPs respectively). HC members, more so than IDPs, reported to treat their drinking water (23% and 19% for HC and IDPs respectively), mostly with chlorine tablets, liquids, or powder. In addition, only a minority had received chlorine tablets or other water disinfecting agents for water treatment (HC: 17%; IDPs: 16%). Only very few respondents reported having reconstruction support, solid waste support, free trucked drinking-water, or water containers.

Few significant differences were found between the three districts types with regards to the quality and treatment of water. Again, approximately half of the respondents reported experiencing issues with their water, without any significant differences between the different districts. However, whenever issues were reported, districts prioritized for both were more likely to report water with a bad appearance (districts prioritized for both: 71%; cholera prioritized districts: 42%; famine prioritized districts: 42%) or smell (districts prioritized for both: 41%; cholera prioritized districts: 31%; famine prioritized districts: 20%). Furthermore, no significant differences were reported for the prevalence of water treatment, with only a minority reporting treating their drinking water. However, there are some differences regarding the reasons why people do not treat their water. Districts prioritized for both were more likely to report being able to access and afford water treatment (districts prioritized for both: 34%; cholera prioritized districts: 20%; famine prioritized districts: 22%). At the same time, these districts were also more likely to report not treating water due to a lack of knowledge of treatment methods (districts prioritized for both: 48%; cholera prioritized districts: 32%; famine prioritized districts: 35%), whereas cholera prioritized districts were more likely to report not treating water due to a lack of materials to do so (cholera prioritized districts: 54%; famine prioritized districts: 33%; districts prioritized for both: 25%).

Water collection

In order to inform a more comprehensive understanding of existing issues related to water collection, respondents were asked to estimate the time they usually spent fetching water during peak time (see Figure 4). They were then asked whether this activity constituted a problem for their household and, if so, what these problems were (reduced time for other activities; preventing children from attending classes; reduced amount of water available for household; forces household to use closer and less desirable water sources)). The SPHERE Handbook for humanitarian standards' response states that water sources should be located no further than 500 metres from a household (i.e. between five and six minutes walking), and that the time spent queuing for water should not exceed 30 minutes.⁵⁸

KIIs reported that, across all populations in all districts, people face difficulties in accessing water, as well as in accessing sufficient amounts of water. They reported that in order to have sufficient amounts of water, people would adopt different coping strategies, such as reducing the amount of water used for other purposes such as bathing. They also reported that some people would reduce their intake of water. Reducing the intake of water is directly linked to increased burden of diseases.^{59,60}

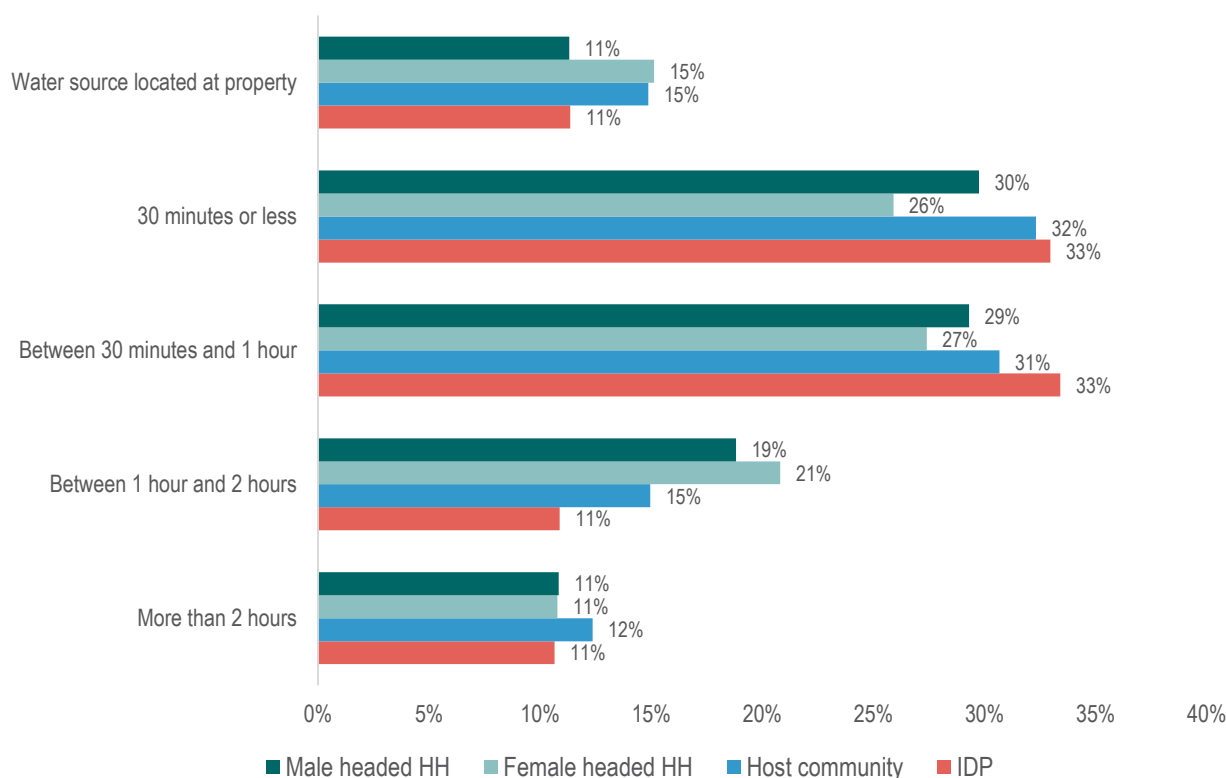
⁵⁷ Robert Bain and others, 'Global Assessment of Exposure to Faecal Contamination through Drinking Water Based on a Systematic Review.', *Tropical Medicine & International Health : TM & IH*, 19.8 (2014), 917–27 <<https://doi.org/10.1111/tmi.12334>>.

⁵⁸ IFRC, I.

⁵⁹ Stephen S. Lim and others, 'A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and Risk Factor Clusters in 21 Regions, 1990-2010: A Systematic Analysis for the Global Burden of Disease Study 2010', *The Lancet*, 380.9859 (2012), 2224–60 <[https://doi.org/10.1016/S0140-6736\(12\)61766-8](https://doi.org/10.1016/S0140-6736(12)61766-8)>.

⁶⁰ Annette Prüss-Ustün and others, 'Burden of Disease from Inadequate Water, Sanitation and Hygiene in Low- and Middle-Income Settings: A Retrospective Analysis of Data from 145 Countries', *Tropical Medicine and International Health*, 19.8 (2014), 894–905 <<https://doi.org/10.1111/tmi.12329>>.

Figure 4: Time spent fetching water from main source, disaggregated by head of household, gender and population group



Though female-headed households more frequently reported having water sources located at their properties – 15% compared to 11% for male-headed households⁶¹ - the majority of female-headed households still reported spending over 30 minutes to fetch water (59%). KIs confirmed that time spent fetching water constituted a specific problem for women and children for a variety of reasons. Both women and children were said to face harassment while traveling to fetch water, and face problems, such as fatigue and dehydration when walking longer distances. In addition, KIs reported that some children were dropping out-of-school in order to support their household by fetching water. In addition, when compared to male-headed households, female-headed households were more likely to have to revert to closer and less desirable water sources (female-headed households: 21%; male-headed households: 17%⁶²), putting them at increased risk of water-borne diseases such as cholera, which are more likely to be transmitted through unimproved sources.⁶³

HC respondents were more likely than IDP respondents to report having their water source located at their properties⁶⁴, leaving IDP households in the more vulnerable position of having to fetch water outside of their households. Indeed, IDPs more frequently reported experiencing problems related to fetching water.

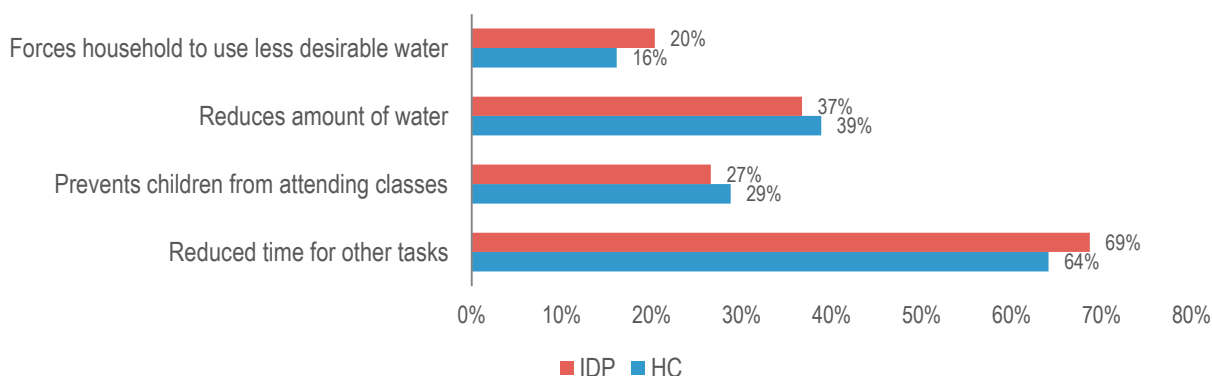
⁶¹ *p*-value: 0.004.

⁶² *p*-value: 0.02.

⁶³ Marlene Wolfe and others, 'A Systematic Review and Meta-Analysis of the Association between Water, Sanitation, and Hygiene Exposures and Cholera in Case-Control Studies', *The American Journal of Tropical Medicine and Hygiene*, 99.2 (2018), 534–45 <<https://doi.org/10.4269/ajtmh.17-0897>>.

⁶⁴ *p*-value: 0.031

Figure 5: Problems faced in water collection, disaggregated by population



Respondents from cholera prioritized districts again had a worse situation, as respondents from these districts significantly least often had water sources located at their properties as compared to the other types of districts.⁶⁵ Also, respondents from cholera prioritized districts more often experienced problems related to fetching water (cholera prioritized districts: 89%; famine prioritized districts: 72%; districts prioritized for both: 84%). Again, the most common problem among all districts related to fetching water was having less time for other activities, with no significant differences.

Amount and storage of water

To assess the amount of water people access per day, they were assisted by the enumerators. Firstly, respondents were asked whether they had water tanks at their properties. Then, with the help of data collectors, respondents were asked to estimate the amount of water they collected per day. Respondents were asked how many containers for water they had at their households. They were then asked to estimate the volume of each of the containers. Enumerators showed pictures of different types of containers which also indicated the volume of each of the containers in the pictures and helped the respondents estimate the volumes of their containers. Subsequently, respondents were asked how many times each container was filled during the previous day. Enumerators then multiplied the volume of each of the containers by the times that these containers were filled during the previous day, to estimate the amount of water that the household had access to during the previous day. Then, respondents were asked if this amount meets their household needs, and if not, what their coping strategies were. No significant differences were found in the amount of water per person per day between the population groups, as shown in Figure 6. Overall, HC respondents reported on average 32.0 litres per person per day, while IDP respondents reported an average of 33.6 litres.⁶⁶ These amounts all meet the minimum standard of 15 litres of water for both drinking and household needs, as set in the SPHERE Handbook.⁶⁷ However, the majority of respondents (61%) indicated that the amount of water they accessed was not enough to meet their household needs. Despite IDPs reporting having more water per person per day, they were more likely to report not having enough water to meet their household needs (77%), though 67% of HC respondents also reported not having sufficient water to meet household needs.⁶⁸ Indeed, the SPHERE Handbook details that in some urban areas, 50 litres per person per day might be the minimum acceptable amount of water for maintaining dignity and health.⁶⁹ This possibly explains why a large proportion of respondents reports not to have sufficient amounts of water despite meeting the minimum standard of 15 litres water per person per day. For those households reporting their water needs not being met, the most reported coping strategy was to reduce the amount of water used for hygiene practices (HC: 55%; IDPs: 59%), followed by a reduced consumption of drinking-water (HC: 39%; IDPs: 46%). Only about half of respondents reported having tanks for storing water, with IDPs less likely to have tanks than HC (IDPs: 43%; HC: 55%).⁷⁰

⁶⁵ Cholera prioritized districts: 6.5%; famine prioritized districts: 17.0%; districts prioritized for both: 7.1%; p -value<0.05

⁶⁶ p -value: 0.38.

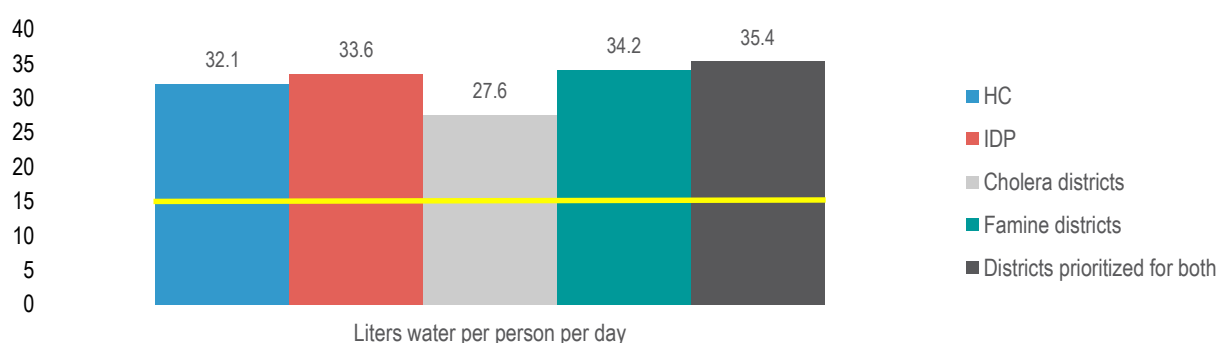
⁶⁷ IFRC, I.

⁶⁸ p -value: <0.01

⁶⁹ IFRC, I.

⁷⁰ p -value: <0.001.

Figure 6: Litres of drinking and household water per person per day, disaggregated by population groups and district type



Again, cholera prioritized districts were found to have worse outcomes compared to the other districts, confirming a trend observed earlier in this report. Although not significant, cholera prioritized districts less often reported having tanks for water storage (cholera prioritized districts: 37%; famine prioritized districts: 53%; districts prioritized for both: 52%). Also, respondents from cholera prioritized districts were most likely to perceive their household water needs water not to be met.⁷¹ In addition, cholera prioritized districts reported the least amount of water per person per day. Some significant differences were observed between districts in terms of coping strategies related to insufficient quantities of water. Firstly, famine prioritized districts were more likely than other districts to report receiving water on credit or borrowing water (famine prioritized districts: 11%; cholera prioritized districts: 4%; districts prioritized for both: 5%), and reducing drinking water consumption (famine prioritized districts: 48%; cholera prioritized districts: 40%; districts prioritized for both: 37%). In addition, districts prioritized for both were more likely to report fetching water from a farther point (districts prioritized for both: 41%; cholera prioritized districts: 31%; famine prioritized districts: 33%). No relevant significant differences were observed for water storage, and collection between male- or female-headed households.

Conclusion

Nearly half the respondents reported relying on unimproved sources as their primary source for drinking-water. Moreover, the majority of respondents from cholera prioritized districts relied on unimproved sources as primary source for drinking-water, and water for washing and cooking. The use of unimproved water sources is directly linked in increase in burden of disease, especially in low- and middle-income countries.⁷² The risk of increased burden of disease is further aggravated as only a minority reported treating their drinking-water. Water treatment is crucial in the prevention of diseases such as cholera, as even water from improved sources can be contaminated with faecal pathogens.^{73,74} In addition, the majority of respondents across all assessed groups exceeded the SPHERE Handbook standard of spending 30 minutes fetching water, which is especially problematic for children and women, who typically collect water and are can be exposed to harassment. These long times spent fetching water do not seem to impact the amount of water accessed as all respondents were found to have more than 15 litres water per person per day for both drinking and domestic hygiene, therefore meeting the SPHERE Handbook minimum standard. However, despite this standard being met, a large gap in the need for water remains, as the majority of respondents perceived their household water needs not being met. Considering past and current cholera outbreaks in Yemen, the high reliance on unimproved sources and low rate of respondents indicating to treat their drinking water highlight the urgent need for interventions to improve access to clean and safe drinking water. Effective interventions that improve the quality of water include well disinfection, monitoring of water trucking, and small scale source-based treatment of water.^{75,76}

⁷¹ Cholera prioritized districts: 25.6%; famine prioritized districts: 44.6%; districts prioritized for both: 29.9%.

⁷² World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE*.

⁷³ World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE*.

⁷⁴ Bain and others.

⁷⁵ Global Guiding Principles and others, 'YEMEN WASH CLUSTER STRATEGIC OPERATIONAL FRAMEWORK (SOF) March 2018', 2018, 1–29.

Sanitation

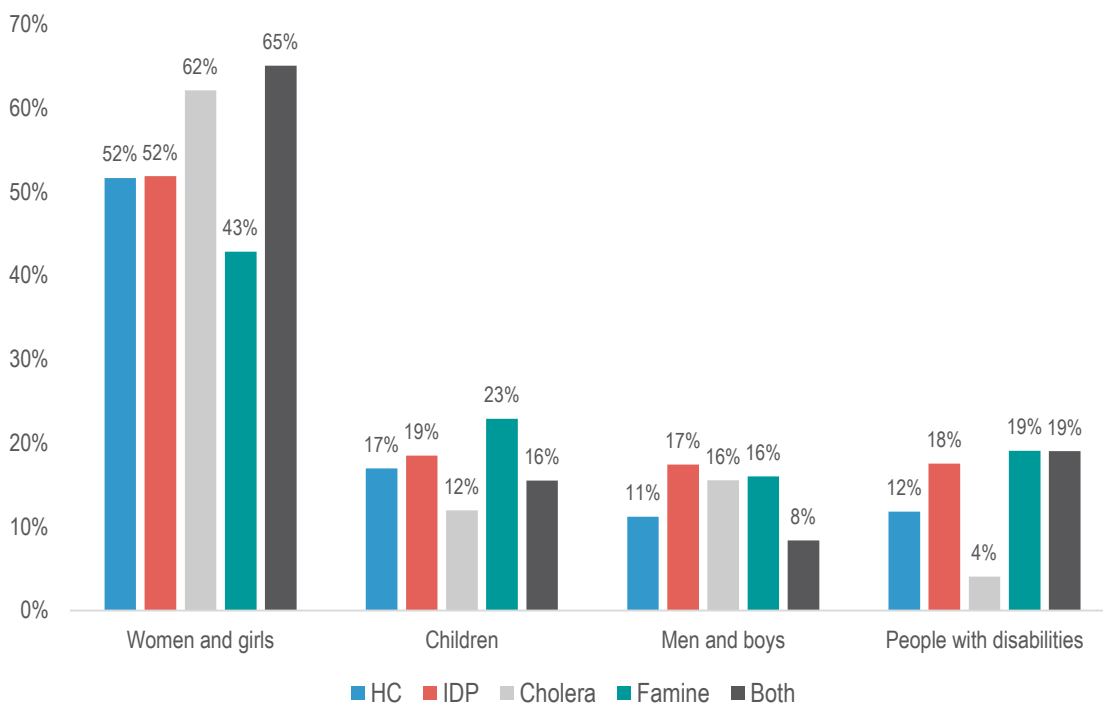
This section provides information on sanitation, touching upon two main topics. Firstly, access to latrines will be considered, assessing the use of improved and unimproved latrines by different population groups and districts, including the problems they face while accessing latrines. Secondly, findings on solid waste management and wastewater are presented, analysing ways of solid waste disposal and collection.

Access to latrines

All respondents were asked whether their household had access to a latrine, what type of latrine they had access to, and whether they shared this latrine with other people than their household members. They were also asked if all members of their household had access to this latrine, or if some did not have access. If respondents reported that some or no household members could access the latrine, they were asked which household members specifically, and what problems they face (Figure 7).

Overall, KIs reported that the practice of open defaecation was widely practiced in Yemen and had seen an increase over the course of the conflict. This increase in open defaecation was said to be related to the breakdown of sanitation services as a result of the ongoing crisis. Open defaecation constitutes a particularly risky practice as it contributes to the faecal contamination of the environment, which is one of the main causes of the spread of faecal-oral diseases, including acute watery diarrhoea and cholera. KIs furthermore explained that open defaecation exposed people to protection risks such as gender based violence including harassment and natural hazards such as scorpions and snakes, especially at night. Furthermore, high usage of unimproved latrines (48%), which is also a source of faecal contamination, was reported both by KIs as well as by household respondents. The use of unimproved latrines was said to be related to the malfunctioning or failure of parts of the sanitation systems, as civil servants' salary payments had been extensively delayed.

Figure 7: Groups reporting to experience issue with accessing latrines, disaggregated by population groups and district type



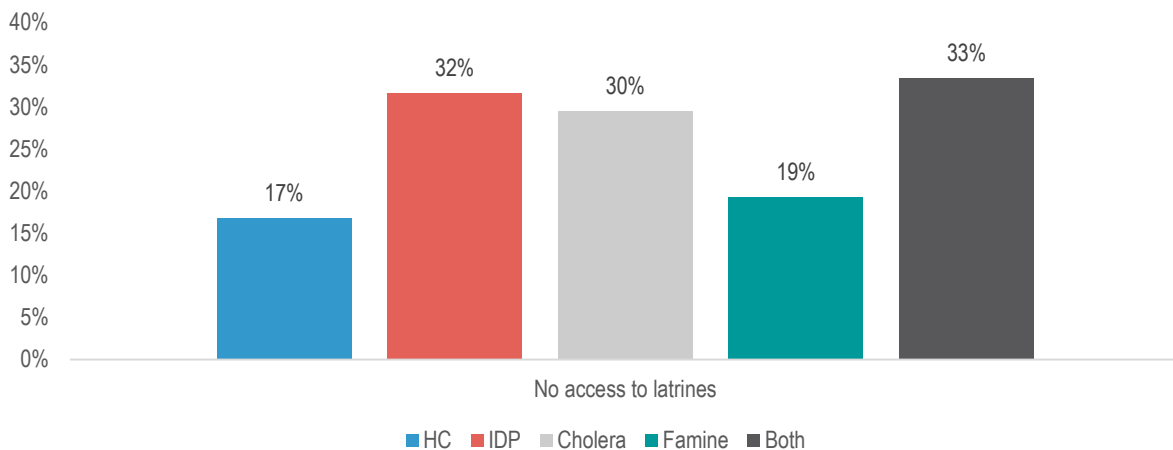
⁷⁶ Travis Yates and others, *Short-Term WASH Interventions in Emergency Response: A Systematic Review*, International Initiative for Impact Evaluation, 2017 <http://www.3ieimpact.org/media/filer_public/2017/03/01/srs8-short-term-wash.pdf%0Ahttp://www.3ieimpact.org/media/filer_public/2017/02/21/sr33-wash-interventions.pdf> [accessed 28 May 2019].

KIs further noted that the lack of infrastructure in the districts was a significant barrier to accessing functioning improved latrines and handwashing facilities. This was especially the case in rural areas, with KIs reporting that sewage systems were particularly lacking in these areas. Consequently, they reported rural residents to have less access to improved latrines due to the lack of these sewage systems. Compared to male-headed households, female-headed households were more likely to report accessing improved latrines (female-headed households: 53%; male-headed households: 44%), and were more likely to be using covered pit-latrines (female-headed households: 23%; male-headed households: 17%).⁷⁷ This finding is unexpected as, like shown in Figure 7 below, women and children are the population group experiencing the most issues in accessing latrines. KIs added that access to latrines was limited for elderly people, as these facilities were not designed for people with mobility difficulties.

IDPs were again shown to be facing a more difficult situation when compared to HC respondents. Overall, IDPs were less likely to have functioning latrines (IDPs: 60%; HC: 73%).⁷⁸ They less frequently accessed improved latrines (IDPs: 48%; HC: 53%), instead reporting that they accessed open pit-latrines (IDPs: 26%; HC: 21%).⁷⁹ Furthermore, as shown in Figure 7, the majority of respondents indicated women and girls to have issues with accessing latrines. When comparing the different population groups, IDPs more so than HCs reported certain members of their households experiencing difficulty in accessing latrines, again particularly women and girls. Overall, the most frequently reported problem faced by women and girls was the lack of privacy or separation between men and women (74%, similar across population groups). KIs further highlighted that a lack of cleanliness was also a major challenge for access. KIs reported that when accessing latrines, women and children frequently faced harassment. This trend was observed across district types.

No important differences were found between district types in relation to access to latrines, sharing of latrines, or type of latrines used. However, respondents from districts prioritized for both had least access to latrines, as shown in Figure 8 below. They least often reported that all of their household members could access a latrine (districts prioritized for both: 49%; cholera prioritized districts: 59%; famine prioritized districts: 73%) and least often reported accessing improved latrines (districts prioritized for both: 33%; cholera prioritized districts: 34%; famine prioritized districts: 55).

Figure 8: No family members access to latrines, disaggregated by population groups and district type



Some small significant differences were found in the types of problems faced by women or girls when accessing latrines. Whereas the lack of privacy or separation between men and women was the most common problem in the cholera prioritized districts and famine prioritized districts, in districts prioritized for both it was the lack of safety due to the absence of doors or locks.⁸⁰ In these districts, this problem was also most likely to be among children who could not access latrines.

⁷⁷ *p*-value: 0.001.

⁷⁸ *p*-value: <0.001.

⁷⁹ *p*-value: 0.03.

⁸⁰ This difference is significant.

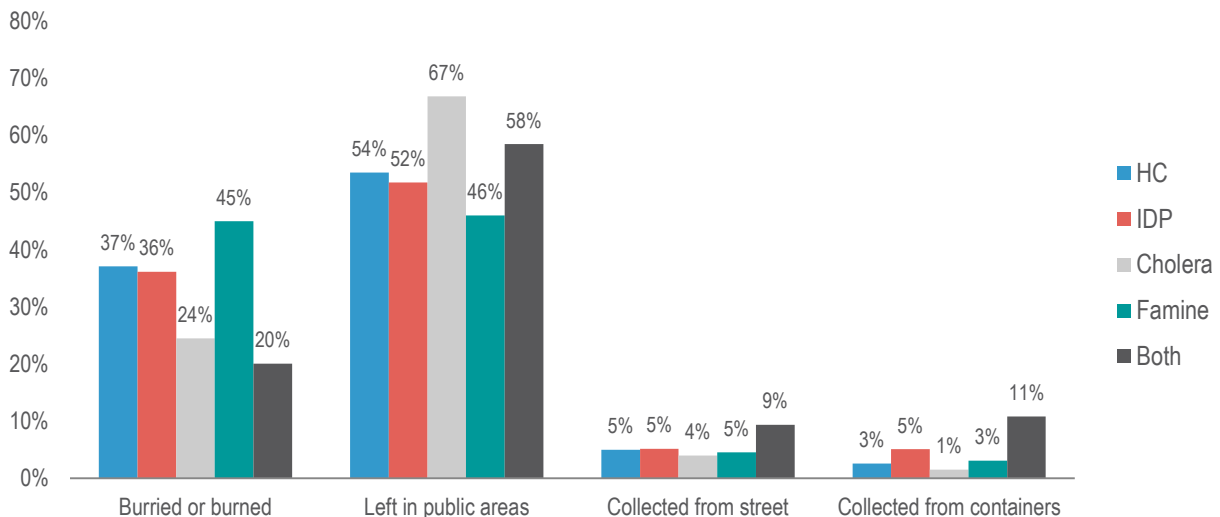
Waste management

In order to assess sewage management, respondents were asked if there was sewage in the vicinity (30 metres) of their household. For understanding household waste management, respondents were asked how household garbage is disposed and, if collected, how frequently this collection occurs.

Overall, solid waste and sewage were reportedly poorly managed among the surveyed population. Nearly all respondents indicated that their household garbage was not picked up (89%), and nearly half of all respondents (46%) reported to sometimes, often or always see sewage water in the vicinity of their households. This is highly alarming, as both sewage and household garbage that are not managed properly can pose serious health risks for residents living in their proximity.⁸¹ Sewage and solid waste which is left outside can be a point of contamination for the spread of food- and water-borne diseases. Also vector-borne diseases such as typhoid, malaria, cholera, dysentery, or dengue fever can be spread through sewage or solid waste that is not being managed properly, some of these diseases have seen recent outbreaks in crisis-affected Yemen.

Interestingly, HC members reported poorer waste management as compared to IDPs, contradicting previously highlighted trends. HC members were more likely to report sewage in the vicinity of their households, and less often saw their solid waste being collected on a regular basis. Also, 50% of HC members reported no sewage near their households, whereas this was only 58% among the IDPs.⁸² In addition, the lack of a regular pick up of household garbage and the presence of household garbage in streets might exacerbate the waste situation as residents might not be prompted to dispose of household garbage safely.

Figure 9: Household garbage disposal, disaggregated by population groups and district-type



Only a few significant differences were observed between the different types of districts assessed in sewage and household garbage management. Firstly, famine prioritized districts more frequently reported sewage near their households (famine prioritized districts: 21%; cholera prioritized districts: 4%; districts prioritized for both: 2%), whereas over half of all surveyed districts overall reported no sewage near their households.

With relation to garbage disposal, significant differences were observed. Though household garbage was generally reported to be left in public areas, respondents in cholera prioritized districts more often reported this, indicating a potential increased health risk for these districts, as well as a possible link between these types of practices and the type prioritization of those districts.^{83,84} The second most reported method of garbage-disposal

⁸¹ Sunil N. Thitame, Deepak B. Phalke, and Goraksha M. Pondhe, 'Public Health Risk and Environmental Impact Associated with Disposal of Urban Waste at Sangamner City, Ahmednagar, Maharashtra, India', *International Journal of Preventive and Public Health Sciences*, 2015, 5 <<https://doi.org/10.17354/ijpphs/2015/09>>.

⁸² *p*-value: <0.001.

⁸³ Cholera prioritized districts: 66.8%; famine prioritized districts: 46.0%; districts prioritized for both: 58.5%.

⁸⁴ Thitame, Phalke, and Pondhe.

was burning or burying, which was most significantly reported in famine prioritized districts.⁸⁵ Districts prioritized for both more frequently than other district types to report having their garbage collected through a public system. However, no significant differences were observed in the frequency of garbage collection.

Irrespective of the type of district or population group, KIs indicated that the large amounts of household garbage left in public areas posed a threat, particularly for children. Children were said to often play near garbage points, which can expose them to food-borne, or water-borne diseases such as cholera and typhoid.

Conclusion

In summary, sanitation assistance is urgently needed to prevent the spread of food-borne, and water-borne diseases, as well as vector-borne diseases such as dengue fever, and to improve access to sanitation services for IDPs in particular, rural communities, and cholera prioritized districts. IDPs were shown to be especially in need of improved and functioning latrines, as well as gender-segregated latrines so as to improve access for women and girls. For improving access to latrines for women and girls, districts prioritized for both were shown to specifically be in need of latrines with doors and locks. Finally, assistance for household waste collection was shown to be needed across district types, and especially in cholera prioritized districts, to further decrease the risk of the spread of communicable diseases.

Hygiene

Hygiene practices and items

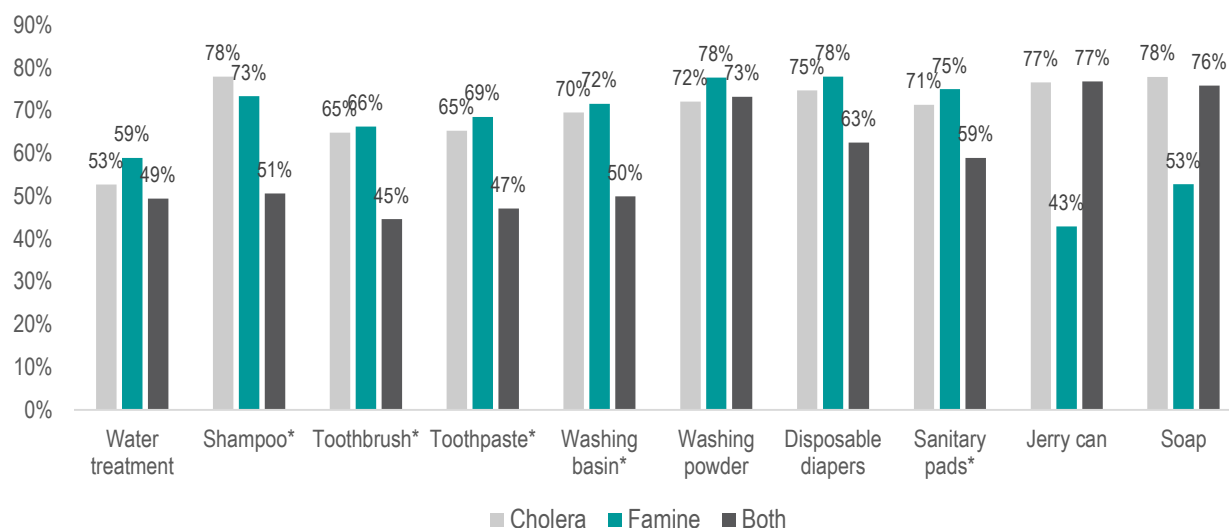
For assessing hygiene, respondents were first asked about handwashing facilities and access to soap and other hygiene items such as washing basins. They were then asked at what critical times they usually wash their hands. Then, they were asked if they had received any hygiene promotion messaging or training during the past year, and if so, how frequently they received messages or trainings. They were then asked when they last received such messages or training but not for the topic of these messages or trainings.

Nearly none of the respondents had handwashing facilities or had the presence these facilities be confirmed by enumerators seeing these facilities (7%). Likewise, only a minority of respondents (22%) reported to have soap which could also be confirmed through enumerators seeing the soap. When asked why respondents did not have soap, the majority (75%) indicated not to be able to afford soap.

Compared to the other types of districts, respondents from cholera prioritized districts were least likely to have handwashing facilities at their premises and also had the presence of these confirmed by the enumerators (3%). Likewise, respondents from cholera districts were least likely to have soap present in their households (15% versus 25% in famine prioritized districts and 24% in districts prioritized for both). The most important reason for not having soap remained unaffordability, with no significant differences among the three types of districts.

When it comes to other types of hygiene products, respondents from famine prioritized districts most often reported not being able to access or afford hygiene items (famine prioritized districts: 79%; cholera prioritized districts: 77%; districts prioritized for both: 71%). This was confirmed by KIs from famine prioritized districts reporting a general lack of hygiene items. This is also reflected in Figure 10 below, detailing which item hygiene items were unaffordable for respondents from the different types of districts. However, some contradicting differences were found between the districts. Respondents from districts prioritized for both were most likely to report being able to access and afford washing basins (districts prioritized for both: 43%; cholera prioritized districts: 16%; famine prioritized districts: 20%); sanitary pads; shampoo; toothbrush; toothpaste, whereas respondents from famine prioritized districts were more likely to report the ability of affording and accessing soap (famine prioritized districts: 39%; cholera prioritized districts: 11%; districts prioritized for both: 17%). Cholera prioritized districts were less likely to be able to afford shampoo (cholera prioritized districts: 79%; famine prioritized districts: 73%; districts prioritized for both: 51%). KIs mentioned that frequently used coping mechanism for the lack of soap were washing with water or soap substitutes such as ash.

⁸⁵ Famine prioritized districts: 45.0%; cholera prioritized districts: 24.4%; districts prioritized for both: 20.0%.

Figure 10: Hygiene item unaffordability, disaggregated by district-type⁸⁶

KIs reported that people often face difficulties accessing hygiene items such as soap washing basins. Especially male KIs reported being unable to access or afford hygienic items. Female KIs on the other hand reported that they would find themselves in similar situations but would have the ability of relying on non-food item-distributions from charity organizations. This trend seems reflected in the surveys. Male-headed households significantly more than female-headed households reported not being able to access or afford hygiene items such as soap or washing powder. Furthermore, KIs reported that even though women would prefer using disposable sanitary pads for managing their menstruation, these would not be available for all women. Especially in rural areas, disposable sanitary pads would be less widely available and affordable, urging women to use reusable cloths or reusable sanitary pads.

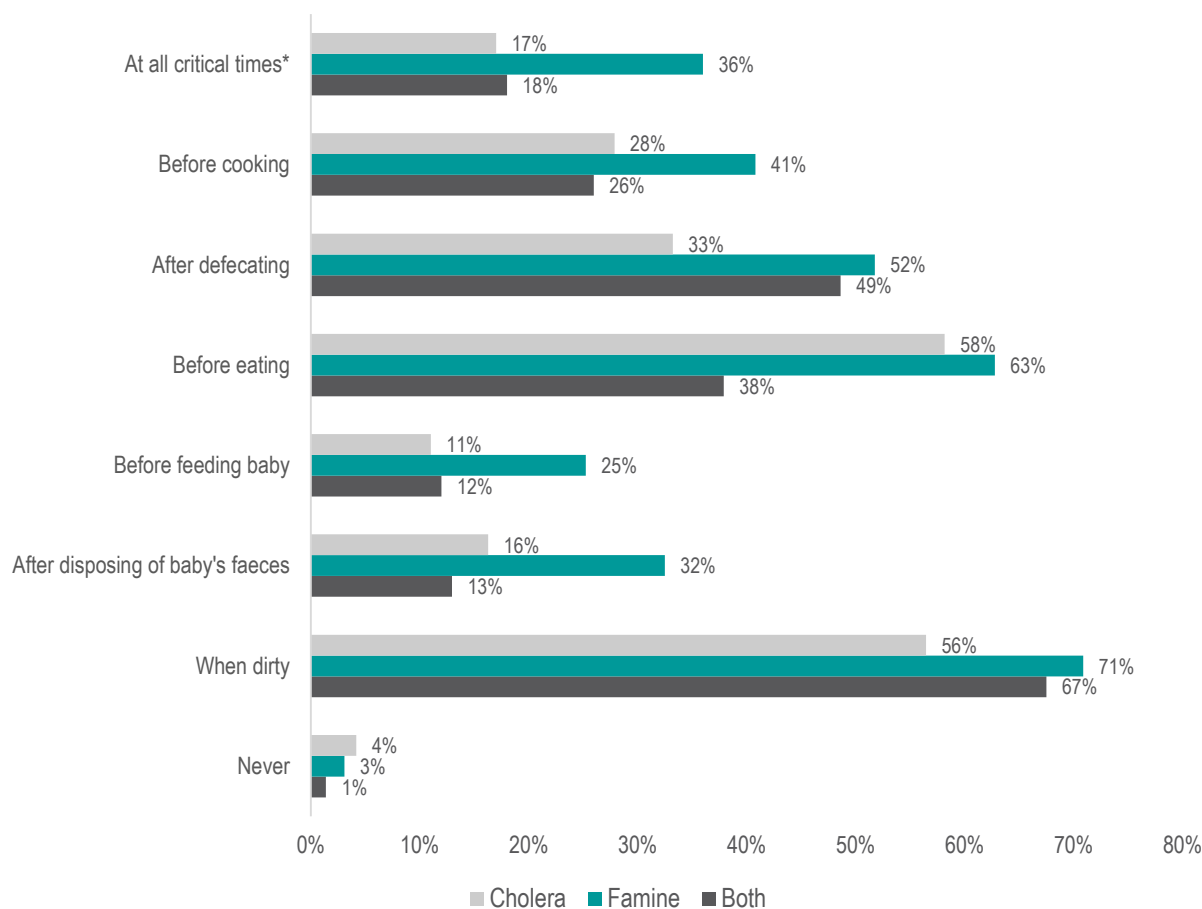
No significant differences were observed between the population groups in the presence of handwashing facilities or soap. Also no significant differences were found between the population groups with regards to reasons for not having soap. However, compared to HC, IDPs were more likely to report not being able to access or afford certain hygiene items, again indicating IDPs being more in need of assistance.⁸⁷ Indeed, IDPs reported having received less assistance during the last six months (IDPs: 60%; HC: 62%). For example, only a minority of respondents had received basic consumable hygiene kits (HC: 23%; IDPs: 24%).

When asked for handwashing at critical times, only a small minority of respondents (11%) reported to wash their hands at all the five critical times (i.e. before preparing food; before eating; before feeding baby; after defecating; after disposing of baby's faeces). Respondents most frequently reported washing their hands whenever they are dirty (66%), before eating (58%), after eating (52%), and after defecating (48%). Findings disaggregated by type of district are presented in Figure 11 below. As can be seen, respondents from famine affected districts were more likely to report washing their hands at all critical times. This might be related to respondents from famine affected districts reporting more frequently seeing hygiene campaigns.

When comparing male and female respondents, it is interesting to note that female respondents were consistently more likely to report washing their hands at all critical times than male respondents. When comparing handwashing at critical times, no significant differences were found between HC and IDP respondents.

⁸⁶ An asterisk is placed on water sources for which differences between population groups were statistically significant.

⁸⁷ p -value < 0.001

Figure 11: Handwashing practices, disaggregated by district-type⁸⁸

Hygiene awareness and assistance

Respondents from famine prioritized districts reported more often receiving hygiene messages or training and better hygiene practices. They were more likely to have received hygiene messages or training compared to the other types of districts (famine prioritized districts: 44%; cholera prioritized districts: 24%; districts prioritized for both: 21%). However, the majority of respondents from famine prioritized districts, but also from cholera prioritized districts only received such messages once a year, whereas respondents from districts prioritized for both received such messages more frequently. Indeed, respondents from famine prioritized districts were more likely to report washing their hands at each of the five critical times as compared to respondents from the other districts (famine prioritized districts: 36%; cholera prioritized districts: 17%; districts prioritized for both: 18%). In addition, respondents from famine prioritized district were more likely to have soap (famine prioritized districts: 25%; cholera prioritized districts: 15%; districts prioritized for both: 24%) and be able to afford it. Whereas the majority of respondents did not have access to handwashing facilities in their households, respondents from cholera prioritized districts least often had such facilities at their households (cholera prioritized districts: 3%; famine prioritized districts: 7%; districts prioritized for both: 15%). Respondents from districts prioritized for both were most likely to have such facilities at their households.

For menstrual hygiene management, most KIs reported that women would use reusable cloths or disposable sanitary pads. They also mentioned that women had a strong preference for the disposable pads. These pads would be thrown in garbage after use and later be incinerated. Reusable cloths or pads would be washed, if available, with soap. Some KIs reported cleaning their reusable cloth or pad by boiling them in water.

⁸⁸ An asterisk is placed on handwashing practices for which differences between population groups were statistically significant.

Only a few significant differences were observed between the HC and IDPs in hygiene promotion messaging or training, and handwashing practices. Overall, the HC received more messages or trainings and had better hygiene practices than the IDPs. This is probably related to IDPs finding themselves in more difficult situations with less financial resources and stability due to the current crisis. A minority of respondents reported having received some sort of hygiene promotion training or messaging during the past year (HC: 37%; IDPs: 34%). Over half of the respondents having received this training or messaging, received this only once in the last year (HC: 61%; IDPs: 60%). Fewer respondents said having received it once every three or six months. Trainings or messages were mostly received more than six months ago (HC: 45%; IDPs: 38%) or between three to six months ago (HC: 24%; IDPs: 33%).⁸⁹ No information was collected on the type of messages or trainings.

Again, the majority of respondents said not having received any WASH assistance during the past six months. This held mostly true for districts prioritized for both (74%) compared to cholera prioritized districts and famine prioritized districts (59%). However, some respondents reported having received basic consumable hygiene kits (famine prioritized districts: 26%; cholera prioritized districts: 22%; districts prioritized for both: 13%), or chlorine tablets or other water disinfecting agents for water treatment (cholera prioritized districts: 27%, famine prioritized districts: 14%; districts prioritized for both: 12%).

Conclusion

Concluding, there seems to be an urgent need for hygiene interventions that integrate both hardware (i.e. hygiene items) with software (i.e. hygiene awareness campaigns) as overall both access to hygiene items and hygiene awareness were alarmingly low. Especially hygiene messages or training are urgently needed as only a minority of respondents washed their hands at all five critical times. These messages or training should be inclusive and specifically target men, as men are less often washed their hands at critical times. Hygiene messages or trainings should also target the cholera prioritized districts and IDPs as these had received the least of such trainings or messages. Respondents from famine prioritized districts most frequently received hygiene messages and trainings and also most often washed their hands at the five critical times.

WASH distributions seem mostly needed for IDPs as they were least able to afford soap and consequently reported not being able to wash their hands. Furthermore, basic consumable hygiene items seem needed in all types of districts as the majority of respondents were unable of afford those (see Figure 11).

⁸⁹ *p*-value: 0.02.

CONCLUSION

For better understand the needs people have related to water, sanitation, and hygiene, particularly among IDPs and HC but also in cholera-prioritized districts and famine-prioritized districts, REACH facilitated a household assessment. The assessment took place between 4 September and 28 November 2018 in 38 priority districts. A total of 7609 household interviews and 76 KI interviews were conducted in districts hosting at least 8% IDPs as part of the total population, and that had been prioritized for cholera, famine, or for both cholera and famine.

Access to water remains a serious challenge with nearly half the respondents who used unimproved sources for drinking, especially in rural areas, in cholera prioritized districts, and among IDPs (across all districts). This is particularly problematic in light of the cholera outbreaks in Yemen as those sources are less likely to deliver safe water. This is all the more concerning, as also household water treatment did not appear to be a widespread practice among the survey respondents. On average, respondents had access to at least 15 litres of water per person per day, the SPHERE Handbook minimum standard for household and drinking water. However, over half the respondents reported that they had access to insufficient quantities of water for meeting their household needs. Also water collection constituted a problem for many, as most respondents reported spending over 30 minutes on reaching their water points and spent long times queuing at the water points. This was particularly true for women and children as they are usually the ones in charge of fetching water. For restoring and maintaining sustainable water systems, humanitarian assistance is urgently needed to increase access to safe water through the provision, rehabilitation and maintenance of water supply systems for affected people.⁹⁰

Also access to sanitation poses a serious issue for the survey respondents, approximately half of the respondents reported using unimproved latrines and KIs reported that open defecation is widely practiced in Yemen. The use of unimproved latrines was most often reported in rural areas, in cholera prioritized districts, and among IDPs (across all types of districts). Open defecation and the use of unimproved latrines are problematic as they contribute to the faecal contamination of the environment and the spread of water-borne diseases including acute watery diarrhoea and cholera. In addition, access to latrines was specifically difficult for women and children as latrines were reported not to be gender-segregated and did not provide privacy, creating serious protection issues. Furthermore, wastewater and solid waste management were reportedly poorly managed, posing serious risks to nearby residents. Only a minority of survey respondents saw their household garbage being collected through a public system whereas most respondents reported that garbage was left in the streets without being collected; or garbage being burnt or buried. These practices were especially frequent in cholera prioritized districts. Assistance is needed for reduce excess morbidity and mortality by providing operational support to waste water treatment- and solid waste systems.

Most respondents reported not having soap as they could not afford it, especially in cholera prioritized districts. Unaffordability of other hygiene items was also widely reported among respondents from the different types of districts. Only few survey respondents washed their hands at all five critical times, with male respondents reporting this less often than female respondents. Only respondents from famine prioritized districts reported regularly receiving hygiene messages or training. The majority of respondents from districts prioritized for both, and over half of respondents from districts reported not having received any WASH assistance over the past six months. Therefore, when conducting awareness campaigns, focussing on the inclusion of men is important to thereby prevent the further spread of diseases.

Finally, despite the fact that findings are not generalizable at governorate or national level, findings of this report are representative for the districts surveyed and provide clear insights on the WASH-related needs of IDP and HC populations. Aid should aim to increase access to improved water sources and improved latrines, ensure collection of solid waste, and both ensure access to soap and improve handwashing practices. Assistance is particularly needed in rural areas and in cholera prioritized districts, while targeting IDPs, as respondents from these areas were reported to have least access to safe water, latrines, and wastewater and solid waste management services.

⁹⁰ Principles and others.

ANNEXES

Annex 1: Table of main indicators⁹¹

#	INDICATOR	POPULATION GROUPS		PRIORITY DISTRICT		
		HC	IDP	Cholera	Famine	Both
W1.1	Uses improved source for drinking water	50%	45%	34%	52%	55%*
W5	Treats household water	22%	19%	24%	19%	22%
W8	Amount of water per person per day	32L	34L	28L	34L	35L
W9	Water meets household needs	43%	33%*	26%	45%	30%*
W10	Water source located at property	15%	11%*	7%	17%	7%*
W11	Fetching water does not constitute a problem	26%	19%*	13%	15%	28%*
S2	All household members have access to latrine	72%	59%*	59%	73%	49%*
S2.2	Use of improved latrines	52%	49%	17%	58%	33%
S2.3	Women and girls do not access latrines	52%	52%	62%	43%	65%
S3	Sometimes, often or always wastewater near household	51%	42%	41%	49%	46%
S4	Garbage is being collected through public system	8%	10%	5%	8%	20%*
S5	Handwashing facilities present (and confirmed by enumerator)	8%	7%	3%	7%	15%*
S6	Soap present (and confirmed by enumerator)	24%	20%	15%	25%	24%
S7	Reports to wash hands at critical times	29%	27%	17%	18%	36%*
S8	Received hygiene promotion messaging or training in last six months	37%	34%	24%	21%	44%*
S9	Received WASH assistance in last six months	46%	56%	52%	51%	46%

⁹¹ An asterisk is placed on water sources for which differences between population groups or priority districts were statistically significant (i.e. p -value<0.006) and yellow coloured cells indicate the group that had the worst outcome for that indicator.

Annex 2: Sample frame

District	Governorate	Priority Group	Host HHs figures	IDP HHs figures	Host Samples Collected	IDP Samples Collected
Al Jafariyah	Raymah	Cholera	14067	1340	103	101
Al Maslub	Al Jawf	Cholera	2086	393	98	78
Al Maton	Al Jawf	Cholera	5427	932	98	106
Al Miftah	Hajjah	Cholera	7354	665	108	89
Arhab	Sana'a	Cholera	16980	1747	101	95
Az Zahir	Al Jawf	Cholera	4782	448	97	85
Iyal Surayh	Amran	Cholera	9607	791	130	47**
Kharif	Amran	Cholera	8280	1166	110	69*
Kushar	Hajjah	Cholera	16267	2361	95	111
Marib	Marib	Cholera	8333	977	111	95
Marib City	Marib	Cholera	7400	751	102	93
Qarah	Hajjah	Cholera	6771	961	103	104
Wald Rabi'	Al Bayda	Cholera	3911	615	94	91
Washhah	Hajjah	Cholera	13609	3964	97	112
Abs	Hajjah	Famine	29541	9898	111	102
Al Abr	Hadramaut	Famine	722	599	98	90
Al Hashwah	Sa'ada	Famine	3445	673	102	92
Al Ma'afer	Taizz	Famine	22556	2560	-	-
Al Maqatirah	Lahj	Famine	10974	1221	104	104
Al Qabbaytah	Lahj	Famine	19500	2021	108	99
Ash Shamayatayn	Taizz	Famine	30337	4189	103	115
At Ta'iziyah	Taizz	Famine	40060	7321	116	103
Ataq	Shabwah	Famine	7346	637	105	89
Bani Dhabyan	Sana'a	Famine	3059	1419	96	89*
Bani Sa'd	Al Mahwit	Famine	12616	1157	105	98
Bani Suraim	Amran	Famine	5886	595	107	97
Dhi Bin	Amran	Famine	5683	662	161	57**
Dimnat Khadir	Taizz	Famine	22697	4279	106	103
Khanfir	Abyan	Famine	21852	2876	107	106
Majz	Sa'ada	Famine	16318	1412	95	98
Mudhaykhirah	Ibb	Famine	15508	1525	118	91
Saqayn	Sa'ada	Famine	12569	3337	-	-
Shara'b As Salam	Taizz	Famine	21965	2128	97	95
Tuban	Lahj	Famine	18225	2894	105	99
Zingibar	Abyan	Famine	5160	1024	106	90
Aslem	Hajjah	Both	11720	2204	121	98
Hayran	Hajjah	Both	3429	1337	-	-
Khamir	Amran	Both	13164	1657	94*	103
Kitaf wa Al Boqe'e	Sa'ada	Both	10297	903	103	97
Manakhah	Sana'a	Both	14817	1891	111	91
Mustaba	Hajjah	Both	9319	4237	99	102
Total Sample Collected					4025 HHs	3584 HHs

*: Findings are representative at district level for this population group with a 90% confidence level and a 10% margin of error.

** : Findings at district level for this population group should be considered as indicative.

Annex 3: WASH HH assessment questionnaire

WASH Cluster Tool Household Level-Yemen
GENERAL

G1. Date			G2. Enumerator ID	
G3. Governorate		G4. District	G5. Sub-district	
G6. Location name				
G7. Type of locality		<input type="checkbox"/> 1. Urban	<input type="checkbox"/> 2. Rural	
<p>G8. Hello, my name is ____, and I work for [Name of organization]. We are conducting a survey to find out more about the access to water and hygiene practices for your household. It would be important to talk to someone who knows about these topics and, if possible, an adult who collects water (it must be a person 18 years old or older). The aim of the interview is to provide updated information on needs, gaps, and priorities for humanitarian actors supporting vulnerable populations in Yemen. However, the outcome of this information is not in any way linked to humanitarian assistance that may be provided to you or to [population group] in this location in the future.</p> <p>The survey should take about 30 minutes to complete. Any information that you provide will be confidential and also anonymous. This is voluntary and you can choose not to answer any or all of the questions, however, we hope that you will participate since your views are important. Do you have any questions? Are you willing to be interviewed?</p>		<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No		

DEMOGRAPHICS

D1. What is the sex of the respondent? <i>(Do not ask, just observe and fill)</i>	<input type="checkbox"/> 1.Male <input type="checkbox"/> 2.Female	D2. What is the sex of the head of household? Head of household is defined as one of the members of the HH recognised as the head of the unit by the other members of the HH unit or by him/herself if living alone	<input type="checkbox"/> 1.Male <input type="checkbox"/> 2.Female
D3. What is the residence status of this household?	<input type="checkbox"/> 1.Host	2.IDP, including people who have been displaced and have now returned to their place of habitual residence as of the day of data collection ⁹² For the purposes of this assessment, individuals will be considered as IDPs or former IDPs (returnees) only if the reason to their initial displacement was related to the conflict starting in 2015.	
D4. How many members in your household fall in the following category? <i>(write the number next to category)</i>	_____ Children under 5 years old _____ Person with disability (i.e. difficulties seeing even when wearing glasses, difficulties hearing even when using hearing aids, difficulties communicating even in native language)	_____ Pregnant/lactating woman _____ Adult over 60 years old	
D5. Are you currently hosting any people who are not usually members of this household and who share resources, such as food and water, with you? This includes IDPs or extended family	<input type="checkbox"/> Yes <input type="checkbox"/> No		
D6. How many people currently live in your household?	_____ Household members (including head of household)	_____ Guests (extended family or IDPs sharing resources)	

WATER

W.1. What water source(s) did your household have access to in the last 30 days? (select all that apply)	Improved	Non-improved
	<input type="checkbox"/> 1.Piped water into compound <input type="checkbox"/> 2.Piped water connected to public tap <input type="checkbox"/> 3.Borehole <input type="checkbox"/> 4.Protected well <input type="checkbox"/> 5.Protected rainwater tank <input type="checkbox"/> 6.Protected spring <input type="checkbox"/> 7.Bottled water	<input type="checkbox"/> 8.Water Trucking <input type="checkbox"/> 9.Illegal connection to piped network <input type="checkbox"/> 10.Unprotected rainwater tank <input type="checkbox"/> 11.Unprotected well <input type="checkbox"/> 12.Unprotected spring <input type="checkbox"/> 13. Surface water (river, dam, lake, pond, stream, canal)
W1.1 What water source did your household use the most for drinking in the last 30 days? (select one)	<input type="checkbox"/> 14. Other (specify): <input type="checkbox"/> 15. I don't know <input type="checkbox"/> 1.Piped water into compound <input type="checkbox"/> 2.Piped water connected to public tap <input type="checkbox"/> 3.Borehole <input type="checkbox"/> 4.Protected well	

⁹² This option includes both IDPs, and former IDPs (returnees). Returnees are defined, from IOM DTM, as “IDP who has now returned to their place of habitual residence where they used to live prior to being displaced, irrespective of whether they have returned to their former residence or to another one”.

	<input type="checkbox"/> 5.Protected rainwater tank <input type="checkbox"/> 6.Protected spring <input type="checkbox"/> 7.Bottled water <input type="checkbox"/> 8.Water Trucking <input type="checkbox"/> 9.Illegal connection to piped network <input type="checkbox"/> 10.Unprotected rainwater tank <input type="checkbox"/> 11.Unprotected well <input type="checkbox"/> 12.Unprotected spring <input type="checkbox"/> 13.Surface water (river, dam, lake, pond, stream, canal) <input type="checkbox"/> 14.Other (specify): <input type="checkbox"/> 15. I don't know	
W2. Did your household use other sources of water for drinking in the last 30 days?	<input type="checkbox"/> 1.Yes	<input type="checkbox"/> 2.No <input type="checkbox"/> 3. I don't know
<i>If respondent answered "yes" to #W2, ask this:</i> W2.1 What other water sources for drinking did you use in the last 30 days? (select all that apply)	Improved	Non-improved
	<input type="checkbox"/> 1.Piped water into compound <input type="checkbox"/> 2.Piped water connected to public tap <input type="checkbox"/> 3.Borehole <input type="checkbox"/> 4.Protected well <input type="checkbox"/> 5.Protected rainwater tank <input type="checkbox"/> 6.Protected spring <input type="checkbox"/> 7.Bottled water <input type="checkbox"/> 14.Other (specify):	<input type="checkbox"/> 8.Water Trucking <input type="checkbox"/> 9.Illegal connection to piped network <input type="checkbox"/> 10.Unprotected rainwater tank <input type="checkbox"/> 11.Unprotected well <input type="checkbox"/> 12.Unprotected spring <input type="checkbox"/> 13. Surface water (river, dam, lake, pond, stream, canal)
W3. What water source did your household use the most in the last 30 days for other purposes such as washing and cooking? (select one)	<input type="checkbox"/> 1.Piped water into compound <input type="checkbox"/> 2.Piped water connected to public tap <input type="checkbox"/> 3.Borehole <input type="checkbox"/> 4.Protected well <input type="checkbox"/> 5.Protected rainwater tank <input type="checkbox"/> 6.Protected spring <input type="checkbox"/> 7. Bottled Water <input type="checkbox"/> 8.Water Trucking <input type="checkbox"/> 9.Illegal connection to piped network <input type="checkbox"/> 10.Unprotected rainwater tank <input type="checkbox"/> 11.Unprotected well <input type="checkbox"/> 12.Unprotected spring <input type="checkbox"/> 13.Surface water (river, dam, lake, pond, stream, canal) <input type="checkbox"/> 14. Other (specify): <input type="checkbox"/> 15. I don't know	
W4.Did you have any issue relating to taste, appearance or smell of your water sources in the last 30 days?	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. I don't know	
W4.1 If yes to W4 what was/were the issues? Select all that apply	<input type="checkbox"/> 1.Bad smell <input type="checkbox"/> 2. Bad appearance <input type="checkbox"/> 3. Bad taste <input type="checkbox"/> 4. Other (specify):	
W5. Do you use any methods to treat your drinking water for better quality?	<input type="checkbox"/> 1.Yes <input type="checkbox"/> 2.No <input type="checkbox"/> 3. I don't know	

If respondent answered "yes" to W5, ask this: W5.1 How do you treat your drinking water? (Select all that apply)		<input type="checkbox"/> 1. Boil the water <input type="checkbox"/> 2. Use chlorine tablets, powder or liquid	<input type="checkbox"/> 3. Use a Filter <input type="checkbox"/> 4. Other: _____ <input type="checkbox"/> 5. I don't know	
If respondent answered "no" to #5, ask this: W5.2 Why don't you treat your drinking water? Select one		<input type="checkbox"/> 1. There is no need as I feel the water I collect is clean and does not need to be treated <input type="checkbox"/> 2. We don't have materials for water purification/treatment	<input type="checkbox"/> 3. I don't know any treatment methods <input type="checkbox"/> 4. I don't have the time <input type="checkbox"/> 5. I don't know <input type="checkbox"/> 6. Other: _____	
W6. How many different containers do you use to collect water? Ask the person to get the containers				
W7. Record containers one by one in the following table. Calculate the total volume used by the household at the bottom of the table. If there are more containers, continue table at the back of the sheet (Show photos of different types of containers with the volume / capacity of each)				
Container #	a. Volume of the container (in litres)	b. Number of times the container was filled yesterday (or the last time water was collected)	Volume * number of times it was filled (a*b)	Is the container narrow neck or covered (i.e. does it have a lid?)
1				
2				
3				
4				
5				
W8. In this household, do you have water tanks to store water?		<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. I don't know		
If yes to question W8. Tank #	a. Volume of the tank (in litres)	b. Number of times the tank was filled last week (or the last time water was collected)	Volume * number of times it was filled (a*b)	Is the container narrow neck or covered (i.e. does it have a lid?)
1				
2				
3				
W9. Did you have enough water in the last 30 days to meet your household needs (i.e. for drinking, cooking and washing)?		<input type="checkbox"/> Yes <input type="checkbox"/> No		
If respondent answered "no" to W9, ask this: W9.1 How did you adjust for the lack of water? (select all that apply but do not prompt answers)		<input type="checkbox"/> 1. Reduce drinking water consumption <input type="checkbox"/> 2. Reduce water consumption for hygiene practices (bathe less, etc.) <input type="checkbox"/> 3. Reduce water consumption for HH purposes such as cleaning and washing dishes <input type="checkbox"/> 4. Spend money usually spent on	<input type="checkbox"/> 5. Go fetch water to a farther water point than the usual one <input type="checkbox"/> 6. Receive water on credit/Borrow water <input type="checkbox"/> 7. Drink water usually used for cleaning or other purposes than drinking <input type="checkbox"/> 8. Other (explain):	

	other things to buy water	
W10. How long does it take to go on foot to your main water point, fetch water, and return (at peak time)? Select one (and read categories if respondent has difficulties evaluating time)	<input type="checkbox"/> 1. Water source is located at the property <input type="checkbox"/> 2. 30 minutes or less <input type="checkbox"/> 3. Between 30 min and 1 hour <input type="checkbox"/> 4. Between 1 and 2 hours <input type="checkbox"/> 5. More than 2 hours <input type="checkbox"/> 6. Do not know	
W11. Do you feel the activity of fetching water (distance and queuing time) constitutes a problem for your household? (select one)	<input type="checkbox"/> 1. No problem <input type="checkbox"/> 2. Distance is a problem <input type="checkbox"/> 3. Queuing time is a problem	<input type="checkbox"/> 4. Both distance and queuing time are a problem <input type="checkbox"/> 5. Do not know
If respondent answered options 2, 3 or 4 to W11, ask this: W11.1 What are the problems associated with fetching water? (Select all that apply)	<input type="checkbox"/> 1. Reduces time usually spent on other tasks <input type="checkbox"/> 2. Prevents children from attending classes <input type="checkbox"/> 3. Reduces amount of water accessible to household <input type="checkbox"/> 4. Forces household to use closer, less desirable water sources <input type="checkbox"/> 5. Other (please specify)	

SANITATION AND HYGIENE

S1. Was there one/multiple hygiene item you needed to procure in the last 30 days but could not find or afford?	<input type="checkbox"/> 1. Yes <input type="checkbox"/> 2. No																																					
If respondent answered "yes" to S1, ask: S1.1 What item(s) could you not access or afford? (select all that apply but do not prompt answers besides soap and jerry can)	<table border="1"> <thead> <tr> <th>Item</th> <th>Could not Afford</th> <th>Could not Access</th> </tr> </thead> <tbody> <tr><td>1. Bar of soap</td><td></td><td></td></tr> <tr><td>2. Jerry can/Bucket</td><td></td><td></td></tr> <tr><td>3. Sanitary pads</td><td></td><td></td></tr> <tr><td>4. Disposable diapers</td><td></td><td></td></tr> <tr><td>5. Washing Powder</td><td></td><td></td></tr> <tr><td>6. Washing Basin</td><td></td><td></td></tr> <tr><td>7. Toothpaste</td><td></td><td></td></tr> <tr><td>8. Toothbrush</td><td></td><td></td></tr> <tr><td>9. Shampoo</td><td></td><td></td></tr> <tr><td>10. Water treatment (for instance, water purification tablets):</td><td></td><td></td></tr> <tr><td>11. Other:</td><td></td><td></td></tr> </tbody> </table>	Item	Could not Afford	Could not Access	1. Bar of soap			2. Jerry can/Bucket			3. Sanitary pads			4. Disposable diapers			5. Washing Powder			6. Washing Basin			7. Toothpaste			8. Toothbrush			9. Shampoo			10. Water treatment (for instance, water purification tablets):			11. Other:			
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11. Other:																																						
S2. Do your household members have access to a functioning latrine? (select one) Note: A functioning latrine refers to a toilet that is not broken, the toilet hole is not blocked, and water is available for flush/pourflush toilets	<input type="checkbox"/> 1. All members have access to a functioning latrine <input type="checkbox"/> 2. Only some members have access to a functioning latrine <input type="checkbox"/> 3. No members have access to a functioning latrine <input type="checkbox"/> 4. I don't know																																					
If respondent picked choice 1 or 2 to S2, ask: S2.1 Is your functioning latrine shared with people other than your household members?	<input type="checkbox"/> Yes <input type="checkbox"/> No																																					

<p>If respondent picked choice 1 or 2 to S2, ask: S2.2 What type of functioning latrine do your household members have access to? Select one</p>	<input type="checkbox"/> 1. Flush latrine to the open (unimproved) <input type="checkbox"/> 2. Flush latrine to a tank/sewer system/pit (improved) <input type="checkbox"/> 3. Pit latrine-covered/with slab (improved) <input type="checkbox"/> 4. Pit latrine-open/without slab (unimproved) <input type="checkbox"/> 5. Other (specify): _____	
<p>If respondent answered choice 2 and 3 to #S2, ask: S2.3 Please specify which members do not have access to functioning latrines Select all that apply</p>	<input type="checkbox"/> 1. Women and girls <input type="checkbox"/> 2. Children (aged under 17 y/o) <input type="checkbox"/> 3. Men and boys	<input type="checkbox"/> 4. People with disability <input type="checkbox"/> 5. Other (specify): _____
<p>If respondent picked choice 1 to S2.3, ask: S2.3.1 What is/are the problem(s) that they face? Select all that apply but do not read out options</p>	<input type="checkbox"/> 1. There is not enough facilities/too crowded <input type="checkbox"/> 2. Absence/insufficiency of water <input type="checkbox"/> 3. Latrines are unclean/unhygienic <input type="checkbox"/> 4. Lack of privacy/no separation between men and women <input type="checkbox"/> 5. It is not safe (no door, no lock, etc.)	<input type="checkbox"/> 6. Cess pit is full <input type="checkbox"/> 7. Pipes are blocked <input type="checkbox"/> 8. Connection to sewage blocked <input type="checkbox"/> 9. Structure is damaged <input type="checkbox"/> 10. Other (specify): _____
<p>If respondent picked choice 2 to S2.3, ask: S2.3.2 What is/are the problem(s) that they face? Select all that apply but do not read out options</p>	<input type="checkbox"/> 1. There is not enough facilities/too crowded <input type="checkbox"/> 2. Absence/insufficiency of water <input type="checkbox"/> 3. Latrines are unclean/unhygienic <input type="checkbox"/> 4. Lack of privacy/no separation between men and women <input type="checkbox"/> 5. It is not safe (no door, no lock, etc.)	<input type="checkbox"/> 6. Cess pit is full <input type="checkbox"/> 7. Pipes are blocked <input type="checkbox"/> 8. Connection to sewage blocked <input type="checkbox"/> 9. Structure is damaged <input type="checkbox"/> 10. Other (specify): _____
<p>If respondent picked choice 3 to S2.3, ask: S2.3.3 What is/are the problem(s) that they face? Select all that apply but do not read out options</p>	<input type="checkbox"/> 1. There is not enough facilities/too crowded <input type="checkbox"/> 2. Absence/insufficiency of water <input type="checkbox"/> 3. Latrines are unclean/unhygienic <input type="checkbox"/> 4. Lack of privacy/no separation between men and women <input type="checkbox"/> 5. It is not safe (no door, no lock, etc.)	<input type="checkbox"/> 6. Cess pit is full <input type="checkbox"/> 7. Pipes are blocked <input type="checkbox"/> 8. Connection to sewage blocked <input type="checkbox"/> 9. Structure is damaged <input type="checkbox"/> 10. Other (specify): _____
<p>If respondent picked choice 4 to S2.3, ask: S2.3.4. What is/are the problem(s) that they face? Select all that apply but do not read out options</p>	<input type="checkbox"/> 1. There is not enough facilities/too crowded <input type="checkbox"/> 2. Absence/insufficiency of water <input type="checkbox"/> 3. Latrines are unclean/unhygienic <input type="checkbox"/> 4. Lack of privacy/no separation between men and women <input type="checkbox"/> 5. It is not safe (no door, no lock, etc.)	<input type="checkbox"/> 6. Cess pit is full <input type="checkbox"/> 7. Pipes are blocked <input type="checkbox"/> 8. Connection to sewage blocked <input type="checkbox"/> 9. Structure is damaged <input type="checkbox"/> 10. Other (specify): _____
<p>If respondent picked choice 5 to S2.3, ask: S2.3.5 What is/are the problem(s) that they face? Select all that apply but do not read out options</p>	<input type="checkbox"/> 1. There is not enough facilities/too crowded <input type="checkbox"/> 2. Absence/insufficiency of water <input type="checkbox"/> 3. Latrines are unclean/unhygienic <input type="checkbox"/> 4. Lack of privacy/no separation between men and women <input type="checkbox"/> 5. It is not safe (no door, no lock, etc.)	<input type="checkbox"/> 6. Cess pit is full <input type="checkbox"/> 7. Pipes are blocked <input type="checkbox"/> 8. Connection to sewage blocked <input type="checkbox"/> 9. Structure is damaged <input type="checkbox"/> 10. Other (specify): _____
<p>S3. Was there visible wastewater in the vicinity (30 meters or less) of your house in the last 30 days? (select one)</p>	<input type="checkbox"/> 1. No <input type="checkbox"/> 2. There is sometimes visible wastewater in the vicinity of my household (1-2 times/month)	<input type="checkbox"/> 3. There is often visible wastewater in the vicinity of my household (1-2 times/week) <input type="checkbox"/> 4. There is always visible wastewater in the vicinity of my household <input type="checkbox"/> 5. I do not know

<p>S4. What is the most common way your household disposed of garbage in the last 30 days? (select one)</p>	<p><input type="checkbox"/> 1. Garbage is left in street by household and collected through public system</p> <p><input type="checkbox"/> 2. Garbage is left in street containers by household and collected through public system</p>	<p><input type="checkbox"/> 3. Garbage is left in public areas and not collected</p> <p><input type="checkbox"/> 4. Garbage is buried or burned</p> <p><input type="checkbox"/> 5. Other (specify)</p>
<p><i>If respondent picks choice 1 or 2 to S4, ask:</i> S4.1 How frequently was garbage collected in the last 30 days?</p>		<p><input type="checkbox"/> 1. More than once a week</p> <p><input type="checkbox"/> 2. Once a week</p> <p><input type="checkbox"/> 3. Once every 2 weeks</p> <p><input type="checkbox"/> 4. Once every month</p>
<p>S5. Do you have handwashing facilities in your household? Ask to see facilities</p>	<p><input type="checkbox"/> 1. Yes (saw the facilities)</p> <p><input type="checkbox"/> 2. Yes (but did not see facilities)</p> <p><input type="checkbox"/> 3. No</p>	<p><input type="checkbox"/> 4. I don't know</p>
<p>S6. Do you have soap in your household and use it? Ask to see soap</p>	<p><input type="checkbox"/> 1. Yes (saw soap)</p> <p><input type="checkbox"/> 2. Yes (but did not see soap)</p> <p><input type="checkbox"/> 3. No</p> <p><input type="checkbox"/> 4. I don't know</p>	
<p><i>If respondent answered "no" to #S6, ask:</i> S6.1 If no, why don't you have soap? Select one</p>	<p><input type="checkbox"/> 1. It is unavailable at the local market</p> <p><input type="checkbox"/> 2. We prefer a substitute (ex: ash)</p>	<p><input type="checkbox"/> 3. We are waiting for the next distribution</p> <p><input type="checkbox"/> 4. We ran out of soap</p> <p><input type="checkbox"/> 5. The market is too far</p>
<p><input type="checkbox"/> 6. We cannot afford it</p> <p><input type="checkbox"/> 7. Soap is not necessary</p> <p><input type="checkbox"/> 8. Other:</p>		
<p>S7. Please name specific activities before or after which you wash your hands with soap or soap substitute. Specify the focus on activities (ex: before eating), not times of the day (ex: in the morning) Select all that apply but do not read out options</p>	<p><input type="checkbox"/> 1. I never wash my hands</p> <p><input type="checkbox"/> 2. When my hands are dirty</p> <p><input type="checkbox"/> 3. Before preparing food</p> <p><input type="checkbox"/> 4. After defecating</p> <p><input type="checkbox"/> 5. Before prayer</p>	<p><input type="checkbox"/> 6. Before eating</p> <p><input type="checkbox"/> 7. Before feeding baby</p> <p><input type="checkbox"/> 8. After eating</p> <p><input type="checkbox"/> 9. After disposing of baby's faeces</p> <p><input type="checkbox"/> 10. Other:</p>
<p>S8. Did you or a member of your household receive hygiene promotion messaging or training in the last year?</p> <p>Note: Hygiene promotion messaging or training involves organizations sharing information and knowledge to enable people to take action to prevent and/or mitigate WASH-related diseases</p>	<p><input type="checkbox"/> 1. Yes</p>	<p><input type="checkbox"/> 2. No</p> <p><input type="checkbox"/> 3. I don't know</p>
<p>S8.1. If "Yes" to S8, How often in the last year have you or a member of your household received hygiene promotion messaging or training?</p>	<p><input type="checkbox"/> 1. Every six months</p> <p><input type="checkbox"/> 2. Every three months</p> <p><input type="checkbox"/> 3. Every two weeks</p> <p><input type="checkbox"/> 4. Monthly</p>	<p><input type="checkbox"/> 5. One visit in the last year</p> <p><input type="checkbox"/> 6. Weekly</p> <p><input type="checkbox"/> 7. I don't know</p>
<p>S8.2. When was the last time you or a member of your household receive hygiene promotion messaging or training?</p>	<p><input type="checkbox"/> 1. Less than three months ago, but more than a month ago</p> <p><input type="checkbox"/> 2. Less than six months ago, but more than three months ago</p> <p><input type="checkbox"/> 3. Less than one day ago</p>	<p><input type="checkbox"/> 4. Less than one month ago, but more than a week ago</p> <p><input type="checkbox"/> 5. Less than one week ago, but more than a day ago</p> <p><input type="checkbox"/> 6. More than six months ago</p> <p><input type="checkbox"/> 7. I don't know</p>
<p>S9. Did you or a member of your household receive any of the following types of WASH assistance in the last six months?</p>	<p><input type="checkbox"/> 1. Received support for the construction or maintenance of water and / or sanitation facilities</p> <p><input type="checkbox"/> 2. Received support for solid waste collection and disposal</p>	<p><input type="checkbox"/> 3. Received safe drinking water through free access to water trucking</p> <p><input type="checkbox"/> 4. Received water containers for safe water transport / storage at household level</p> <p><input type="checkbox"/> 5. Received chlorine tablets or</p>

		<p>other water disinfecting agents for water treatment</p> <ul style="list-style-type: none"><input type="checkbox"/> 6. Received basic/consumable hygiene kits<input type="checkbox"/> 7. Other<input type="checkbox"/> 8. I don't know<input type="checkbox"/> 9. No WASH assistance received
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Annex 4: Location coverage per district assessed

District name	Total number of locations in the initial location list	% of locations NOT assessed from the initial location list	% of locations assessed from the initial location list
Zingibar	6	50%	50%
Shara'b As Salam	52	2%	98%
Dimnat Khadir	55	9%	91%
Kharif	39	41%	59%
Iyal Surayh	33	39%	61%
Dhi Bin	36	61%	39%
Arhab	105	10%	91%
Marib City	7	86%	14.3%
Marib	28	89%	11%
Mustaba	45	96%	4%
Aslem	104	9%	91%
Ash Shamayatayn	79	3%	98%
Mudhaykhirah	30	3%	97%
At Ta'iziyah	75	7%	93%
Khanfir	11	18%	82%
Ataq	3	67%	33%
Al Qabbaytah	40	3%	98%
Tuban	20	10%	90%
Al Maqatirah	25	0%	100%
Az Zahir	7	14%	86%
Abs	90	4%	96%
Al Abr	4	0%	100%
Majz	22	0%	100%
Al Hashwah	34	9%	91%
Bani Dhabyan	75	13%	87%
Bani Sa'd	96	0%	100%
Bani Suraim	49	8%	92%
Wald Rabi'	12	50%	50%
Al Maton	7	0%	100%
Al Maslub	6	33%	67%
Kushar	81	4%	96%
Al Miftah	27	48%	52%
Washhah	118	95%	5%
Qarah	56	0%	100%
Al Jafariyah	64	0%	100%
Kitaf wa Al Boqe'e	33	12%	88%
Manakhah	118	54%	46%
Khamir	37	0%	100%

Annex 5: References

Malnutrition and cholera or other diseases

- Prüss-Üstün, Annette, Robert Bos, Fiona Gore, and Jamie Bartram, *Safer Water, Better Health*, 2008
<https://apps.who.int/iris/bitstream/handle/10665/43840/9789241596435_eng.pdf?sequence=1> [accessed 18 April 2019]
- WaterAid, 'WASH and Nutrition | WASH Advocates', *Post-2015 Toolkit*, 2015, 1–10
<<http://www.washadvocates.org/learn/wash-facts/wash-and-nutrition/>>

Water sources and cholera or other diseases

- Bain, Robert, Ryan Cronk, Rifat Hossain, Sophie Bonjour, Kyle Onda, Jim Wright, and others, 'Global Assessment of Exposure to Faecal Contamination through Drinking Water Based on a Systematic Review.', *Tropical Medicine & International Health : TM & IH*, 19 (2014), 917–27 <https://doi.org/10.1111/tmi.12334>
- Wolfe, Marlene, Mehar Kaur, Travis Yates, Mark Woodin, and Daniele Lantagne, 'A Systematic Review and Meta-Analysis of the Association between Water, Sanitation, and Hygiene Exposures and Cholera in Case–Control Studies', *The American Journal of Tropical Medicine and Hygiene*, 99 (2018), 534–45
<<https://doi.org/10.4269/ajtmh.17-0897>>
- World Health Organization, *Exposures and Impacts in Low-and Middle-Income Countries PREVENTING DIARRHOEA THROUGH BETTER WATER, SANITATION AND HYGIENE, WHO Library Cataloguing-in-Publication Data*, 2014 <http://apps.who.int/iris/bitstream/10665/150112/1/9789241564823_eng.pdf> [accessed 27 May 2019]
- World Health Organization, *Highlights CHOLERA SITUATION IN YEMEN Distribution of Suspected Cholera Cases in Yemen, Cholera Cases and Case Fatality Rates by Governorate in Yemen Governorate Cases Deaths CFR (%)*, 2018 <http://applications.emro.who.int/docs/EMROPub_2018_EN_20790.pdf?ua=1> [accessed 3 April 2019]

Sewage and solid waste management and burden of disease

- Barreto, Mauricio L., Bernd Genser, Agostino Strina, Maria Gloria Teixeira, Ana Marluca O. Assis, Rita F. Rego, and others, 'Effect of City-Wide Sanitation Programme on Reduction in Rate of Childhood Diarrhoea in Northeast Brazil: Assessment by Two Cohort Studies', *Lancet*, 370 (2007), 1622–28
<[https://doi.org/10.1016/S0140-6736\(07\)61638-9](https://doi.org/10.1016/S0140-6736(07)61638-9)>
- Freeman, Matthew C., Joshua V. Garn, Gloria D. Sclar, Sophie Boisson, Kate Medicott, Kelly T. Alexander, and others, 'The Impact of Sanitation on Infectious Disease and Nutritional Status: A Systematic Review and Meta-Analysis', *International Journal of Hygiene and Environmental Health*, 220 (2017), 928–49
<<https://doi.org/10.1016/j.ijheh.2017.05.007>>
- De, Shaoli, and Biswajit Debnath, 'Prevalence of Health Hazards Associated with Solid Waste Disposal- A Case Study of Kolkata, India', *Procedia Environmental Sciences*, 35 (2016), 201–8
<https://doi.org/10.1016/j.proenv.2016.07.081>
- Thitame, Sunil N., Deepak B. Phalke, and Goraksha M. Pondhe, 'Public Health Risk and Environmental Impact Associated with Disposal of Urban Waste at Sangamner City, Ahmednagar, Maharashtra, India', *International Journal of Preventive and Public Health Sciences*, 2015, 5
<<https://doi.org/10.17354/ijpphs/2015/09>>

Water quantity and burden of disease

- Lim, Stephen S., Theo Vos, Abraham D. Flaxman, Goodarz Danaei, Kenji Shibuya, Heather Adair-Rohani, and others, 'A Comparative Risk Assessment of Burden of Disease and Injury Attributable to 67 Risk Factors and Risk Factor Clusters in 21 Regions, 1990-2010: A Systematic Analysis for the Global Burden of Disease Study 2010', *The Lancet*, 380 (2012), 2224–60 <[https://doi.org/10.1016/S0140-6736\(12\)61766-8](https://doi.org/10.1016/S0140-6736(12)61766-8)>
- Prüss-Üstün, Annette, Jamie Bartram, Thomas Clasen, John M. Colford, Oliver Cumming, Valerie Curtis, and others, 'Burden of Disease from Inadequate Water, Sanitation and Hygiene in Low- and Middle-Income Settings: A Retrospective Analysis of Data from 145 Countries', *Tropical Medicine and International Health*, 19 (2014), 894–905 <<https://doi.org/10.1111/tmi.12329>>

Fertility and Conflict

- Cetorelli, Valeria, 'The Effect on Fertility of the 2003-2011 War in Iraq.', *Population and Development Review*, 40 (2014), 581–604 <<https://doi.org/10.1111/j.1728-4457.2014.00001.x>>
- Khawaja, Marwan, 'The Recent Rise in Palestinian Fertility: Permanent or Transient?', *Population Studies* (Taylor & Francis, Ltd. Population Investigation Committee), 331–46 <<https://doi.org/10.2307/2584789>>
- Yüceşahin, M. Murat, and E. Murat Özgür, 'Regional Fertility Differences in Turkey: Persistent High Fertility in the Southeast', *Population, Space and Place*, 14 (2008), 135–58 <<https://doi.org/10.1002/psp.480>>

Other references

- Abu Qdais, Hani, *Country Report on the Solid Waste Management in Jordan*, 2014 <https://www.retech-germany.net/fileadmin/retech/05_mediathek/laenderinformationen/Jemen_RA_ANG_WEB_Laenderprofile_sweep_net.pdf> [accessed 22 May 2019]
- Comfort, Alison B, Slavea Chankova, Randall Juras, C Natasha Hsi, Lauren A Peterson, and Payal Hathi, 'Providing Free Pregnancy Test Kits to Community Health Workers Increases Distribution of Contraceptives: Results from an Impact Evaluation in Madagascar.', *Contraception*, 2015 <<https://doi.org/10.1016/j.contraception.2015.09.011>>
- Global WASH Cluster, 'Global WASH Cluster Needs Assessment Indicators & Question Bank', 2019
- Gressmann, Wolfgang, *FROM THE GROUND UP: GENDER AND CONFLICT ANALYSIS IN YEMEN*, 2015 <https://www.acaps.org/sites/acaps/files/key-documents/files/yemen_gender_report.pdf> [accessed 26 March 2019]
- IFRC, *The Sphere Handbook, The Sphere Project Humanitarian Charter and Minimum Standards in Humanitarian Response*, 2018, | <[https://doi.org/ISBN 978-1-908176-00-4](https://doi.org/ISBN%20978-1-908176-00-4)>
- OCHA, 'Humanitarian Needs Overview Yemen 2019', 2019
- Oxfam, *OXFAM MEDIA BRIEFING Yemen Pushed towards Man-Made Famine*, 2015 <<https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620233/mb-yemen-two-year-conflict-famine-230317-en.pdf;jsessionid=1DA0980EF58B608C1E3B9B6BA008EE8A?sequence=1>> [accessed 18 April 2019]
- Principles, Global Guiding, Wash Cluster, Wash Cluster, Response Approaches, Wash As, Part Of, and others, 'YEMEN WASH CLUSTER STRATEGIC OPERATIONAL FRAMEWORK (SOF) March 2018', 2018, 1–29
- Unicef, *Yemen Humanitarian Situation Report*, 2019 <https://www.unicef.org/appeals/files/UNICEF_Yemen_Humanitarian_Situation_Report_Jan_2019.pdf> [accessed 18 April 2019]
- UNICEF, and WHO, *Progress on Drinking Water and Sanitation: Special Focus on Sanitation*, 2008 <http://www.wssinfo.org/fileadmin/user_upload/resources/1251794333-JMP_08_en.pdf> [accessed 21 May 2019]
- WHO/UNICEF, 'Progress on Sanitation and Drinking Water. Methodology 2015 Update & Sdg Baselines', 2018, 1–23
- World Health Organization, *Country Highlights Yemen*, 2015 <www.who.int> [accessed 21 May 2019]
- World Health Organization & Ministry of Public Health and Population, 'Electronic Integrated Disease Early Warning and Response System, Yemen', 07 (2019), 1–9
- Yates, Travis, Jelena Allen, Myriam Leandre Joseph, and Daniele Lantagne, *Short-Term WASH Interventions in Emergency Response: A Systematic Review*, *International Initiative for Impact Evaluation*, 2017 <http://www.3ieimpact.org/media/filer_public/2017/03/01/srs8-short-term-wash.pdf> <http://www.3ieimpact.org/media/filer_public/2017/02/21/sr33-wash-interventions.pdf> [accessed 28 May 2019]